2021台灣胸腔暨重症加護醫學會年會

暨台灣胸腔外科醫學會、台灣胸腔及心臟血管外科學會聯合會議
暨台灣胸腔暨重症加護醫學會第18屆第2次會員大會

2021 Annual Congress of Taiwan Society of Pulmonary and Critical Care Medicine
And Taiwan Society of Thoracic Surgeons, Taiwan Association
of Thoracic & Cardiovascular Surgery Joint Conference

2021 12/11 (Sat) - 12 (Sun)

臺中榮民總醫院
Taichung Veterans General Hospital

經衛福部食藥署核准
用於治療 2019 冠狀病毒疾病 (COVID-19)

適應症：

韋如意適用於治療必須住院之成人與兒童病人 (12 歲 (含) 以上且體重至少 40 公斤)的 2019 冠狀病毒疾病 (COVID-19)。

僅可於醫院或可提供類似住院照護之急性照護的醫療照護機構內投予。

Veklury®
remdesivir 100 MG FOR INJECTION

韋如意® 凍晶乾燥注射劑 100 毫克/瓶　VEKLURY® Lyophilized Powder for Injection 100 mg/Vial

衛部藥輸字第 027899 號　本品限由醫師處方使用

1. 適應症與用途

適用於治療必須住院之成人與兒童病人 (12 歲 (含) 以上且體重至少 40 公斤) 的 2019 冠狀病毒疾病 (COVID-19)。僅可於醫院或可提供類似住院照護之急性照護的醫療照護機構內投予。

2. 用法用量

2.1 開始使用 VEKLURY 治療之前與治療期間應進行的檢驗

在臨床適合的情況下，所有病人在開始使用 VEKLURY 之前都應先檢測 eGFR、肝臟實驗室檢驗，以及凝血酶原時間，接受治療期間亦應持續監測。

2.2 成人及 12 歲(含)以上且體重至少 40 公斤之兒童病人的建議劑量

於第1天靜脈輸注單劑 200 毫克 (起始劑量)，從第2天起每天一次靜脈輸注 100 毫克 (維持劑量)。

- 對不須使用侵入性機械呼吸器及/或體外膜氧合器 (葉克膜/ECMO) 的病人，建議的治療時間爲 5 天。如果病人未呈現臨床改善的效果，治療可額外延長最多 5 天，總治療時間爲最長 10 天。
- 對須使用侵入性機械呼吸器及/或葉克膜的病人，建議的治療時間爲 10 天。
- 必須先稀釋再靜脈輸注給藥。

2.3 腎功能不全

不建議用於 eGFR 低於 30 毫升/分鐘的病人。

2.4 製備與投藥

- 必須在醫療照護人員的監督之下進行製備與投藥。
- 僅可靜脈輸注給藥。切勿透過任何其他途徑給藥。
- 必須先以無菌注射用水調製，再稀釋於100毫升或250毫升的0.9%氯化鈉輸注袋中。
- 投予注射用藥之前，應先目視檢查是否有微粒異物或變色的現象。在稀釋於0.9%氯化鈉輸注袋中之前，調製後的藥品應爲澄清、無色至黃色的溶液，且不含肉眼可見的微粒。
- 應於投藥當天，於無菌條件下製備稀釋溶液。(藥品調製、稀釋與投藥指示請參閱完整版仿單。)

切勿將製備好的稀釋溶液與任何其他藥物同時投予。以30至120分鐘靜脈輸注的方式投予。

2.5 製備後之藥物的存放

以生理食鹽水稀釋之後，任何溶液只要在 20 至 25°C 的溫度下存放 >4 小時 (包含以注射用水調製之後的時間)，或在 2 至 8°C 的溫度下存放 >24 小時 (包含以注射用水調製之後的時間)，即不可使用並應予以丟棄。

3. 禁忌

禁用於曾對 VEKLURY 或本品之任何組成產生臨床上顯著之過敏反應的病人。

4. 警語及注意事項

4.1 過敏，包括輸注相關反應與過敏性反應

曾在投予 VEKLURY 期間及投藥之後觀察到發生過敏反應，包括輸注相關反應與過敏性反應。可考慮採用較低的輸注速率 (最長輸注時間不超過 120 分鐘)，或可預防這些徵兆與症狀。在投予 VEKLURY 期間及投藥之後，應於嚴密的醫療監督之下監視病人是否發生過敏反應。如果出現具臨床意義之過敏反應的徵兆和症狀，應立即停止投予 VEKLURY，並採取適當的處置措施。

4.2 轉胺酶升高的風險增加

- 如果 ALT 濃度升高超過正常值上限的 10 倍，應考慮停用 VEKLURY。
- 如果 ALT 升高且伴有肝臟發炎的徵兆或症狀，應停用 VEKLURY。

4.3 與 Chloroquine Phosphate 或 Hydroxychloroquine Sulfate 合併投予導致抗病毒活性降低的風險

不建議將 VEKLURY 與 chloroquine phosphate 或 hydroxychloroquine sulfate 併用。

5. 不良反應

請見其他段落說明。

6. 藥物交互作用

目前尚未於人體進行過 VEKLURY 與其他併用藥物的藥物-藥物交互作用試驗。

7. 特定族群之使用

7.1 懷孕

從對孕婦使用 remdesivir 的已發表病例報告及恩慈使用結果所獲得的資料並不足以評估是否存有重大出生缺陷、流產、或母體/胎兒不良影響方面的藥物相關風險。

7.2 授乳

目前並無任何關於 remdesivir 是否會出現於人類的乳汁、對餵哺母乳之嬰兒的影響、或對乳汁生成作用之影響方面的資料。應將餵哺母乳對嬰兒發育及健康的效益和母親對 VEKLURY 的臨床需求，以及餵哺母乳的嬰兒可能因 VEKLURY 或母親的基礎疾病而受到的不良影響一併考慮。餵哺母乳的 COVID-19 病人應遵循臨床指引行事，以避免嬰兒暴露於 COVID-19。

7.4 兒童之使用

對 12 歲 (含) 以上且體重至少 40 公斤的兒童病人治療 COVID-19 的安全性及有效性已經確立。

7.5 老年人之使用

對超過 65 歲的病人，並不須調整劑量。一般而言，對老年病人投予 VEKLURY 和進行監視時應多加小心，因爲他們有較高的頻率發生肝臟、腎臟或心臟功能減弱、患有合併症或同時使用其他藥物治療。

7.6 腎功能不全

目前尚未針對腎功能不全的病人評估過 VEKLURY 的藥物動力學。

對 eGFR 低於 30 毫升/分鐘的病人，不建議投予配方中含有 betadex sulfobutyl ether sodium 的藥物 (如 VEKLURY)。

7.7 肝功能不全

目前尚未針對肝功能不全的病人評估過 VEKLURY 的藥物動力學。

10. 過量

目前並無任何 VEKLURY 急性使用過量的人類經驗。VEKLURY 使用過量時的處置方式爲一般的支持性措施，包括監視生命徵象，以及觀察病人的臨床狀態。VEKLURY 使用過量並無任何特定的解毒劑。

11. 臨床藥理學

11.1 作用機制

Remdesivir 是一種抗病毒藥物，具可對抗嚴重急性呼吸道症候群冠狀病毒 2 (SARS-CoV-2) 的活性。

11.2 藥效學

目前並不確知 remdesivir 和代謝物的暴露量-反應關係與藥效學反應時程。

16. 包裝規格/儲存與操作

包裝規格 VEKLURY 凍晶乾燥注射劑 100 毫克/瓶爲單劑小瓶裝，瓶中裝有無菌、不含防腐劑、白色至灰白色至黃色的凍晶乾燥粉末。本品須經調製與進一步的稀釋之後，經靜脈輸注給藥。未使用的部份請予以丟棄。

儲存與操作 請將本藥品儲存於 30°C 以下 (86°F 以下) 的環境，直到要使用再取出。切勿重複使用調製後或稀釋後的 VEKLURY，或將其保存以供未來使用。已部份使用的小瓶應予以丟棄。

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如有任何與 Gilead 產品有關的醫療諮詢，請電郵至 asiamedinfo@gilead.com 或致電 008 011 36520 (免費電話)

北市衛藥廣字第110100201號

GILEAD 香港商吉立亞醫藥有限公司台灣分公司
台北市信義區松仁路32號10樓之1、36號10樓之1

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December 11, 2021 (Sat.)

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08:30	**OPENING**					
09:00	Moderator：**鄭世隆**教授 Speaker： Pro: **陳家弘**醫師 Con: **陳彥甫**醫師 **Is long-term macrolide treatment effective and safe for patients with non-cystic fibrosis bronchiectasis?**	Moderator：**鍾飲文**院長 Speaker： **洪仁宇**副院長 **Recent advances of target therapy in NSCLC**	Moderator：**黃伊文**教授 Speaker： **方啟泰**教授 **Role of Ventilation in TB Control**		台灣胸腔外科醫學會 09:00-09:40 Moderator：**方信元**副院長 Hsin-Yuan Fang, M.D., Ph.D. **莊政諺**主任 Cheng-Yen Chuang, M.D. Speaker： **Dr. Shun-ichi Watanabe** **Less is more? Update of Japanese sublobar resection trials for small-sized lung cancer**	09:00-10:20 Moderator：**邱國樑**主任 Speaker： **林嘉謨**主任 **蔡明儒**主任 **莊立邦**主任 **周昆達**主任 **Sleep hands-on : PSG & PAP**
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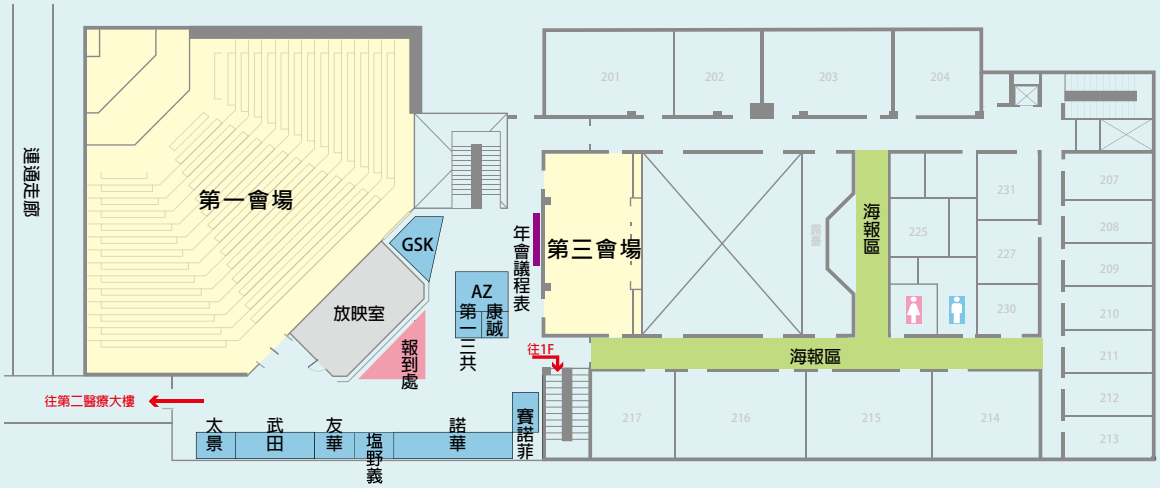
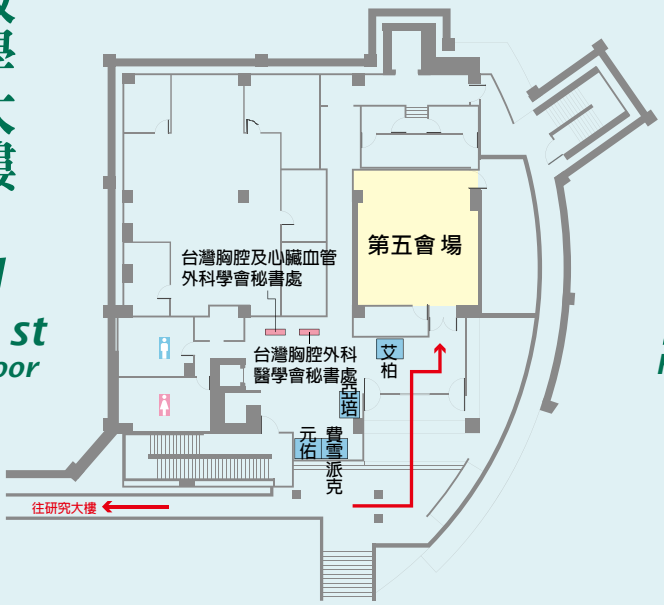
09:40 10:20	Moderator：**陽光耀**教授 Speaker：**施信如**教授 **SARS-CoV2 and Its Variants**	Moderator：**彭殿王**教授 Diahn-Warng Perng, M.D., Ph.D. Speaker：**Prof. Kerri Johannson** **Treatment of interstitial lung diseases: current approaches and future directions**	Moderator：**涂智彥**主任 Chih-Yen Tu, M.D. Speaker：**柯明耀**院長 **肺毛玻璃結節【Ground-glass nodules (GGNs)】的介入根治的臨床實踐**	Moderator：**林孟志**教授 Speaker：**郭耀昌**主任 **Indoor air pollution and health**	台灣胸腔外科醫學會 09:40-10:20 Moderator：**陳維勳**主任 Wei-Hsun Chen, M.D. **徐紹勛**主任 Hsao-Hsun Hsu, M.D., Ph.D. Speaker：**Prof. Hiroshi Date** **Current status of lung transplant in Japan and Kyoto University Hospital -- What's different and important during Covid-19 pandemic?**	台灣胸腔及心臟血管外科學會 09:40-10:20 Moderator：**呂宏益**主任 Hung-I Lu, M.D. **方信元**副院長 Hsin-Yuan Fang, M.D. Speaker：**Prof. Daniel Steinfort** **Bronchoscopic Thermal Vapor Ablation of Localized Cancer Lesion**
10:20 10:40	**Coffee break**					
10:40 11:20	Moderator：**王鶴健**理事長 Speaker：**李伯璋**署長 **In response to the COVID-19 epidemic, National Health Insurance's adjustment to critical medicine payments**	Moderator：**張允中**教授 Speaker：**黃昱森**醫師 **CT Evaluation of ILD Severity**	10:40-11:10 Moderator：**陳寧宏**主任 Ning-Hung Chen, M.D., Ph.D. Speaker：**Prof. Seema Khosla** **Navigating the Future of Sleep Medicine**	Moderator：**余忠仁**院長 Speaker：**楊泮池**院士 **楊泮池院士與年輕醫師的深度對談 - 關於胸腔科醫師的人生規劃**	台灣胸腔外科醫學會 10:40-11:00 Moderator：**郭光泰**部長、**黃培銘**主任 Speaker：**林敬凱**醫師 **Cone-beam CT-guided bronchoscopic techniques for the diagnosis of small peripheral pulmonary lesions** 台灣胸腔外科醫學會 11:00-11:20 Moderator：**張宏**教授、**湯恩魁**主任 Speaker：**黃才旺**主任 **Diagnosis and staging of NSCLC : Role of EBUS-TBNA**	台灣胸腔及心臟血管外科學會 10:40-11:20 Moderator：**夏君毅**主任 Jiun-Yi Hsia, M.D. **李章銘**主任 Jang-Ming Lee, M.D. Speaker：**Prof. Herbert Loong** **Precision Medicine – How does genetic testing affect the way we treat our patients?**
11:20 12:00	Moderator：**曹昌堯**教授 Speaker：**王耀震**醫師 **Respiratory care for critical patients with 2019 coronavirus**	Moderator：**林慶雄**副院長 Speaker：**王鶴健**理事長 **Progressive fibrosing Interstitial lung disease (PF-ILD) Taiwan Consensus**	11:10-11:40 Moderator：**陳寧宏**主任 Ning-Hung Chen, M.D., Ph.D. Speaker：**Prof. Ambrose Chiang** **Emerging Sleep Technology in the Telemedicine Era: on the Road to Better Patient Care** 11:40-12:00 Moderator：**陳寧宏**主任 Speaker：**李佩玲**主任 **Common non-respiratory sleep disorder encountered in sleep laboratory**	Moderator：**吳杰亮**主任 Speaker：**高毓儒**教授 **How to inspire a research idea**	台灣胸腔外科醫學會 11:20-12:00 Moderator：**周世華**教授 Shah-Hwa Chou, M.D., Ph.D. **黃文傑**主任 Wen-Chien Huang, M.D. Speaker：**徐栗**醫師 **Experience sharing: Localization of lung nodule for resection using VBN**	台灣胸腔及心臟血管外科學會 11:20-12:00 Moderator：**吳玉琮**副院長 **鄭清源**院長 Speaker：**顏銘宏**主任 **ERAS in thoracic surgery**
12:00 13:20		台灣阿斯特捷利康 股份有限公司 *Lung Cancer*	健喬信元醫藥生技 股份有限公司 / 台灣諾華股份有限公司 *Airway Disease & Lung cancer*	*Lung Cancer*	輝瑞大藥廠股份有限公司 *Lung Cancer*	台灣阿斯特捷利康 股份有限公司 *Airway Disease*

研究大樓 1st Floor

研究大樓 2nd Floor



教學大樓 1st Floor



教學大樓 2nd Floor

避免急性發作的長期保護
選擇 Nucala(Mepolizumab) [1-4]

Choose Nucala to restore long term balance[1-4]

53% eduction in all-cause exacerbations vs. baseline[1-4]

61% reduction in exacerbations requiring hospitalization/ER*[1, 2, 5]

Powerful and lasting OCS reduction[5-7]

Nucala powder is approved to treat SEA from age of 6 years, and EGPA for adults.[8-9]

Nucala solution for injection is approved to treat SEA from age of 12 years and EGPA in adult patients.[8-9]

Abbreviation: OCS, oral corticosteroid; SEA, severe eosinophilic asthma; EGPA, Eosinophilic granulomatosis with polyangiitis

NUCALA不可使用於緩解急性支氣管痙攣或氣喘重積狀態(status asthmaticus)。在開始使用NUCALA治療之後，如果患者的氣喘症狀仍未獲得控制或出現惡化的現象，應尋求醫療建議

Reference
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9. Taiwan Nucala solution for injection Full PI, TW01

舒肺樂凍晶注射劑簡易仿單

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2021 台灣胸腔暨重症加護醫學會年會

暨台灣胸腔外科醫學會、台灣胸腔及心臟血管外科學會聯合會議暨台灣胸腔暨重症加護醫學會第 18 屆第 2 次會員大會

2021 Annual Congress of Taiwan Society of Pulmonary and Critical Care Medicine

And Taiwan Society of Thoracic Surgeons, Taiwan Association of Thoracic & Cardiovascular Surgery Joint Conference

演講摘要

- 台灣胸腔暨重症加護醫學會
- 台灣胸腔外科醫學會
- 台灣胸腔及心臟血管外科學會
- Satellite Symposium

台灣胸腔暨重症加護醫學會
第一會場

12 / 11

- Is long-term macrolide treatment effective and safe for patients with non-cystic fibrosis bronchiectasis
- Putting COPD care on the map: redefining the diagnosis and treatment in early COPD
- Call me by my name: Asthma-COPD overlap, is a true disease?
- What are the feature and benefit of individual treatment for asthma?
- Precision Management of Lung Cancer Prevention and Early Detection
- Introduction of Korea COPD Subgroup Study team (KOCOSS) and its nationwide CODP cohort study

12 / 12

- Inflammatory cascade leading to sepsis and potentials for immune modulations (with emphasis on SARS-CoV-2 infections)
- SARS-CoV2 and Its Variants
- In response to the COVID-19 epidemic, National Health Insurance's adjustment to critical medicine payments
- Respiratory care for critical patients with 2019 coronaviru

Pro:
Is long-term macrolide treatment effective and safe for patients with non-cystic fibrosis bronchiectasis

陳 家弘 醫師 / Chia-Hung Chen, M.D.

Attending Physician,Division of Pulmonary and Critical Care Medicine, China Medical University Hospital
Associate Professor,Department of Internal Medicine

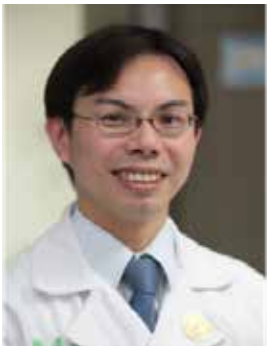
Abstract

Non-cystic fibrosis bronchiectasis is a respiratory disease characterized by persistent airway inflammation and dilation of bronchial wall driven by various causes. Patients with bronchiectasis suffer from excessive sputum production, recurrent exacerbations, and progressive airway destruction. Major therapy for bronchiectasis is focused on breaking the "vicious cycle" of mucus stasis, infection, inflammation, and airway destruction.

Growing evidence have been shown that macrolides possess immunomodulatory and anti-inflammatory functions beyond their antimicrobial effects. The benefit of macrolide antibiotic in treated non-cystic fibrosis bronchiectasis includes reduce airway mucus secretion and viscosity and decrease airway neutrophil accumulation through a reduction in pro-inflammatory cytokines expression and adhesion molecule production.

In terms of safety, previous evidence showed that macrolides increased the risk of diarrhea and abdominal discomforts, but not overall adverse events in adults. Macrolides for maintenance therapy in adults has not resulted in emerging pathogens. In addition, there were no reported serious cardiovascular events in patients treated with macrolides. Nevertheless, before embarking on long term macrolide therapy, the benefit-to-risk ratio still need careful consideration.

In conclusion, there is strong evidence providing support to the benefit of using this type of drug for the long term and in low doses to treat non-cystic fibrosis bronchiectasis. Further work should not be on the effective and safe of long-term macrolide treatment and should be focused to understand the optimal drug, dose, and regimen.



Con:
Is long-term macrolide treatment effective and safe for patients with non-cystic fibrosis bronchiectasis

陳 彥甫 醫師 / Yen-Fu Chen, M.D.

Director of Department of Outpatient, National Taiwan University Hospital Yun-Lin Branch
Attending Physician,National Taiwan University Hospital Yun-Lin Branch
Clinical Lecturer, National Taiwan University College of Medicine

Abstract

Non-cystic fibrosis bronchiectasis (NCFB) is a heterogeneous disorder with various etiologies characterized by irreversibly pathological dilation of the airways with daily symptoms of cough, excessivesputum production, as well as recurrent pulmonary exacerbations. The prevalence of bronchiectasis is increasing worldwide. However, the pathogenesis of the disease and the mechanism of inflammatory, infective and molecular drivers of disease progression are not fully understood. Current treatments available are limited to those alleviating symptoms and reducing exacerbations.

In the past decade, some clinical trials had demonstrated that macrolides, such as azithromycin and erythromycin, are associated with clear benefits in terms of reducing the number of exacerbations, time to first exacerbation, sputum purulence and breathlessness. The improvement of lung function was also observed after macrolides treatment. Nevertheless, the long-term efficacy and safety of macrolides for patients with bronchiectasis were still not clear. There are several issues concerning long-term use of macrolides lies within clinical benefit. First, the optimal length of macrolide administration is unknown. There are no data to determine for how long patients should be treated (e.g. 6, 12 or 24 months) and to investigate the issue of recurrent exacerbations after discontinuing the macrolides. Second, the many adverse effects of macrolides, such as gastrointestinal tract (e.g. nausea and diarrhea), cardiac (e.g. prolonged QT intervals) and hearing disorders have been reported. Despite convincing positive outcomes (significantly reduced exacerbation frequency) were demonstrated in several trials and meta-analysis, the risk and benefit of long-term macrolides treatment should be re-assessed for most trials with their observational duration were less than 2 years. Third, although up to 60% of bronchiectasis patients suffer some kind of chronic bronchial infection (e.g.Haemophilus influenzae and Pseudomonas aeruginosa), the efficacy of long-term macrolides on nonchronically infected patients or patients with chronically infected with specific pathogens (P. aeruginosa, Non-tuberculosis mycobacteria or multi-drug resistance pathogens) are not fully evaluated. Fourth, the macrolide-resistance microbiome after long-term exposure of macrolides has been reported (resistance rate up to 88%) in clinical trials. The clinical relevance of macrolide-resistance should be investigated further in reducing the risk of antibiotic overuse and resistance in bronchiectasis. Finally, since non-cystic fibrosis bronchiectasis is a highly heterogeneous disease with multiple etiologies, the role of macrolides in different phenotypes of bronchiectasis is not clear and further studies are needed to clarify this.

In the future, the development of affordable microbiological rapid diagnostic tools could improve the management of infections in bronchiectasis and minimize the overuse of broad-spectrum antibiotics that contribute to the spread of antimicrobial resistance, which pave the way in the application of precision medicine to the treatment of bronchiectasis.

Putting COPD care on the map: redefining the diagnosis and treatment in early COPD

Meilan King Han, M.D.

Professor of Internal Medicine
Director, Michigan Airways Program, University of Michigan, Division of Pulmonary and Critical Care Medicine

Education and Training

•Education
08/1991-06/1995 BS, Cell and Molecular Biology, University of Washington, Seattle, WA
08/1995-06/1999 MD, University of Washington School of Medicine, Seattle
09/2005-04/2007 MS, Biostatistics and Clinical Trial Design, University of Michigan, Ann Arbor, MI
•PostDoctoral Training
06/1999-06/2000 Internship, Internal Medicine, University of Michigan Health System
07/2000-06/2002 Residency, Internal Medicine, University of Michigan Health System
07/2002-06/2005 Fellowship, Pulmonary & Critical Care Medicine, University of Michigan Health System

Certification And Licensure

•Certification
05/2004-04/2024 Pulmonary Disease (Amer Brd of Internal Medicine)
11/2005-12/2025 Critical Care Medicine (Amer Brd of Internal Medicine)
•Licensure
10/2021 DEA Registration
01/2024 State of Michigan, Controlled Substance
01/2024 State of Michigan, Medical License

Peer-Reviewed Journals and Publications

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Pro:
Call me by my name: Asthma-COPD overlap, is a true disease?

黃 俊凱 醫師 / Chun-Kai Huang, M.D.

Attending Physician, Divisions of Chest Medicine, Department of internal medicine, National Taiwan University Hospital,Taipei, Taiwan

Abstract

Asthma and COPD have characteristic clinical features, but patients with clinical features of both asthma and COPD are often encountered in clinical practice. Asthma and chronic obstructive pulmonary disease (COPD) are heterogeneous and overlapping conditions. This observation has led to the term "asthma-COPD overlap" (ACO), which is a description of a collection of clinical features rather than a definition of a single entity. However, this topic remains controversial and no single, universally accepted definition of ACO has emerged.

Asthma and COPD each include several different clinical phenotypes, and are likely to have several different underlying mechanisms, some of which may be common to both asthma and COPD. A common question when considering the pathogenesis of ACO is whether it is the result of a unique pathogenic process, or the result of additive pathologic processes of asthma and COPD coexisting in the same patient.

History, laboratory data, pulmonary function tests and imaging are important for telling them apart. However, distinguishing asthma from COPD can be difficult, particularly in smokers and older adults, and some patients may have features of both asthma and COPD. As a result, the term "ACO" is a simple descriptor for patients who have features of both asthma and COPD.

In GINA 2021, the treatment recommendation for patients with features of both asthma and COPD is to treat as asthma. ICS-containing therapy is important to reduce the risk of severe exacerbations and death. In this debate, I will present the current evidence of ACO.

Con:
Call me by my name: Asthma-COPD overlap, is a true disease?

蕭 逸函 醫師 / Yi-Han Hsiao, M.D.

Attending Physician, Department of Chest Medicine, Taipei Veterans General Hospital

Abstract

In the 1980s, J.D. Scadding proposed that "disease" should be defined by four key characteristics, including 1) clinical description, 2) disorder of structure, 3) disorder of function, and 4) causation. Both asthma and chronic obstructive pulmonary disease (COPD) are common airway diseases with distinct characteristics of chronic inflammation. Patients with features of both diseases are common and it has been debated for decades whether these patients should be considered a single disease with common origins. In 2015, the Global Initiative for Asthma (GINA) – Global Strategy for Obstructive Lung Disease (GOLD) document that defined Asthma-COPD overlap syndrome (ACOS). However, this definition has

been criticized for not being sufficiently objective or quantitative, and GINA formally recommended use of the term "ACO" rather than "ACOS" in 2017, given that the term "syndrome" suggests a condition in which the clinical findings indicate a common pathophysiologic mechanism. Nevertheless, there is still no single, universally accepted definition of ACO nowadays. The variability and differences of the clinical conditions remain confusing. It may increase the risks of clinical judgement when we oversimplify them toward an imprecise term without recognizing the underlying conditions with their specificities. GOLD 2020 therefore stated that "We no longer refer to ACO, instead we emphasize that asthma and COPD are different disorders, although they may share common traits and clinical features". In summary, although recognition of patients with both diseases are important to guide clinical care, ACO is likely not a single disease, nor even a syndrome from a clinical or mechanistic perspective.

What are the feature and benefit of individual treatment for asthma?

Chih-KooK Rhee, M.D., Ph.D.

Professor, Seoul St. Mary's Hospital, The Catholic University of Korea

Abstract

Asthma is heterogeneous disease and treatment should be based on endotype. Asthma can be classified as T2 high and T2 low.
T2 high asthma is further characterized as allergic eosinophilic and non-allergic eosinophilic. Omalizumab can be used as a fist line treatment in allergic severe asthma. For non-allergic severe asthma, other biologics (anti-IL-5, anti-IL-5Rα, or anti-IL4Rα) can be used. Anti-IL-5 and IL-5Rα can be very effective in patients with high blood eosinophil. Anti-IL-4Ra can be effective both in patients with high blood eosinophil or high FeNO.
In T2 low severe asthma, macrolide can be effective. In a randomized clinical trial, azithromycin significantly reduced asthma exacerbation.1 In post hoc analysis, airway abundance of Haemophilus influenzae predicted response to azithromycin.2 Tyrosine kinase inhibitor (TKI) can also be effective in T2 low asthma. Masitinib, a c-kit/PDGF receptor TKI, improved disease control in severe corticosteroid-dependent asthmatics.3 In phase 3 trial, masitinib showed promising effect in patients with severe asthma, regardless of blood eosinophil level.4 Imatinib, a KIT inhibitor, also decreased airway hyperresponsiveness, mast cell count, and tryptase release.5 Interestingly, the increases in FEV1 were positively correlated with baseline BAL neutrophil counts.
Tiotropium is a very excellent option as add on treatment in asthma. In patients with poorly controlled asthma despite the use of ICSLABA, the addition of tiotropium significantly increased the time to the first severe exacerbation and improved FEV1.6 Currently, the Global Initiative for Asthma (GINA) strategy recommends tiotropium for patients at Steps 4–5. However, adding tiotropium to ICS also effective in patients with moderate symptomatic asthma.7, 8 In a pos hoc analysis of five double-blind trials, tiotropium Respimat add-on therapy improved lung function, and may improve asthma control, in adults across disease severities (GINA Steps 2-5).9

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Precision Management of Lung Cancer Prevention and Early Detection

吳 昭軍 署長 / Chao-Chun Wu, M.D.

Director-General, Health Promotion Administration, Ministry of Health and Welfare, Taiwan, R. O. C.

Abstract

Lung cancer has been the leading cause of cancer mortality worldwide among both men and women in recent years. In Taiwan, although the lung cancer age-standardized mortality rate has decreased from 26.0/105 in 2011 to 21.8/105 in 2020, there were still 9,629 people died of lung cancer in 2020, accounting for the most common cancer mortality rate.

The US National Lung Screening Trial (NLST) and Europe Dutch-Belgian Lung Cancer Screening Trial (NELSON) have demonstrated the ability of lung cancer screening with low-dose computed tomography (LDCT) to detect lung cancer at an early stage and significantly reduce lung cancer mortality in heavy smokers. However, more than half of Taiwan’ s lung cancer patients do not smoke. To identify the effectiveness of LDCT for lung cancer screening in non-smokers and develop the lung cancer risk model, the Ministry of Health and Welfare has subsidized Taiwan Lung Cancer Society for “Taiwan Lung Cancer Screening in Never Smoker Trial (TALENT)” since 2014. The primary result of baseline screening shown that the lung cancer prevalence rate was higher in subjects with lung cancer family history than those without lung cancer family history.

There are two major precision approaches to prevent from lung cancer. First, the risk factors of lung cancer include behaviors (such as tobacco smoking), chemical agents in the environment (such as asbestos, arsenic, radon or air pollution), personal disease history (such as COPD, TB) or a family history of lung cancer. Second, the LDCT lung cancer screening program will be most efficient and cost-effective when targeted to high-risk individuals, especially combining smoking cessation interventions in heavy smoker group. The future of lung cancer prevention and early detection efforts should emphasize standardized protocol, quality assurance and smoking cessation. The implementation guidelines will be developed after full discussion with professionals and stakeholders.

Introduction of Korea COPD Subgroup Study team (KOCOSS) and its nationwide CODP cohort study

Ki-Suck Jung, M.D., Ph.D.

Professor, Division of Pulmonary, Allergy and Critical Care Medicine/Hallym University Medical College
Editor-in-chief, Tuberculosis & Respiratory Diseases
Chair, KOCOSS (Korea COPD Subgroup Study)
Congress President, APSR (Asia-Pacific Society of Respirology) 2022 Seoul, Korea
Senior Advisor/KSP/Korea Development Institute

Abstract

KOCOSS is an abbreviation of Korea COPD subgroup study team, which was organized for the study of COPD in Korea.
It has a nationwide COPD cohort and has been registering COPD patients since 2012. More recently KOCOSS started to
produce COPD papers from cohort data. Some of representative study is going to be introduced for the importance of COPD cohort in our own society.

Infammatory cascade leading to sepsis and potentials for immune modulations (with emphasis on SARS-CoV-2 infections)

Jen-Ting (Tina) Chen, M.D.

Associate Director of Medical Intensive Care Unit, Moses Campus

Education

•Wellesley College, Wellesley, Massachusetts (1997-2001)
Bachelor of Arts, Biological Chemistry
•Albert Einstein College of Medicine, Bronx, New York (2002-2006)
Doctorate of Medicine
•Albert Einstein College of Medicine, Bronx, New York (2017-2019)
Master of Science, Clinical Research Training Program

Postgraduate Training

•Internship in Family Medicine (July 2006- November 2007)
Columbia University Medical Center-New York Presbyterian Hospital, New York, New York
•Post-Graduate Year 1 Training in Emergency Medicine (March 2008- February 2009)
Shuang Ho Hospital, New Taipei, Taiwan
•Internship and Residency in Internal Medicine (March 2009- June/2011)
Columbia University Medical Center-New York Presbyterian Hospital
•Fellowship in Pulmonary and Critical Care Medicine (July 2012- June 2015)
Columbia University Medical Center-New York Presbyterian Hospital

PROFESSIONAL EMPLOYMENT AND HOSPITAL APPOINTMENTS

•Assistant Professor of Medicine, Division of Critical Care Medicine (July 2015- present)
•Albert Einstein College of Medicine, Bronx, New York (academic appointment)
•Montefiore Medical Center, New York, New York (clinical appointment)
•Associate Director of Medical Intensive Care Unit, Moses Campus (March 2020- present)
•Co-Chair, Critical Care subcommittee, System Pharmacy and Therapeutics Committee, Montefiore Health System (August 2021- present)

Original Communications in Reviewed Journals

National Heart, Lung, and Blood Institute PETAL Clinical Trials Network, Effect of hydroxychloroquine on clinical status at 14 days in hospitalized patients with COVID-19: a randomized clinical trial, Journal of American Medical Association, 2020, 324(21):2165-2176 PMID: 33165621
P Nauka, S Chekuri, M Aboodi, A Hope, MN Gong, JT Chen, A Case-control study of prone positioning in awake and non-intubated hospitalized Coronavirus disease 2019 patients, Critical Care Explorations, 2021, Feb;3(2): e0348 PMID: 3361523
ST Jian, CH Fang, JT Chen, RV Smith, The face of COVID-19: Facial pressure wounds related to prone positioning in patients undergoing ventilation in the intensive care unit, Otolaryngol Head Neck Surg, 2021, Feb; 1642): 300-301PMID: 32779961
ATTACC Investigators; ACTIV-4a Investigators, REMAP-Cap Investigators " Therapeutic anticoagulation with heparin in noncritically ill patients with COVID-19, NEJM, 2021; 385(9): 790-802 PMID: 34351721
REMAP-CAP Investigators; ACTIV-4a Investigator; ACTTACC Investigators, "Therapeutic anticoagulation with heparin in critically ill patients with COVID-19," NEJM, 2021; 385(9):777-789 PMID: 34351722

SARS-CoV2 and Its Variants

施 信如 教授 / Shin-Ru Shih, Ph.D.

Director/Professor, Research Center for Emerging Viral Infections, Chang Gung University
Faculty in the Department of Medical Biotechnology and Laboratory Science &
Graduate Program of Biomedical Sciences, Chang Gung University
Medical Director, Clinical Virology Laboratory, Department of Clinical Pathology, Chang Gung Memorial Hospital

Abstract

Coronavirus disease 2019 (COVID-19) is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The global COVID-19 pandemic has threatened the lives of hundreds of millions of people and has had a severe negative impact on the global economy. Though several COVID-19 vaccines are currently being administered, none of them is 100% effective. Moreover, SARS-CoV-2 variants remain an important worldwide public health issue. Hence, this talk will discuss how SARS-CoV-2 mutates and what are variants of concerned.

In response to the COVID-19 epidemic, National Health Insurance's adjustment to critical medicine payments

李 伯璋 署長 / Po-Chang Lee, M.D., M.T.L

Director General, National Health Insurance Administration,Ministry of Health and Welfare
Professor of Surgery, Medical College, National Cheng-Kung University

Abstract

During the community outbreak of the COVID-19 epidemic, severe and moderate emergency hospitals play an important role. At the same time, treating COVID-19 patients put medical staff under high risk and high pressure.
The National Health Insurance Administration supports hospitals to prevent epidemics outbreak and provide effective treatment methods for patients.
In order to expand medical resources and capacity, Humidified High Flow Oxygen Therapy and Prone Positioning Ventilation treatment were provided to COVID-19 patients.
Thanks to the efforts of medical staff, the epidemic has been effectively controlled. The National Health Insurance Administration will continue to adjust the payment for acute and critical medicine, so that medical providers can receive reasonable benefits and improve the existing medical environment.

Respiratory care for critical patients with 2019 coronavirus

王 耀震 主任 / Yao-Chen Wang, M.D., Ph.D.

Deputy Director of Administration, Department of Internal Medicine, Chung Shan Medical University Hospital
Attending Physician, Department of Internal Medicine, Chung Shan Medical University Hospital

Abstract

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) leads to upper respiratory tract infection and could rapidly spread down to the lower respiratory tract. When infection occurs, most of the patients were asymptomatic or only having a mild illness (81%). The most common symptoms reported were fever, fatigue, cough (with or without sputum production), anorexia, malaise, myalgia, sore throat, dyspnea, nasal congestion and headache. Less frequently, patients may also present with diarrhea, nausea and vomiting. Near 14% of the infected patients developed severe pneumonia and had fever or signs of respiratory tract infection. Patients also manifested one of the following conditions: tachypnea with the respiratory rate (RR) > 30 breaths/minute; severe respiratory distress; or hypoxemia with peripheral oxygen saturation (SpO2) ≤ 93% when breathing in ambient air and needed oxygen therapy. Approximately 5% of these patients progressed to hypoxemic respiratory failure. Acute respiratory distress syndrome (ARDS), results from intrapulmonary ventilation-perfusion mismatching or shunting and usually requires mechanical ventilation (MV) support. Providing these patients timely with optimal respiratory care devices and protecting healthcare workers from being infected are important issues.In this presentation, recently published clinical experience and observational studies were reviewed. Corresponding respiratory therapy regarding different stages of infection is proposed.

台灣胸腔暨重症加護醫學會
第二會場

12 / 11

- Recent advances of target therapy in NSCLC
- Clinical Pharmacist Perspective: TKIs in Lung cancer - Drug Metabolism, Interactions, and Important Rare Adverse Reactions
- First-line treatment options for metastatic NSCLC without actionable driver mutations
- "Liquid First" or "Liquid Only" for Molecular Profiling in NSCLC?

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- Myths in fibrosing ILDs
- Treatment of interstitial lung diseases: current approaches and future directions
- CT Evaluation of ILD Severity
- Progressive fibrosing Interstitial lung disease (PF-ILD) Taiwan Consensus

Recent advances of target therapy in NSCLC

洪 仁宇 副院長 / Jen-Yu Hung, M.D., Ph.D.

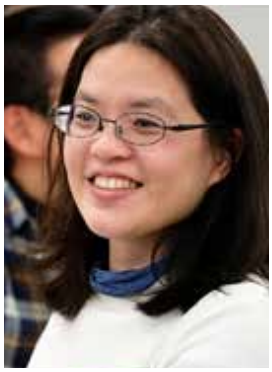
Vice Superintendent, Kaohsiung Municipal Ta-Tung Hospital
Associate Professor, Internal Medicine, Kaohsiung Medical University

Abstract

For lung cancer patients with EGFR-exon 19 deletions or exon 21 L858R point mutation, the standard first-line treatment used to be first-generation (gefitinib, erlotinib), or second-generation (afatinib, dacomitinib) TKIs. These 1st/2nd generation EGFR TKIs improve response rates, time to progression, and overall survival of these EGFR mutation positive NSCLC patients.

Since its approval in April 2018, the 3rd generation EGFR-TKI, osimertinib has been widely adopted as first-line therapy for patients with advanced EGFR-mutant NSCLC or as 2nd line therapy for patients with EGFR exon 20 T790M mutation after failure of their frontline 1st or 2nd generation EGFR TKI therapy. Understanding the resistance mechanisms of osimertinib and currently available treatment options are essential for selecting optimal therapy for patients whose disease progresses after front-line osimertinib.

Clinical Pharmacist Perspective: TKIs in Lung cancer - Drug Metabolism, Interactions, and Important Rare Adverse Reactions



羅 英 藥師 / Yin Lo, M.S.

Pharmacist, Department of Pharmacy, National Taiwan University Hospital

Abstract

Ever since the advent of the protein kinase inhibitors, targeted therapy had shaped the treatment landscape of advanced non-small cell lung cancer with driver proteins. Various protein kinase inhibitors have now become the mainstay of therapy as the direction of NSCLC pharmacotherapy develops towards being increasingly personalized.
Kinase inhibitors are taken orally, are effective and convenient, and their latest development ensure their place in therapy for the foreseeable future. However, they also come with their challenges. Their metabolism via hepatic enzymes, affinity to transporter proteins, and their regular administration schedule have led to drug interactions that could potentially complicate therapy. Rare, unexpected adverse events have also raised safety issues. This talk will focus on metabolism of kinase inhibitors and its clinical implications, clinically relevant drug interactions, and the rare safety concerns that requires the attention of clinicians.

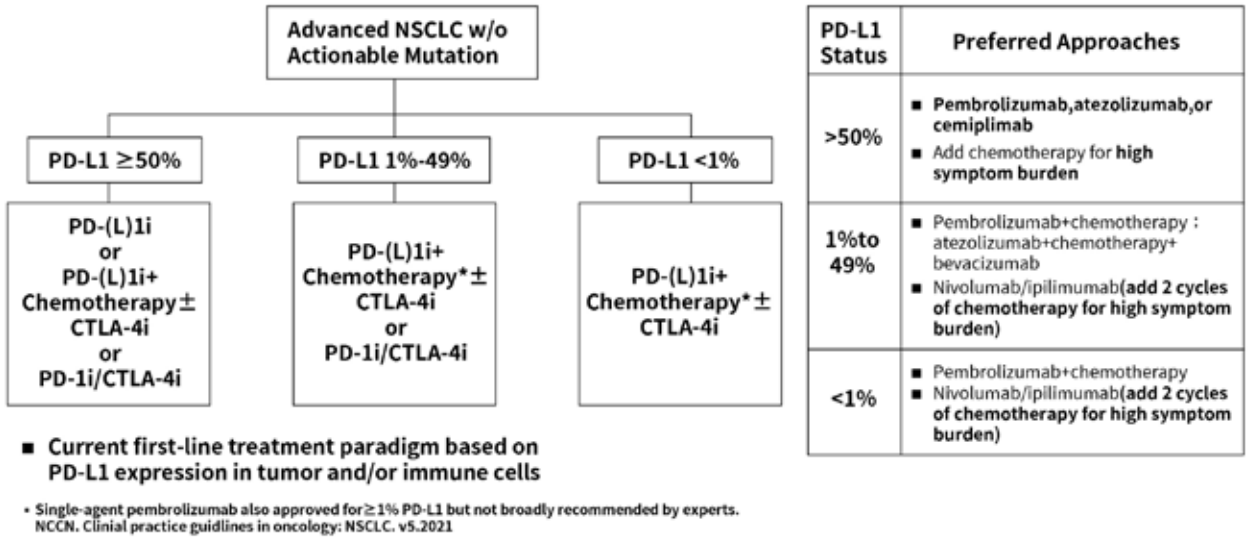
First-line treatment options for metastatic NSCLC without actionable driver mutations

蔡 俊明 教授 / Chun-Ming Tsai, M.D.

Consultant Professor, Department of Oncology, Taipei Veterans General Hospital
Department of Chest medicine, Cathay General Hospital, Department of Chest medicine, Good Liver Health Management Center, Good Liver Clinic

Abstract

First-line treatment options for advanced NSCLC without actionable driver mutation



Conclusions

•For PD-L1–high disease, single-agent PD-1/PD-L1 immune checkpoint inhibitor therapy remains the mainstay of treatment
•For PD-L1–negative disease, IO/IO and IO/IO/chemo or IO/chemo are viable options whereas single-agent IO is not
•For disease with PD-L1 1%-49%, options include IO/chemo, IO/IO, or IO/IO/chemo - single-agent IO is an inferior option vs IO/chemo

"Liquid First" or "Liquid Only" for Molecular Profiling in NSCLC?

Nir Peled, M.D., Ph.D.

Head, Oncology Division Shaare Zedek Medical Center, Jurusalem, ISRAEL

Abstract

Dr Peled and his colleagues developed a pilot study and evaluated 40 patients with treatment-naive advanced metastatic non-small cell lung cancer (NSCLC). They sought to compare time to report and time to treatment for next-generation sequencing (NGS)-based liquid biopsy vs. tissue-based analysis.

The research outcomes were presented at the 2020 IASLC Lung Cancer Virtual Conference.

"This study suggests that NGS-based liquid biopsy improves time to report and more importantly, time to treatment, in patients with advanced NSCLC in comparison to tissue-based molecular analysis," Dr. Peled said.

In addition, he said, "I am convinced that that the practice of 'liquid first' should be even implemented before tissue biopsy is performed; if so, we may see even more dramatic outcomes."

Myths in fibrosing ILDs

Kevin R. Flaherty, M.D.

Associate Professor of Pulmonary and Critical Care Medicine, University of Michigan Health System, Ann Arbor, Michigan

Abstract

Progressive Fibrosing Interstitial Lung Disease (PF-ILD) describes a phenotype of a large group of diverse interstitial lung diseases that despite initial therapeutic interventions (such as immunosuppression in connective tissue disease associated ILD and/or antigen avoidance in hypersensitivity pneumonia) show progression of fibrosis and loss of lung function. The INBUILD study (N Engl J Med 2019; 381:1718-27) demonstrated that the loss of lung function, measured by change in forced vital capacity (FVC) was similar to that in idiopathic pulmonary fibrosis (IPF) and that nintedanib could slow the rate of decline compared to placebo. The concept of PF-ILD is not meant to dimmish the importance of early and accurate diagnosis as many ILDs, especially when treated before the development of fibrosis, can respond to initial thearpy. Rather the concept of PF-ILD highlights that when progressive fibrosis is present anti-fibrotic therapy such as nintedanib can slow disease progression. Key inclusion criteria for the INBUILD study included having a non-IPF ILD with at least 10% fibrosis on HRCT and the demonstration of progression within 2 years of screening by having at least one of: 1) relative decline in FVC of > 10%, 2) relative decline in FVC of 5-10% if combined with increased symptoms or increased fibrosis on HRCT or 3) increased symptoms with increased fibrosis on HRCT.

Treatment of interstitial lung diseases: current approaches and future directions

Kerri A. Johannson, B.Sc., M.D., M.P.H., FRCPC, ATSF

Clinical Associate Professor, Medicine, joint-appointment in Community Health Sciences, University of Calgary

Abstract

The fibrotic interstitial lung diseases are a complex group of disorders with variable clinical presentations and responses to therapy. This session will summarize the current approach to treatment of fibrotic ILDs, present novel and evoloving therapies, and highlight controversies in clinical management.

CT Evaluation of ILD Severity

黃 昱森 醫師 / Yu-Sen Huang, M.D., Ph.D.

Attending Physician, Department of Radiology, National Taiwan University Hospital
Clinical Assistant Professor, Department of Radiology, National Taiwan University School of Medicine

Abstract

Evaluating CT severity of ILD is a great challenge because lack of methodological consensus.
In this lecture, I will introduce how to evaluating CT severity of ILD. I will also present the concept of biomarkers, recent literature review and expert opinions from radiology society regarding semi-quantitative and quantitative CT Evaluation of ILD Severity.

Progressive fibrosing Interstitial lung disease (PF-ILD) Taiwan Consensus

王 鶴健 理事長 / Hao-Chien Wang, M.D., Ph.D.

Chairman, Taiwan Society of Pulmonary and Critical Care Medicine
Deputy Superintendent, National Taiwan University Cancer Center

Abstract

Interstitial lung disease (ILD) is a heterogeneous group of diseases of known and unknown etiology characterized by inflammation and fibrosis of the lung parenchyma. An important subset of patients with fibrotic ILD experience a decline in lung function with progressive CT images, clinical symptoms, and reduce quality of life. Idiopathic pulmonary fibrosis (IPF) is the prototypical & severe progressive fibrosing ILD (PF-ILD). However, other ILD subtypes also have progressing phenotype. These include connective tissue disease-associated ILD (CTD-ILD), fibrotic hypersensitivity pneumonitis (HP), unclassifiable ILD, idiopathic non-specific interstitial pneumonitis (NSIP), and rarely sarcoidosis, organizing pneumonia, and ILD-associated with occupational exposures. PF-ILD shows clinical and functional features of progression including a progressive decline in lung function , increasing extent of fibrosis on high-resolution computed tomography (HRCT) and worsening of symptoms resulting in early mortality. There is no standardized definition of PF-ILD that clinicians & researchers have agreed upon. Several criteria have been used to define PF-ILD. Cottin proposed: a relative declined in FVC ≧ 10%, a relative decline in the diffusion capacity for carbon monoxide ≧ 15%, or a relative decline in FVC ≧ 5% but ≤10 % in combination with worsening of respiratory symptoms or radiographic finding in the past 24 months. Meanwhile, the eligibility criteria proposed for the INBUILD trail were as follows: a relative decline in FVC ≧ 10%, a relative decline in FVC ≧ 5% but <10% in combination with worsening of respiratory symptoms or increase extent of fibrosis observable on HRCT, or worsening of respiratory symptoms combined with increased extent of fibrosis observable on HRCT in the past 24 months.

The diagnosis of PF-ILD is complicated and collaboration with multidisciplinary medical professionals are needed. Pulmonologist should provide the evaluation of clinical symptoms, lung function declination & clinical follow-up. Rheumatologist could find patients diagnosed as CTD with ILD & collaborate with pulmonologist to make the diagnosis of PF-ILD. Radiologists could evaluate the evolution of fibrosis on images to decide if there is clinically relevant ILD progression.

For the improvement the knowledge & awareness of PF-ILD, Taiwan Society of Pulmonary & Critical Medicine (TSPCCM) in collaberation with Taiwan Radiological Society and Taiwan College of Rheumatology initiate the taskforce for Taiwan PF-ILD consensus. The detailed of Taiwan consensus will be present in this session.

台灣胸腔暨重症加護醫學會
第三會場

12 / 11

- Role of Ventilation in TB Control
- Clinical application of liquid chromatography-mass spectrometry method to therapeutic drug monitoring for antituberculosis drugs
- Bioinformatics in Pulmonary Infectious Diseases

12 / 12

- Bronchoscopic treatment of emphysema
- 肺毛玻璃結節【Ground-glass nodules (GGNs)】的介入根治的臨床實踐
- Emerging Sleep Technology in the Telemedicine Era: on the Road to Better Patient Care
- Navigating the Future of Sleep Medicine
- Common non-respiratory sleep disorder encountered in sleep laboratory

Role of Ventilation in TB Control

方 啟泰 教授 / Chi-Tai Fang, M.D., Ph.D.

Professor of Institute of Epidemiology and Preventive Medicine, College of Public Health, National Taiwan University
Attending Physician, Division of Infectious disease, Department of internal medicine, National Taiwan University Hospital

Abstract

Tuberculosis is an airborne disease which spread through infectious aerosol generated by patients during cough. In an indoor environment, infectious aerosol progressively accumulates and put everyone in the room at risk unless the indoor air is continuously replaced with the fresh outdoor air by ventilation. Poor ventilation is associated with increased risk of tuberculin skin test (TST) conversion. The role of ventilation in preventing TB transmission has been widely proposed in infection control guidance. However, conclusive evidence is lacking until the first demonstration that improving ventilation to levels with CO2 <1,000 ppm is associated with a 97% decrease in TB incidence among close contacts during a TB outbreak occurred in poorly ventilated indoor environment (Indoor Air 2020; 30:422-432.). Until now, Global End TB Strategy has focused on early diagnosis and effective treatment of active TB and preventive therapy for LTBI in high burden resource-limited countries, and so far had a limited impact on TB epidemic trajectory. As a comparison, in developed countries, the improvement in indoor ventilation as part of a general improvement in public health from the nineteenth to twentieth centuries was followed by a dramatic reduction in TB incidence before the era of anti-TB chemotherapy. A refocusing on the importance of adequate indoor ventilation in TB control could be the game changer for achieving the global End TB target in 2035.

Clinical application of liquid chromatography-mass spectrometry method to therapeutic drug monitoring for antituberculosis drugs

蔡 伊琳 醫師 / I-Lin Tsai, M.D., Ph.D.

Associate Professor, Department of Biochemistry and Molecular Cell Biology, Taipei Medical University

Abstract

Tuberculosis (TB) infection is one of the top 10 causes of death worldwide. In contrast to other antibiotic treatments for infectious diseases, multiple anti-TB agents should be taken for months. An active therapeutic drug monitoring which monitors the drug blood concentration is crucial for patient adherence and could be a reference to prevent low drug exposure. Liquid chromatography coupled with mass spectrometry (LC-MS) is a sensitive and selective analytical tool which has been used for therapeutic drug monitoring. We have developed a microwave-assisted sample extraction method followed by LC-MS analysis to determine fluoroquinolones from dried plasma spot samples. The method was validated in terms of repeatability, accuracy, quantitative ranges, and stabilities. This study was selected as an example to perform the connection between analytical chemistry and clinical applications.

Bioinformatics in Pulmonary Infectious Diseases

楊 進木 教授 / Jinn-Moon Yang, M.D., Ph.D.

Dean, College of Biological Science and Technology, National Yang Ming Chiao Tung University

Abstract

Intelligent analysis of biological big data and precision medicine have initiated a revolution in the global medical field. Therefore, to effectively integrate diagnostics and medicines for specific diseases is one of the most important topics. To address the issues, we have extensively explored new models of **computational systems biology** and **computer-aideddrug design** to study protein-pathway-cellular processes-disease relationships for establishing the links from basic research to translational medicine. In this speech, I will share two cooperation cases connecting from computation, bench, to clinical practices: the drug repurposing for COVID-19 and the development of Gene Panel for tuberculosis treatment and diagnosis.

Bronchoscopic treatment of emphysema

林 冰 醫師 / LAM Bing, M.D.

Director, Respiratory Medicine Centre, Hong Kong Sanatorium & Hospital

Abstract

Chronic obstructive pulmonary disease (COPD) is a progressive disease despite treatment. The treatment of COPD is guided by the phenotype of COPD: chronic bronchitis or emphysema. The efficacy of medical treatment is more effective for chronic bronchitis phenotype. Lung transplant/ lung volume reduction surgery is considered as the last resort for a selected group of patients but carries significant morbidity and mortality. Bronchoscopic lung volume reduction have progressively gained acceptance. Endobronchial unidirectional valves block the airways and result in collapse, i.e. volume loss. Bronchoscopic thermal vapor ablation administered heated water vapor to targeted region to cause inflammation followed by fibrosis and volume reduction. Bronchoscopic reduction coils involved deployment of biological inert coils to the targeted lobe resulting in lung volume reduction. The treatments are recommended by GOLD guideline in selected patients with emphysema.

肺毛玻璃結節【Ground-glass nodules (GGNs)】的介入根治的臨床實踐

柯 明耀 院長 / MINGYAO KE, M.D.

廈門醫學院附屬第二醫院呼吸醫院執行院 , 廈門醫學院客座教授

Abstract

肺毛玻璃結節（GGNs）是指病變密度不足以掩蓋其中的血管和支氣管的肺結節，持續存在的 GGN 大多數是惡性的，或有向惡性發展的潛能。外科手術乃是目前 GGN 的標準處理方法，但鑒於絕大多數 GGN 是沒有轉移的早期肺癌，近幾年來通過介入技術根治 GGN 越來越得到學界的認可。本演講介紹了 GGN 的特點與診治策略、介入治療技術、以及在 GGN 介入根治方面的臨床實踐經驗及體會。

Emerging Sleep Technology in the Telemedicine Era: on the Road to Better Patient Care

Ambrose A. Chiang, M.D.

Chief, Sleep Medicine Section, Louis Stokes VA Medical Center
Faculty, Division of Pulmonary, Critical Care, and Sleep Medicine, University Hospitals Cleveland Medical Center
Associate Professor of Medicine, Case Western Reserve University

Abstract

Consumer technology devices now exert a significant impact in medicine and healthcare. Many emerging sleep technologies allow physiological data acquisition in sleep and enable clinicians to assess sleep outside of sleep labs. Although in-lab polysomnography (PSG) remains the gold standard in understanding sleep, the blooming of consumer-grade and medical-grade testing devices has the potential to screen, diagnose, provide long-term monitoring of sleep disorders, and assess the efficacy of treatment.

Navigating the Future of Sleep Medicine

SEEMA KHOSLA, M.D.

Chief of Medical Officer/Medical Director for the North Dakota Center for Sleep
Medical Advisor of MedBridge Healthcare

Abstract

COVID-19 changed the way we practice sleep medicine and made us reimagine sleep health care. We will discuss potential growth areas for a typical sleep clinic and challenge ourselves to look inwards as we examine our current practices and where they fall short. We explore the vast potential to improve the sleep health of our communities by addressing other non-OSA sleep disorders. The aim of this presentation is to offer some possibilities into how sleep medicine may change as we incorporate consumer-facing sleep technologies into our practices and consider how we truly evolve from our current model into one that embraces technology and remains patient-centered while delivering high quality essential care.

Common non-respiratory sleep disorder encountered in sleep laboratory

李 佩玲 主任 / Pei-Lin Lee, M.D., Ph.D., F.A.A.S.M.

Director, Center of Sleep Disorder, National Taiwan University Hospital
Clinical Associate Professor, Department of Internal Medicine,National Taiwan University College of Medicine
Attending Physician, Divisions of Chest Medicine, Department of Internal Medicine, National Taiwan University Hospital

Abstract

The non-respiratory sleep disorder in the sleep clinic referrals include the 1) central hypersomolence 2) parasomnia, REM or NREM 3) circadian rhythm sleep-wake disorders 4) sleep-related movement disorder 5) insomnia not secondary to psychiatric disorder. The central hypersomolence includes the type I and II narcolepsy, idiopathic hypersomnia, and Kleine-Levin syndrome. The REM parasomnia include the REM behavior disorder (RBD) and nightmare disorder while the NREM parasomnia include the confusional arousal, sleep walking, sleep terror, and sleep-related eating disorder. The circadian rhythm disorder includes the delayed sleep-wake phase disorder, advanced sleep-wake phase disorder, irregular sleep-wake rhythm, shift worker disorder, and jet lag disorder. The sleep related movement disorder includes the restless leg syndrome, periodic limb movement, sleep-related bruxism, and propriospinal myoclonus. Detailed sleep history taking, self-administrated questionnaire and sleep diary, and physical examination prior to sleep study would be essential for accurate diagnosis.

台灣胸腔暨重症加護醫學會
第四會場

12 / 11

- Navigating Through the CTEPH Multimodal Continuum
- Treatment of Patients with Pulmonary Hypertension and Advance Lung Disease

12 / 12

- Current status of occupational lung diseases in Taiwan
- Indoor air pollution and health
- 楊泮池院士與年輕醫師的深度對談 - 關於胸腔科醫師的人生規劃
- How to inspire a research idea

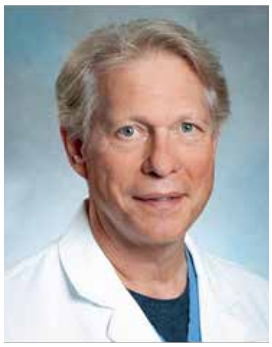
Navigating Through the CTEPH Multimodal Continuum

Victor F Tapson, M.D., F.C.C.P., F.R.C.P.

Cedars-Sinai Medical Center, Los Angeles, CA USA
Associate Director, Pulmonary and Critical Care Division
Director, Clinical Research for the Women's Guild Lung Institute
Director, Venous Thromboembolism and Pulmonary Vascular Disease Research Program
Director, Pulmonary Embolism Response Team

Abstract

Chronic thromboembolic pulmonary hypertension (CTEPH) is a rare complication of pulmonary embolism. From a physiopathological standpoint, many of our CTEPH patients have mixed anatomical lesions – occlusion of the lobar, segmental pulmonary arteries, with microvasculopathy of the distal vessels (<500 μm). Our current CTEPH treatment armamentarium includes pulmonary endarterectomy (PEA), balloon pulmonary angioplasty (BPA), and pharmacological therapy. In light of the treatment algorithm proposed in the 6th World Symposium on Pulmonary Hypertension (WSPH), the treatment landscape is evolving towards a more dynamic, multimodal approach. With results from recent clinical studies such as RACE (exploring the optimal sequencing of medical therapy and BPA), and looking forward to newer trials such as GO CTEPH, a non-inferiority randomized trial to evaluate BPA and PEA in patients eligible for both treatments (presented at ESC 2021), we are addressing gaps in evidence that will help us paint a better picture of this multimodal continuum. In this lecture, we will take a deeper dive into our current landscape, the evidence at hand, and how expert centers should integrate the imaging, surgical, interventional, medical expertise, to better navigate through the CTEPH multimodal continuum, to bring the most optimized treatment strategies to our patients.



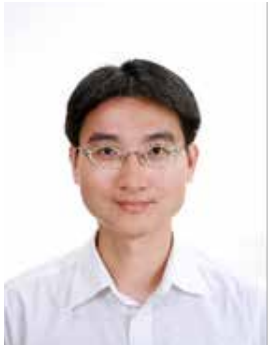
Treatment of Patients with Pulmonary Hypertension and Advance Lung Disease

Aaron B. Waxman, M.D., Ph.D.

Director, Pulmonary Vascular Disease Program, Brigham and Women's Hospital
Professor of Medicine, Harvard Medical School

Abstract

Pulmonary hypertension (PH) due to lung diseases and/or hypoxemia is classified by the World Health Organization (WHO) as WHO Group 3 PH. This classification includes PH due to interstitial lung disease (ILD) as well as combined pulmonary fibrosis and emphysema (CPFE).PH occurs in up to 80% of these patients and until recently there were no approved treatments for PH in patients with ILD or CPFE. Inhaled treprostinil has shown clinical improvements in exercise capacity after 12 weeks of therapy in patients with various forms of PH. The INCREASE study evaluated inhaled treprostinil (iTre) in a 16-week, phase III, multicenter, randomized, double-blind, placebo-controlled study in patients with PH-ILD and met its primary endpoint of change in 6MWD at peak exposure at Week 16. There were significantly fewer clinical worsening events in patients receiving iTre compared to placebo. Inhaled therapy directly targets the more ventilated portion of the lungs in patients with WHO Group 3 PH, minimizing the risk of ventilation perfusion mismatch and allowing for improvements in exercise capacity and delays clinical worsening.



Current status of occupational lung diseases in Taiwan

陳 啟信 醫師 / Chi-Hsien Chen, M.D.

Director and Attending Physician, Department of Environmental and Occupational Medicine, National Taiwan University Hospital, Hsin-Chu Branch

Abstract

Common occupational-related lung diseases in Taiwan include pneumoconiosis, asthma, inhalation lung injury, and respiratory cancer. Some emerging occupational lung diseases require more attention in clinical diagnosis, such as metal-related interstitial lung disease and volatile organic compound-related obstructive bronchiolitis. Occupational exposure to vapor, dust, gas, fume and chemicals can induce and aggravate chronic obstructive pulmonary disease. More local occupational lung disease research is needed to promote workplace respiratory health.
This topic will present the current status of occupational lung diseases in Taiwan through some local confirmed cases and epidemiological studies.

Indoor air pollution and health

郭 耀昌 醫師 / Yau-Chang Kuo, M.D.

Assistant Professor, College of Medicine, School of Medicine, National Cheng-Kung University
Attending Physician, Department of Occupational and Environmental Medicine, National Cheng-Kung University Hospital

Abstract

Background In 2016, WHO (World Health Organization) noted that household air pollution was responsible for 3.8 million deaths. It is responsible for 7.7% of the global mortality.Of the people who die from exposure to household air pollutants, most perish from stroke (18%), ischemic heart disease (27%) and chronic obstructive pulmonary disease (COPD) (20%). Pneumonia and lung cancer account for 27% and 8% of deaths, respectively.Solid fuels (such as wood, crop wastes, charcoal, coal and dung) and kerosene in open fires and inefficient stoves are the major source of indoor air pollution. Source of pollution other than fuel combustion can be asbestos, bacteria and viruses, building and paint products, carbon monoxide, carpets, chemicals, lead, mold, cockroaches, dust mites, nitrogen dioxide, pet dander, Radon, secondhand smoke, and volatile organic compounds (VOCs).
Health ProblemsPneumonia Exposure to household air pollution is responsible for 45% of all pneumonia deaths in children less than 5 years old. It also contributes to 28% of all adult deaths to pneumonia.***COPDO***ne in four of deaths from COPD in adults with exposure to household air pollution. Among men (who have higher rates of smoking), exposure to household air pollution nearly doubles that risk.***Stroke***12% of all deaths due to stroke can be attributed to the daily exposure to household air pollution. ***Ischaemic heart disease*** Approximately 11% of all deaths due to ischemic heart disease can be attributed to exposure to household air pollution.***Lung cancer*** Approximately 17% of lung cancer deaths in adults are attributable to exposure to carcinogens from

household air pollutioncaused by cooking with kerosene or solid fuels. Small particulate matter and other pollutants in indoor smoke ***inflame the airways and lungs***, ***impairing immune response*** and ***reducing the oxygen-carrying capacity*** of the blood.There is also evidence of ***low birth weight***, ***tuberculosis, cataract***, ***nasopharyngeal and laryngeal cancers***.For lung cancer and chronic obstructive pulmonary disease, active smoking and second-hand tobacco smoke are also main risk factors.
Conclusions Access to clean fuels for cooking, prevention of active smoking and second-hand tobacco smoke, cautious for exposure of chemicals, adequate ventilation system, and elimination of biological particles (molds, pollens, pet dander, dust mites) are practical steps to attenuate indoor air hazards.

楊泮池院士與年輕醫師的深度對談－關於胸腔科醫師的人生規劃

楊 泮池 教授 / Pan-Chyr Yang, M.D., Ph.D.

Fellow, Academia Sinica
Professor, Department of Internal Medicine, College of Medicine,National Taiwan University
Attending Physician, Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, National Taiwan University Hospital and College of Medicine

Abstract

在本演講中將介紹我的學思歷程，包括成長、就學及行醫就業歷程，特別會分享大學，在醫學院就讀、接受臨床訓練，投入臨床醫療，選擇胸腔及重症醫學，到沙烏地阿拉伯行醫，就讀臨床所博士班，在中央研究院生醫所的研究工作，後來很早投入行政工作的思考、理念和經驗，和大家分享共勉。

How to inspire a research idea

高 毓儒 教授 / Yu-Ru Kou, M.D., Ph.D.

Professor, Department & Institute of Physiology, College of Medicine, National Yang Ming Chiao Tung University
Professor, Institute of Emergency and Critical Care Medicine, College of Medicine, National Yang Ming Chiao Tung University

Abstract

Doing research has become a requirement for many clinicians. For young clinicians, getting a research idea usually is difficult because there is no guideline to follow. In my talk, I will outline three major sources for inspiring a research idea. I will bring out some examples that highlight the step-by-step procedure to finalize a research idea. It is my hope that you can follow this procedure to get your own research idea.

台灣胸腔暨重症加護醫學會
第六會場

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Sleep hands-on : PSG & PAP

- Basic sleep medicine hand-on practice: PSG and PAP therapy
- Basic sleep medicine hand-on course: PSG scoring and upper airway evaluation
- Sleep Hand on course: CPAP, APAP, BiPAP, Home NIV
- Sleep Hand on course: PSG, CPAP, APAP, BiPAP, Home NIV

Basic sleep medicine hand-on course: PSG scoring and upper airway evaluation

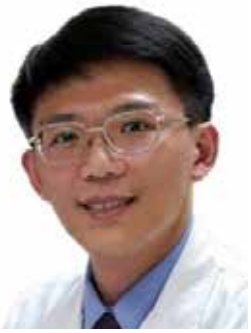
林 嘉謨 主任 / Chia-Mo Lin, M.D.

Director, Division of Pulmonary Medicine, Department of Internal Medicine, Shin Kong Memorial Hospital

Abstract

從 PSG 基本判讀 sleep onset, REM onset 開始，到正常睡眠結構的解析，之後方能了解何謂異常睡眠結構及其與睡眠品質不佳的關係，最後再帶入睡眠上呼吸道評估技巧，希望能幫助找到正確睡眠呼吸治療的方向。

Basic sleep medicine hand-on practice: PSG and PAP therapy



蔡 明儒 主任 / Ming-Ju Tsai, M.D., Ph.D.

Attending Physician, Division of Pulmonary and Critical Care Medicine, Kaohsiung Medical University Hospital
Director, Medical records room,Kaohsiung Medical University Hospital
Associate Professor, School of Medicine, College of Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan

Abstract

Sleep disordered breathing, particularly sleep apnea syndrome, is a major sleep disorder. Polysomnography (PSG) is the major diagnostic exam. Positive airway pressure (PAP) therapy, including CPAP, APAP, BiPAP or NIV, are powerful tools for the treatment of sleep disordered breathing. In this hand-on practice course, we will discuss about the key concepts of PSG, and the evaluation and application of PAP therapy for the patients.

Sleep Hand on course: CPAP, APAP, BiPAP, Home NIV

莊 立邦 醫師 / Li-Pang Chuang, M.D., Ph.D.

Director, Sleep Center, Chang Gung Memorial Hospital, Taoyuan
Attending Physician, Thoracic Medicine, Chang Gung Memorial Hospital, Linkou
Assistant Professor, School of Medicine, Chang Gung University

Abstract

Obstructive sleep apnea (OSA), defined as repeated episodes of obstructive apnea and hypopnea during sleep, together with symptoms of daytime sleepiness or frequently altered cardiopulmonary function, affects at least 5% of the general population. OSA results in intermittent hypoxia (IH) and sleep fragmentation with neurocognitive dysfunction and cardiovascular disease as the major sequelae.

There are several treatment methods, including ventilator, oral appliance and surgery, etc., each one has different advantages and disadvantages. However, according to the American Academy of Sleep Medicine's treatment guidelines for obstructive sleep apnea, the current first-choice treatment is the use of positive airway pressure ventilator.

This speech is a continuation of the core sleep curriculum in August of this year (2021). It mainly focuses on the practical hand on of sleep ventilators, which includes continue positive airway pressure ventilator (CPAP), automatic positive airway pressure ventilator (APAP), bi-level positive airway pressure ventilator (BiPAP), and non-invasive ventilator (NIV) used in home based. I wish that in this 30-minutes talk, the listeners can get relevant concepts and gains in this field.

Sleep Hand on course: PSG, CPAP, APAP, BiPAP, Home NIV

周 昆達 醫師 / Kun-Ta Chou, M.D., Ph.D.

Director, Division of Clinical Respiratory Physiology, Department of Chest Medicine, Taipei Veterans General Hospital
Attending Physician, Department of Chest Medicine, Taipei Veterans General Hospital
Associate Professor, School of Medicine, National Yang Ming Chiao Tung University

Abstract

Sleep apnea is a common disorder, which is estimated to affect one billion people worldwide. Affected individuals are likely to develop adverse health consequences and have higher risk for traffic accidents and work-related injury. Hence, a considerable portion of patients need positive airway pressure therapy, such as CPAP, BiPAP, or even home NIV to treat this disorder. Polysomnography is the gold standard test to diagnose sleep apnea, which collects physiological signals, including brain waves, arterial oxygen saturation, heart rate, nasal and oral airflow, and eye and leg movements to identity the presence of respiratory events . This hand-on course will demonstrate the very steps to implement polysomnography, from hooking-up, acquisition and scoring of signals to interpretation of data. As well, how to obtain and set the optimal pressure for positive airway therapy is also included in the hope of providing a comprehensive and in-depth overview on sleep apnea.

台灣胸腔外科醫學會
第五會場

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- Less is more? Update of Japanese sublobar resection trials for small-sized lung cancer.
- Induction and Adjuvant Immunotherapy in Operable NSCLC
- Adjuvant therapy of EGFR-TKI for resected NSCLC patients
- The evolution of immunotherapy as critical backbone of neoadjuvant therapy in resected NSCLC
- The role of TKIs from the perspective of Thoracic Surgeons: KMUH experience sharing
- Salvage Surgery for Advanced EGFR-mutant Non-small Cell Lung Cancer Patients Receiving EGFR-TKI Treatment
- Surgical management of empyema and lung abscess
- Surgical experience of thoracic empyema - CCH experience
- Clinical Practices and Knowledge of NTM-LD among Pulmonologist and Surgeon

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- Current status of lung transplant in U.S. and Temple University Hospital – What' s different and important during Covid-19 pandemic?
- Current status of lung transplant in Japan and Kyoto University Hospital -- What' s different and important during Covid-19 pandemic?
- Cone-beam CT-guided bronchoscopic techniques for the diagnosis of small peripheral pulmonary lesions
- Diagnosis and staging of NSCLC: Role of EBUS-TBNA
- Localization of lung nodule for resection using VBN

Less is more? Update of Japanese sublobar resection trials for small-sized lung cancer.

Shun-ichi Watanabe, M.D.

Chief, Department of Thoracic Surgery, National Cancer Center Hospital, Tokyo

Abstract

The number of computed tomography (CT) screen-detected early-stage lung cancers showing ground-grass opacity (GGO) on CT is rising, and a new optimal therapeutic strategy for pulmonary resection of screen-detected subsolid tumor is needed. Japanese surgeons make decisions on surgery type based on tumor size and C/T ratio, defined as the maximum consolidation diameter divided by the maximum tumor diameter. The Japan Clinical Oncology Group (JCOG) performed a cohort study (JCOG0201) evaluating the correlation between radiological and pathological findings for stage I 545 adenocarcinomas 2.0 cm or less in size. Pathologic non-invasive adenocarcinoma was defined by the absence of lymph node metastasis or vessel invasion, and radiological non-invasive lung adenocarcinoma was defined by a consolidated maximum C/T ratio of less than 0.25 with a specificity of 98.7%. The results of a prospective, randomized, multi-institutional phase III trial comparing lobectomy vs. segmentectomy for small-sized tumors with a C/T ratio over 0.5 (JCOG0802) has already been released at AATS meeting this year. JCOG has already conducted other two prospective multi-institutional single-arm trials investigating SR for GGO dominant-type tumors. One is JCOG0804, evaluating wide wedge resection for non-solid GGO lesions of less than 2cm, and the other is JCOG1211, evaluating segmentectomy for part-solid GGO lesions with C/T ratios less than 0.5 and 2.1-3.0 cm diameters. Abovementioned three JCOG clinical trials with more than 1,800 registered cases and other forthcoming new JCOG sublobar trials will clarify the role of sublobar resection for patients with stage I lung cancer. As the number of early-stage peripheral lung cancers increases, and many patients have multifocal small lesions, the choice of surgical procedure begin to be tailored to each case.

Induction and Adjuvant Immunotherapy in Operable NSCLC

David R. Jones, M.D.

Professor of Surgery, Memorial Sloan-Kettering Cancer CenterWeil Cornell Medical School
Co-Director, Druckenmiller Center for Lung Cancer Research, MSKCC New York

Professional Interest and Specialties:

Lung and Esophageal Cancers; Thymic Malignancies; Pulmonary Metastases; Germ Cell Tumors, Mediastinal Tumors, Tumors of the Trachea and Bronchus, Minimally Invasive Surgery; Video-Assisted Thoracic Surgery (VATS); endobronchial ultrasound (EBUS)

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Adjuvant therapy of EGFR-TKI for resected NSCLC patients

施 金元 教授 / Jin-Yuan Shih, M.D., Ph.D.

Chief, Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, National Taiwan University Hospital
Professor, Graduate Institute of Clinical Medicine, College of Medicine, National Taiwan University
Professor, Department of Internal Medicine, College of Medicine, National Taiwan University
Visiting Physician, Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, National Taiwan University Hospital

Abstract

In this decade, the stage I-III proportion of NSCLC has been increased due to government policy of low-dose CT (LDCT) and advancement of medical imaging technology. The major treatment of this stage patients is surgery to secure “CURE”, however, most patients still experienced disease progression even tumor completed resection. So the adjuvant therapy after tumor resection is required for patients with high-risks of recurrence. In according to LACE study, the platinum-based chemotherapy has been wildly use for the adjuvant therapy after resection, but the benefits is still limited. In 2020, ADAURA study has been published and indicated the benefits of 3rd generation EGFR-TKI as adjuvant therapy for NSCLC patients after tumor completed resection. In this presentation, we will review current studies of EGFR-TKI in adjuvant therapy setting.

The evolution of immunotherapy as critical backbone of neoadjuvant therapy in resected NSCLC

Tetsuya Mitsudomi, M.D., Ph.D.

Professor, Division of Thoracic Surgery, Department of Surgery, Kindai University

Abstract

The development of immune checkpoint inhibitors (ICIs) has dramatically changed the treatment landscape for metastatic non-small cell lung cancer (NSCLC). In contrast, the current standard of care for patients with completely resected stage II-III NSCLC is postoperative adjuvant cisplatin-based chemotherapy (CTx), improving a 5-year survival rate by 5%. Thus, inspired by the success of ICI for the metastatic NSCLC, strategies to apply ICI to earlier-stage, resectable NSCLC is being actively developed. Among them, the preoperative administration of ICI is attractive because the presence of an intact regional lymphatic system may enhance priming an antitumor T cell response toward both primary and metastatic tumor cells in addition to the opportunity to evaluate the resected specimens for the immune response of the tumor. In addition, improved efficacy of neoadjuvant compared to adjuvant immunotherapy has been shown in mouse models.
Following the pioneering work of the initial neoadjuvant study using nivolumab monotherapy performed at Johns Hopkins University, the results of several phase II studies have been reported. In general, rates for major pathologic response (MPR) and pathological complete response (pCR) are 20-40% and 10-20%, respectively, in ICI monotherapy trial, and 60-80% and 30-50%, respectively, in trials with ICI in combination with CTx, although there is considerable variability. CheckMate 816 is the phase III study comparing nivolumab+ CTx with CTx as neoadjuvant treatment for resectable, stage IB-IIIA NSCLC the showed the benefit of neoadjuvant ICI combined with CTx for NSCLC whose results are presented earlier in 2021. The pCR rate, a co-primary endpoint, was significantly higher in the nivo+CTx arm (24 .0 %) compared with the CTx arm (2.2%) ($P<0.0001$). MPR rate was also higher in the nivo+CTx arm (36.9%) vs. in the CTx arm (8.9%). Although the other co-primary endpoint results, event-free survival, are pending, the results are encouraging.
In this talk, I would like to summarize the recent results of neoadjuvant ICI therapy in NSCLC and discuss future perspectives. In addition, the role of ctDNA analyses as a measure to detect the molecular residual disease as a possible guide for the treatment will also be discussed.

The role of TKIs from the perspective of Thoracic Surgeons: KMUH experience sharing

劉 又瑋 醫師 / Yu-Wei Liu, M.D.

Visiting Staff surgeon, Division of Thoracic Surgery, Kaohsiung Medical University Hospital
Assistant Professor, School of Medicine, College of Medicine, Kaohsiung Medical University

Specialty

Minimally invasive thoracic surgery (including uniportal VATS and subxiphoid VATS) Enhanced recovery after surgery (ERAS) in thoracic disease

Salvage Surgery for Advanced EGFR-mutant Non-small Cell Lung Cancer Patients Receiving EGFR-TKI Treatment

林 孟暐 醫師 / Mong-Wei Lin, M.D., Ph.D.

Attending physician, Division of Thoracic Surgery, National Taiwan University Hospital
Director, Ward of Thoracic Surgery, National Taiwan University Hospital
Associate professor, Department of Surgery, College of Medicine, National Taiwan University

Specialty

Thoracic pathology
Minimally invasive thoracoscopic surgery (Lung cancer, Pneumothorax, Empyema, Mediastinal tumor,Metastatic lung tumor,Myasthenia gravis)
Chest wall tumor
Funnel chest correction
Tracheal / Esophageal stent placement
Uniport thoracic surgery

Surgical management of empyema and lung abscess

李 明璟 醫師 / Ming-Ching Lee, M.D., Ph.D.

Organization/Institute:Division of Thoracic Surgery, Taichung Veterans General Hospital, Taiwan

Abstract

Empyema thoracic is a well-known lung disease that results from the accumulation of pus in the pleural cavity. Meanwhile, the lung abscess is also a type of infectious pulmonary disease, which occurs because of the destruction of pulmonary parenchyma with central necrosis, eventually leading to cavity formation. Although empyema thoracis and lung abscess are both a part of lung infection, the strategies for treating these two diseases are so different. For early-stage empyema thoracis, early surgical intervention was suggested because of correlated with better prognosis and shortened hospitalization. On the other hand, conservative treatment including antibiotics treatment and postural drainage were suggested for lung abscess patients. The operationsby pulmonary resectionand drainage of the abscesswere only suitable and performed in highly selected cases.
According to previous reports, concomitant pleural empyema and lung abscess were seen inabout 10% of patients who received video-assisted thoracoscopic decortication.The coexisted lung abscess was identified as an independent prognostic factor correlated with higher surgical mortality in empyema thoracis patients. It is interesting whether the surgical procedures for treating lung abscess should be performed during the operation of decortication in patients with the coexistence of lung abscess and empyema thoracis.
In this presentation, we will discuss the cons and pros of surgical procedures for patients with concomitant empyema thoracis and lung abscesses. Moreover, surgical complications such as bronchopleural fistula and persisted air-leak will be also addressed. In conclusion, although concomitant surgical procedures for lung abscess are occasionally required in empyema thoracis cases during decortication, thoracic surgeons should pay more attention to the high risk of complications and mortality after the operation in these cases.

Surgical experience of thoracic empyema - CCH experience

洪 維亨 醫師 / Wei-Heng Hung, M.D.

彰化基督教醫院胸腔外科主治醫師

Abstract

Thoracic empyema is defined as active suppuration within the pleural space. The nature of the treatment for empyema depends on the stage at diagnosis. Surgical indication of thoracic empyema includes the presence of an entrapped lung, persistent loculation after chest tube drainage, lack of clinical resolution within 5 to 7 days of nonoperative management, or a combination of these. Owing to less invasive and lower complication rate, thoracoscopic surgery is more favored than open surgery.

In our hospital, we performed more than 100 cases annually for thoracic empyema since 2011. There were about 40 cases underwent repeated surgery. We analyzed these cases and shared our experience, expected to improve surgical outcome of complex cases in the future.

Clinical Practices and Knowledge of NTM-LD among Pulmonologist and Surgeon

曹 世明 醫師 / Shin-Ming Tsao, M.D., Ph.D.

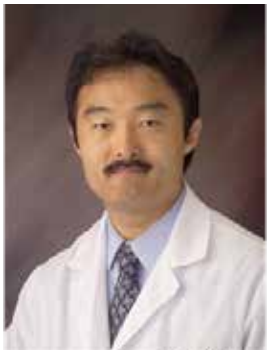
Visiting staff of Chest section, Chung Shan Medical University Hospital
Associated professor, department of internal medicine, Chung Shan Medical University

Abstract

Nontuberculous mycobacterial lung disease (NTM-LD) prevalence has been increasing over the recent decades. The present review aims to provide general insight into NTM-LD epidemiology in Taiwan, identifying vulnerable hosts, diagnosing NTM-LD, medical treatment and stress the important of surgical management.

Guidelines have also emphasized the role of combining surgery for intractable diseases with resectable lesions. Surgical intervention requires multi-disciplinary cooperation between surgeons and physicians. We extensively reviewed pre-operative assessment, operation indication, surgical approach, post-operative outcomes and prognostic factors. It will benefit a lot among Pulmonologist and thoracic surgeon from this review articles in clinical practice.

Current status of lung transplant in U.S. and Temple University Hospital – What's different and important during Covid-19 pandemic?



YOSHIYA TOYODA, M.D., Ph.D.

Professor of Surgery, William Maul Measey Chair in Surgery Chief, Division of Cardiovascular Surgery Surgical Director, Thoracic Transplantation Surgical Director, Mechanical Circulatory Support Co-Surgical Director, Heart and Vascular Institute Vice Chair, Thoracic Medicine and Surgery, Lewis Katz School of Medicine at Temple University

Abstract

In the United States alone, Coronavirus disease 2019 (COVID-19) has infected more than 46 million people and more than 750 thousand deaths have been reported as of October, 2021. There had been controversy regarding the management of COVID-19 patients from the start of the pandemic in USA and worldwide. Temple University Hospital is located in the North of the Philadelphia downtown. Our hospital had been treating and managing the most COVID-19 patients than any other hospital in the region.

My topic of discussion would involve how we managed our lung transplant (LTx) program during the pandemic time. We identified the challenges and concerns on requirements to evaluate and implement in such vulnerable LTx patients while in the waiting list and after post- LTx. We are summarizing outcomes of COVID-19 infection in our center and describing the implementation of vaccine introduction in all LTx listing patients and making a policy on COVID-19 clinical management of LTx patients in our medical center.

At the beginning of the pandemic in March 2020, serious immediate complications and deaths due to transmission of COVID-19 occurred in 2 LTx recipients postoperatively. Our program temporarily suspended LTx surgery. During this suspension, we developed our protocol to safely manage recipients and donors, including a screening process in donors and recipients including high-resolution CT imaging and COVID-19 PCR tests. After we resumed LTx on 5/21/2020, there has been no COVID-19 mortality at index hospitalization and the 1-year mortality was comparable between before and after the pandemic.

Additionally, we performed LTx for COVID-19 associated lung failure. Currently, a total of 14 recipient patients underwent LTx in TUH who were once diagnosed with COVID-19 and all recipients are alive to-date. Although double LTx has been recommended from others, we performed 9 single LTx in such population with excellent outcomes.

The survival outcomes after COVID-19 infection in LTx recipients are of concern. As of October 1, 2021, we identified 75 patients who had received LTx, were diagnosed with COVID-19. Among the 75 recipients, 23 patients died (mortality rate was 30.1%). Out of these 23 patients, 8 patients were fully vaccinated, and others were unvaccinated. The most recent 3-month mortality rate improved from 61.1% (between March 2020 and May 2020) to 34.9% (July 2021 and September 2021). From April 2021, our center had adopted universal gift of life policy that every waiting list patient must be vaccinated to be eligible for lung transplantation.

Advances in vaccine development, monoclonal antibody availability on an out-patient basis, symptomatic management of the covid-19 patients with individual center-specific treatment availability, better protection of medical personnel in such management, hospital COVID-19 unit development contributed much less mortality in such large number of COVID-19 patients. Additional care should be adopted while dealing with COVID-19 infection management in LTx patients.

Current status of lung transplant in Japan and Kyoto University Hospital -- What's different and important during Covid-19 pandemic?

Hiroshi Date, M.D.

Professor and Chairman, Department of Thoracic Surgery, Graduate School of Medicine, Kyoto University

RF Study Abstract

The First Affiliated Hospital of Guangzhou Medical University (Guangzhou Institute of Respiratory Health) is currently carrying out a clinical study on Bronchoscopic Radiofrequency Ablation of Lung Cancer, and ushered in the first enrollment on January 7, 2021.
Radiofrequency ablation therapy has been widely used in the comprehensive treatment of lung cancer. It has the advantages of minimally invasive, fast recovery, safe, reliable, and repeatable. The method of bronchoscopy guided RFA throughnatural cavity has less complications than the traditional percutaneous method. There are fewer symptoms, providing a new treatment way for lung cancer patients.
This study is led by the team of Professor Shiyue Li. It will explore the safety and feasibility of Broncus second-generation RFA system in the treatment of peripheral lung nodules.

Cone-beam CT-guided bronchoscopic techniques for the diagnosis of small peripheral pulmonary lesions

林敬凱醫師 / Ching-Ka Lin, M.D.

Attending physician, National Taiwan University Cancer Center

Abstract

With the increasing use of low-dose computed tomography (CT) for lung cancer screening, peripheral pulmonary lesions (PPLs) are more easily exposed. For suspected malignant PPLs, an accurate diagnosis is an essential step in devising an appropriate treatment plan. The transthoracic approach with CT-guided biopsy traditionally is the first choice due to its having the highest diagnostic accuracy. However, because of its high complication rate, which may lead to patient morbidity and mortality, the use of bronchoscopic techniques, such as endobronchial ultrasound, fluoroscopy, or navigation system have gradually increased.
Cone-beam CT (CBCT) is a newer CT modality that can provide both real-time 2-dimensional (2D) fluoroscopy and 3D CBCT scans. With dedicated software, the target can be contoured, and be projected onto live fluoroscopy images, termed augmented fluoroscopy (AF). This system provides real-time information for interventional radiologists and surgeons in many advanced procedures. CBCT-AF has been applied for bronchoscopic technique recently. Many reports confirmed that CBCT-AF helped increasing the diagnostic accuracy of the diagnosis of PPLs. CBCT-AF also increases the navigation rate during the bronchoscopic procedures.

Diagnosis and staging of NSCLC: Role of EBUS-TBNA

黃 才旺 主任 / Tsai-Wang Huang, M.D., Ph.D.

Director, Tri-Service General Hospital, National Defense Medical Center

Abstract

EBUS-TBNA has emerged as a first-line procedure for the diagnosis of patients with mediastinal lymphadenopathy because it is safe with high accuracy. For the central lung cancer, non-invasive elastography technique is initially used to predict the presence of malignancy and target the area for the mediastinal pulmonary lesions. The role of surgery in patients with pathologically document N2 disease remains controversial. Pre-operative accurate staging of heterogenous N2 NSCLC resulted in informative decision. The invasive mediastinal staging is commanded for clinical stage 1 and II NSCLC. Pathological evaluation of the mediastinum must include evaluation of subcarinal station and contralateral lymph node. EBUS-TBNA is techniques for minimally invasive pathological mediastinal staging that are complementary to mediastinoscopy. In addition, repeated biopsy after treatment of NSCLC is also applicated widely.

Localization of lung nodule for resection using VBN

徐 栗 醫師 / Xu Li, M.D.

ShanDong Public Health Clinical Center, Department of Respiratory Endoscopy

Abstract

i.Definition
ii.Essentials of preoperative evaluation
iii.Intraoperative procedures, including positioning method, Dyes selection, bronchoscope selection, etc.
iv.Applied surgical success factors
v.How to improve the successful rate of surgery
vi.Data Analysis of 100 Dye Marking Cases in Our Center

台灣胸腔及心臟血管外科學會
第六會場

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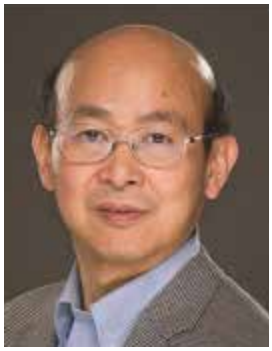
- Transbronchial RF Ablation of Lung Nodules
- Bronchoscopic Thermal Vapor Ablation ofr Localized Cancer Lesion
- Precision Medicine – How does genetic testing affect the way we treat our patients?
- Application of Enhanced recovery after surgery (ERAS) program in Thoracic Surgery: CGH Experience Sharing



Transbronchial RF Ablation of Lung Nodules

Li Shiyue, M.D.

Director, Department of Respiratory Medicine,The 1st Affiliated Hospital of Guangzhou Medical University, Guangzhou, China
Deputy Director, Guangzhou Institute of Respiratory Health, State Key Laboratory for Respiratory Disease

Short CV

1980.9 - 1985.7 M.D ,Guangzhou Medical College, China
1985.7 -1988.9 Resident, 2nd Affiliated Hospital of Guangzhou Medical College
1988.9 - 1991.7 Master Degree, Respiratory medicine Guangzhou Medical College
1991.7 - 1997.11 Resident and Consultant, The 1st Affiliated Hospital of Guangzhou Medical College
1997.2 - 1999.5 Visitng Scholar, National Center for Toxitological Research, USA
Since 1999.5 Associated Professor, Professor, The 1st Affiliated Hospital of Guangzhou Medical College, China

Current Publications

（first author or equal, correspondent author indicated as boldface）

Li S, Wang G, Wang C, Gao X, Jin F, Yang H, Han B, Zhou R, Chen C, Chen L, Bai C, Shen H, Herth FJF, Zhong N. The REACH Trial: A Randomized Controlled Trial Assessing the Safety and Effectiveness of the Spiration® Valve System in the Treatment of Severe Emphysema. Respiration. 2018 · 14:1-12. doi: 10.1159/000494327

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Bronchoscopic Thermal Vapor Ablation of Localized Cancer Lesion

Daniel Steinfort,M.D.,Ph.D.
Associate Professor Daniel Steinfort is a Respiratory Physician at the Royal Melbourne Hospital

Bronchoscopic Thermal Vapor Ablation of Localized Cancer Lesion

Daniel Steinfort, Steinfort, M.D., Ph.D.

Associate Professor Daniel Steinfort is a Respiratory Physician at the Royal Melbourne Hospital

Abstract

Background

Bronchoscopic thermal vapour ablation (BTVA) is an established and approved modality for minimally invasive lung volume reduction in severe emphysema. Preclinical data suggest potential for BTVA in minimally invasive ablation of lung cancer lesions.

Objectives

The objective of this study is to establish the safety, feasibility, and ablative efficacy of BTVA for minimally invasive ablation of lung cancers.

Methods

Single arm treat-and-resect clinical feasibility study of patients with biopsy-confirmed lung cancer. A novel BTVA for lung cancer (BTVA-C) system for minimally invasive treatment of peripheral pulmonary tumours was used to deliver 330 Cal thermal vapour energy via bronchoscopy to target lesion. Patients underwent planned lobectomy to complete oncologic care. Pre-surgical CT chest and post-resection histologic analysis were performed to evaluate ablative efficacy.

Results

Six patients underwent BTVA-C, and 5 progressed to planned lobectomy. Median procedure duration was 12 min. No major procedure-related complications occurred. All 5 resected lesions were part-solid lung adenocarcinomas with median solid component size 1.32±0.36 cm. Large uniform ablation zones were seen in 4 patients where thermal dose exceeded 3 Cal/mL, with complete/near-complete necrosis of target lesions seen in 2 patients. Tumour positioned within ablation zones demonstrated necrosis in >99% of cross-sectional area examined.

Conclusion

BTVA of lung tumours is feasible and well tolerated, with preliminary evidence suggesting high potential for effective ablation of tumours. Thermal injury is well demarcated, and uniform tissue necrosis is observed within ablation zones receiving sufficient thermal dose per volume of lung. Treatment of smaller volumes and ensuring adequate thermal dose may be important for ablative efficacy.

Precision Medicine – How does genetic testing affect the way we treat our patients?

LOONG Herbert Ho Fung, M.D.

Clinical Associate Professor, Department of Clinical Oncology, The Chinese University of Hong Kong
Deputy Medical Director, Phase 1 Clinical Trial Centre, The Chinese University of Hong Kong

Abstract

Treatment outcomes for cancer patients have improved over the past decade with the adoption of precision medicine. Technologies such as cancer genomic profiling are now commonplace as part of patients' diagnostic workup. Among all cancer types, non-small cell lung cancer (NSCLC) is the leading research and clinical application of genomic profiling. As there are increasing number of mutations in tumours which are now deemed actionable with effective therapies in NSCLC, there is a increasing push for the adoption of biomarker identification and selection in our routine clinical practice. Comprehensive genomic profiling (CGP) through next generation sequencing (NGS) is fast becoming the preferred option over single analyte testing in NSCLC. It is important to understand that not all NGS are the same. There are DNA-based vs RNA-based approaches, and tissue and liquid are considerable sources to test for the cancer's genomic profiling. This presentation will provide scientific evidence to explore the balance between new testing technology and traditional available testing approach to help clinicians optimally manage all the diagnostic and therapeutic armamentariums on hand in managing patients with advanced NSCLC in the modern era.

Application of Enhanced recovery after surgery (ERAS) program in Thoracic Surgery: CGH Experience Sharing

顏 銘宏 醫師 / Ming-Hong Yen, M.D.

國泰綜合醫院胸腔外科主任

Abstract

Enhanced recovery after surgery (ERAS) aimed to diminish postoperative organ dysfunction and facilitate recovery through the introduction of multiple evidence-based perioperative measures and has previously been described in thoracic surgery and appeared to result in a reduction in postoperative complications and length of stay. The program includes preoperative counselling, nutritional screening, smoking cessation, rehabilitation for high-risk patients, prevention of hypothermia, regional anesthesia, nausea and vomiting control, opioid-sparing analgesia, euvolemic fluid management, minimally invasive surgery, early chest drain removal, avoidance of urinary catheters and early mobilization after surgery. We are going to share experience of applying ERAS program in thoracic surgery from CGH during in recent years.

Satellite Symposium

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第一會場
- Critical Care（香港商吉利亞醫藥有限公司台灣分公司贊助）
- Airway Disease（荷商葛蘭素史克藥廠股份有限公司台灣分公司贊助 - 視訊）

第二會場
- Airway Disease（台灣阿斯特捷利康股份有限公司贊助）
- Airway Disease & Lung Cancer（台灣百靈佳殷格翰股份有限公司贊助）

第三會場
- Lung Cancer（台灣武田藥品工業有限公司贊助）
- Lung Cancer（行動基因生技股份有限公司贊助）

第四會場
- Lung Cancer（美商默沙東藥廠股份有限公司贊助）
- TB & Infection（輝瑞大藥廠股份有限公司贊助）

第五會場
- Lung Cancer（輝瑞大藥廠股份有限公司贊助）
- Lung Cancer（台灣必治妥施貴寶股份有限公司 / 台灣小野工業股份有限公司贊助）

第六會場
- Lung Cancer（台灣阿斯特捷利康股份有限公司贊助）

12 / 12

第二會場
- Airway Disease（友華生技醫藥股份有限公司贊助）
- Lung Cancer（台灣阿斯特捷利康股份有限公司贊助）

第三會場
- Airway Disease & Lung Cancer（健喬信元醫藥生技股份有限公司 / 台灣諾華股份有限公司贊助）

第四會場
- Airway Disease（台灣諾華股份有限公司贊助）
- Lung Cancer

第五會場
- Lung Cancer（輝瑞大藥廠股份有限公司贊助）

第六會場
- Airway Disease（台灣阿斯特捷利康股份有限公司贊助）

香港商吉利亞醫藥有限公司台灣分公司贊助

Optimal Timing and Role of Antiviral Agents in COVID-19 Treatment

王 振泰 醫師 / Jann-Tay Wang, M.D., Ph.D.

Division of Infectious Diseases, Department of Internal Medicine, National Taiwan University Hospital

COVID-19 was first noted in Wuhan City, China in Dec. 2019, and later spread to all over the world causing a pandemic disease since 2020. It was caused by a novel coronavirus, named SARS-CoV-2. During the past two years, thousands of studies focus on COVID-19 and SARS-CoV-2 illuminate the pathogenesis, clinical pictures, immunological responses, potential treatment modalities, and also vaccine development. Till now, the major treatment modalities include antiviral agents, monoclonal antibodies, steroid, and other anti-inflammatory agents. Studies focus on the pathogenesis of SARS-CoV-2 infection demonstrate that the viral invasion plays a major role in the early disease course; however, inappropriately overwhelm inflammatory response does in the late disease course. More and more studies show that both the antiviral and anti-inflammatory treatments have their own "best timings": antiviral treatment should be used earlier and anti-inflammatory treatment in the later course. Here, we will discuss the effective antiviral agents, including Remdesivir, Molnupiravir, and monoclonal antibodies, and their best timing of treatment in details.

荷商葛蘭素史克藥廠股份有限公司台灣分公司贊助

Personalized asthma treatment strategy based on treatable traits: Add LAMA or increase ICS?

陳 家弘 醫師 / Chia-Hung Chen, M.D.

Attending Physician in China Medical University Hospital

隨著時代的演進以及醫學的進步 , 許多疾病的治療都趨向於探討個人化，客製化治療。告別 One size fits fall, Asthma 的治療是否也能有所突破？
此演講將根據最新的發表，CAPTAIN Study，告訴我們 , 臨床上 , 當病患使用中劑量的 ICS/LABA 仍控制不佳時，有哪些 Biomarker, treatable traits 可以運用，判斷什麼樣的病患適合加上 LAMA，使用 Triple therapy 治療？什麼樣的病患，適合增加 ICS Dose，使用 High dose ICS/LABA 治療？為病患在第一時間挑選一個最適合的藥物？
Single inhaler triple therapy 又是如何改變 Asthma 治療上一直遇到的困境，能帶給病患以及醫師新契機？期待透過此會議，參加醫師能有更多討論與學習！

Prospective observational study, pros and cons, REALITI-A as example

Professor Tobias Welte

Professor of Pulmonary Medicine and Director of the Department of Pulmonary and Infectious Diseases at Hannover University School of Medicine

Different from other most common real world evidence publications, taking retrospective observational approaches, REALITI-A is the first prospective observational study that GSK ever conduct. Why GSK takes this methodology, and how that impacts study design and result. Will prospective RWE becomes next trending, or it' s just one-off study. Follow Prof. Welte' s step, explore the rationale behind the study, and what' s REALITI-A tells us about SEA patient treatment outcome, and how that embed into every day clinical practice.

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Advances in COPD care to address patients' unmet needs

郭 炳宏 教授 / Ping-Hung Kuo, M.D.

現行慢性阻塞性肺病治療有許多不同藥物及吸入劑的選擇，然而整體疾病照護上仍未臻完善。本演講將討論目前在慢性阻塞性肺病治療上有哪些未被滿足的病患需求，同時也將探討新的複方吸入劑 Glycopyrronium/Formoterol 的發展及近期關於慢性阻塞性肺病照護的新發表，提出可協助改善臨床治療之決策與建議。

SABINA III: milestone of Taiwan asthma care,from NHIA big data to target policy shaping

傅 彬貴 主任 / Pin-Kuei Fu, M.D., Ph.D.

臺中榮民總醫院間質性肺病整合照護中心主任 , 臺中榮民總醫院戒菸治療管理中心主任
臺中榮民總醫院重症醫學部主治醫師 , 臺中榮民總醫院呼吸加護病房主任

近年來在氣喘治療的建議上有了重大的變更，也有許多真實世界數據探討了氣喘的藥品使用現況。本演講將從目前 SABA 過度使用的真實世界數據為出發 (SABINA program)，結合最新治療指引的改版內容，探討台灣在氣喘治療上的機會點。

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Step-Up and Step-Down Treatment Approaches for COPD: A Holistic View of Progressive Therapies

張 博瑞 醫師 / Po-Jui Chang, M.D., Ph.D.

林口長庚紀念醫院內科第一加護病房主任

Recent advances in inhaled drugs and a clearer definition of the disease have made the task of managing COPD more complex. Different proposals have been put forward which combine all the available treatments and the different clinical presentations in an effort to select the best therapeutic options for each clinical context. As COPD is a chronic progressive disease, the escalation of therapy has traditionally been considered the most natural way to tackle it and in specific scenario, the possibility of a de-escalation in treatment need to be considered as well. Beyond that point, a patient with persistent symptoms represents a complex clinical scenario which requires a specialized approach, including the evaluation of different respiratory and non-respiratory comorbidities. The debate on de-escalation in pharmacological treatment, therefore, involves two main discussion points: the withdrawal of bronchodilators and the withdrawal of inhaled steroids. Altogether, the scheme for modifying treatment must be more personalized than just adding molecules, and the therapeutic response and its conditioning factors should be evaluated at each step before proceeding further.

GioSwinG: An Evolving Algorithm to Select and Sequence Therapies in EGFR Mutation-positive NSCLC

梁 勝鎧 醫師 / Sheng-Kai Liang, M.D., Ph.D.

台大醫院癌醫中心分院內科主治醫師 , 台大醫學院內科臨床助理教授
台大醫院新竹分院內科兼任主治醫師 , 台大醫院內科兼任主治醫師

Non-small-cell lung cancer (NSCLC) is believed as one of the main reasons that cause deaths from cancer worldwide.Three generations of epidermal growth factor receptor (EGFR) tyrosine kinase inhibitors (TKIs) are now approved in the first-line setting for patients with EGFR mutation-positive non-small-cell lung cancer (NSCLC). Recent randomized trials have demonstrated that afatinib and osimertinib all confer significantly improved progression-free survival versus first-generation TKIs. The lecture will update the recent sequential evidences from Asian RWEs to global study-GioSwinG. While we implement the treatment strategy for our NSCLC patients based on the clinical evidences to our clinical practices, how to consider PFS with maximizing overall survival (OS), the most important measure of treatment efficacy, and balance patients' the quality of life, is an important topic in NSCLC.

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Make A LUNg BRIGhter: Brigatinib's Role in the Present & Future

夏 德椿 主任 / Te-Chun Hsia, M.D., Ph.D.

Chair, Department of Respiratory Therapy, China Medical University.
Vice-Chair, Department of Internal Medicine and Director, Intensive Medicine Center, China Medical University Hospital

Abstract

Target therapies for ALK-rearranged NSCLC have evolved over the last decade. Several new generations of ALK inhibitors have demonstrated their superiority in efficacy over the first ALK inhibitor, crizotinib1. Approximately 70% of patients eventually develop brain metastases during treatment with crizotinib2,3. Hence, the drug' s ability to penetrate CNS and demonstrate intracranial efficacy becomes critical.

Brigatinib is a 2nd generation ALK inhibitor approved for first-line use in patients with advanced ALK+ NSCLC, as well in those who have progressed on crizotinib. In its phase 2 ALTA trial, brigatinib demonstrated significant clinical efficacy post-crizotinib, with an IRC-assessed mPFS of 16.7 months4. The recently published ALTA-1L final analysis validated brigatinib' s superior efficacy in ALK inhibitor-naïve patients (mPFS HR 0.48 for brigatinib vs crizotinib), and highlighted its overall survival benefit in patients with baseline brain metastases (mOS HR 0.43) after a 4-year follow up. Brigatinib was well tolerated, with asymptomatic laboratory abnormalities and GI symptoms being the most common (>25% patients) treatment-emergent adverse events5.

In a real-world setting, the subsequent treatment following brigatinib still exhibited durable benefits (median time-to-treatment discontinuation of 8.0 months in lorlatinib post-brigatinib)6. To date, the emerging ALK inhibitor treatments trigger the need of deciding optimal treatment sequence, with the aim to provide patients with improved overall outcome.

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Predictive Biomarkers for Immunotherapy Efficacy: Current Status and Future Perspectives

温 岳峯 醫師 / Yueh-Feng Wen, M.D.

Attending Physician, Department of Internal Medicine, National Taiwan University Hospital, Hsinchu Branch

Both the treatment and molecular diagnosis of lung cancer have been rapidly changing in the past five years. On one side, we search for oncogene-mutated lung cancers with next-generation sequencing (NGS) and treat them with corresponding targeted agents. On the other side, we also interrogate tumor-intrinsic immune-regulated genes with NGS to predict the response of oncogene-negative lung cancers to immune checkpoint inhibitors (ICIs). Overall the deep-diving genomic approach of lung cancer has led to moderate survival benefits, and in carefully selected patients, even long-term survival.
Numerous candidate intrinsic (cancer cell) and extrinsic (microenvironment) biomarkers of immunotherapy have been discovered, and some have been tested in milestone trials. Of note, tumor programmed cell death 1-ligand 1 (PD-L1) expression, and tumor mutational burden (TMB) have been most extensively studied and put in the front of clinical utilization. The IASLC (International Association for the Study of Lung Cancer) Blueprint Project has confirmed the interchangeability of the trial-validated 22C3, 28-8, and SP263 assays for determining tumor PD-L1 expression. However, current evidence suggests that for TMB, standardization in analysis and reporting methods and validation of universal or tumor type-specific meaningful cut-off values are premature. The Friends of Cancer Research TMB Harmonization Project aims to mitigate the difference across panel assays to estimate TMB and hopefully improve their applicability of immunotherapy. Recently, the project has its phase 2 result and provides a public calibration tool for panel TMB data.

Precision Medicine by NGS: Strategies and Applications for Lung Cancer

王 智亮 醫師 / Wang Chih-Liang, M.D.

Physician attending of Division of Pulmonary Oncology and Interventional Bronchoscopy, Department of Thoracic Medicine, Chang Gung Memorial Hospital

The Goal of precision medicine is to use genomic data to help provide the right treatment to the right patient at the right time. This symposium will discuss clinical applications of next generation sequencing for identifying actionable biomarkers and making treatment decisions in lung cancer.

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Redefining Survival Expectations For Lung Cancer Patients

MODERATOR

施 金元 醫師 / 臺灣大學醫學院附設醫院

TIME	TOPIC	SPEAKER
12:10 12:45	Optimal Immunotherapy Strategy in 1L advanced NSCLC with High PD-L1 Expression	郭志熙醫師 林口長庚紀念醫院
12:45 13:30	Share and Learn from KN-189/KN-407: Seize the One Chance in First Line Treatment for PD-L1 Low/Negative Expression Group	廖唯昱醫師 臺灣大學醫學院 附設醫院

郭 志熙 醫師 / Chih-Hsi Kuo, M.D.

Consultant Physician, Department of Thoracic Oncology and Intervential Bronchoscopy, Chang Gung Memorial Hospital
Associate Professor, Department of Thoracic Oncology and Intervential Bronchoscopy, Chang Gung Memorial Hospital, Chang Gung University
Director, Deapartment of Thoracic Oncology and Intervential Bronchoscopy, Chang Gung Memorial Hospital

廖 唯昱 醫師 / Wei-Yu Liao, M.D., Ph.D.

Attending Physician, Department of Internal Medicine, National Taiwan University Hospital
Clinical Associate Professor, Department of Internal Medicine, National Taiwan University College of Medicine

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Pulmonary TB, NTM and chronic pulmonary aspergillosis: clinical challenges, consensus, and future direction

黃 偉彰 醫師 / Wei-Chang Huang, M.D., Ph.D.

台中榮民總醫院胸腔內科主治醫師
部定助理教授

近年來隨著肺部麴菌感染診斷相關研究的累積與演進，發現可能出現在肺結核與非結核分枝桿菌感染之病患上，形成慢性肺部麴菌感染 (Chronic pulmonary aspergillosis, CPA)。過去研究報導，慢性肺部麴菌感染之五年死亡率可高達 50-85%，近年來逐漸引起臨床醫師關注與討論。
如同非結核分枝桿菌肺部疾病，結核病也是慢性肺部麴菌感染最重要的成因，估計大約有一百二十萬左右的慢性肺部麴菌感染可以歸咎為肺結核的後遺症。慢性肺部麴菌感染的臨床表現差異很大，輕至不太明顯的咳嗽、咳痰，但嚴重則可能會大咳血、呼吸衰竭等危及生命的狀況。最近的研究顯示，臨床檢體中的麴菌抗原、以及血清中的麴菌 IgG 抗體，可以作為診斷上的重要參考，而且兩者也都已經有商業化的試劑可供臨床使用。然而，臨床上面對慢性肺部麴菌感染、肺結核、甚至是非結核分枝桿菌肺部疾病時，如何鑑別其中的差異與相似之處，以進一步給予合適的治療，需要透過更多臨床經驗與證據的累積。
此研討會除了回顧上述肺部感染在近期的研究新進展之外，亦將探討 TB, NTM, CPA 在臨床上常見的診治挑戰，與目前已知的研究或指引建議，以幫助臨床醫師討論與了解照顧此類患者時之鑑別診斷、迅速治療的重要性，與未來研究之可能方向。

輝瑞大藥廠股份有限公司贊助

Optimal treatment strategy in L858R NSCLC patients

鄭 文建 醫師 / Wen-Chien Cheng, M.D.

中國醫藥大學附設醫院內科部胸腔科主治醫師

Epidermal growth factor receptor (EGFR) tyrosine kinase inhibitors (TKIs) are the standard first-line treatment for patients with sensitizing EGFR mutation-positive non-small cell lung cancer (NSCLC). Pivotal studies on first-generation EGFR TKIs gefitinib and erlotinib have confirmed improvement in progression-free survival (PFS) and objective response rate (ORR) but failed to demonstrate a statistically significant overall survival (OS) benefit over chemotherapy in patients with EGFR mutation-positive advanced NSCLC. Second-generation EGFR TKIs including afatinib and dacomitinib are characterized by irreversible binding and pan-EGFR (HER) inhibition. In LUX-Lung 7, a randomized phase 2b trial comparing afatinib with gefitinib in patients with EGFR mutation-positive advanced NSCLC, afatinib significantly improved PFS versus gefitinib but no significant difference in OS. While osimertinib has demonstrated impressive efficacy and tolerability in a first-line setting, there are currently no standard targeted treatment options following progression. There is an argument, therefore, for reserving osimertinib for second-line use in patients who acquire the T790M resistance mutation after first- or second-generation TKIs. Notably the observational GioTag study, and subanalysis of the LUX-Lung and ARCHER 1050 trials demonstrate that sequential second-generation EGFR TKIs and osimertinib can effectively provide prolonged periods of chemotherapy-free treatment in patients with T790M-mediated resistance. Prospective trials are required to compare different sequential regimens with OS as a primary end point.

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Wish patients a better life: Dual IO can help

陳 崇裕 醫師 / Chung-Yu Chen, M.D., Ph.D.

Assistant Professor, College of Medicine, National Taiwan University
Medical Executive Assistant, Superintendent's Office

The immunotherapy-based combination has become one of the standards of care for first-line metastatic NSCLC without the driver gene mutation. However, there are some medical unmet needs with IO-Chemo combination therapy in our daily practice. For example, the duration of response of IO-Chemo combination therapy is not as long as anti-PD(L)1 alone. Patients are still exposed to chemotherapy and its associated toxicities with IO-Chemo combination therapy. Moreover, IO-chemo combination therapy in the PD-L1 negative population seems to be not as good as the PD-L1 positive population. The combination of distinct immune cycle inhibitors is another therapeutic strategy to prolong survival for patients. Recently results showed that combination of dual immunotherapy with or without limited chemotherapy bring durable response and long-term OS for advanced NSCLC patients. This talk will cover mechanism of action and the emerging update data of dual immunotherapy-based combination therapy in first-line metastatic NSCLC.

Obtaining the pieces to the puzzle: Real-world considerations in the 1L management of NSCLC

葉 育雯 醫師 / Yu-Wung Yeh, M.D.

新光吳火獅紀念醫院胸腔內科主治醫師 , 新光吳火獅紀念醫院肺癌多專科團隊召集人
天主教輔仁大學醫學系副教授

Immune checkpoint inhibitors (ICI) have revolutionized lung cancer treatment. Recently, dual immunotherapy-based combination therapy has broadened our first-line treatment options even more. CheckMate 227 and CheckMate 9LA have shown that the combination of distinct immune cycle inhibitors (nivolumab and ipilimumab) could provide long-term survival benefit and durable response in non-small cell lung cancer under trial conditions. However, real-world experience of dual ICI combination therapy is still lacking. In this session, we will explore the dual ICI option in real-world conditions. Considerations when choosing ICI/dual ICI therapies in the 1st line setting may include patient characteristics, method of obtaining biopsy specimens, platform used in determining PD-L1 status, duration of treatment, and cost, among others.

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Post Osimertinib era: what treatment we can expect after the 3rd generation TKI resistance?

廖 唯昱 醫師 / Wei-Yu Liao, M.D., Ph.D.

Attending Physician, Department of Internal Medicine, National Taiwan University Hospital
Clinical Associate Professor, Department of Internal Medicine, National Taiwan University College of Medicine

Non-small cell lung cancer (NSCLC) is the most mortality cancer in Taiwan. In Asia, near 50% NSCLC patients harboring epidermal growth factor receptor (EGFR) gene mutation and can be benefited by related tyroing-kinase target therapy (TKI), however, most patients still experienced disease progression once resistance to this frug around 10-12 months. In 2016, the 3rd generation TKI has been approved in Taiwan for patients with T790M resistance pathway after 1/2G TKI and also be moving forward to 1st treatment after FLAURA study publish and demonstrated survival benefit compared to 1G TKI. As wildly use of 3rd generation TKI, the new resistance pathway are also revealed. In this presentation, we will discuss the resistance pathway of 3rd generation TKI and related treatment.

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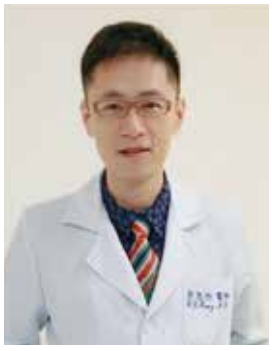

Navigating the real life data with TRIPLE therapy in COPD

彭 忠衍 主任 / Chung-Kan Peng, M.D., Ph.D.

Attending physician (Pulmonologist) ,Division of Pulmonary Medicine and Critical Care Medicine, Department of Internal Medicine, Tri-Service General Hospital,Attending physician, Undersea and Hyperbaric Medicine Center, Tri-Service General Hospital,Director of Sleep Medicine Center, Tri-Service General Hospital,Director of Medical Intensive Care Unit, Tri-Service General Hospital, Associate professor, Department of Internal Medicine, National Defense Medical Center, Director of TingJhou Campus, Tri-Service General Hospital

對於 COPD 患者而言，若症狀明顯、惡化頻繁，其藥物治療必要時將升階至三合一療法。過去患者多使用兩種以上吸入器進行三合一療法，現在市面上已經有複方三合一吸入劑，將可提高患者順從性。演講內容也將討論三合一藥物的臨床研究證據，包含效果、安全性等資料。臨床治療效果與安全性除了隨機對照試驗 (Randomized Control Trials, RCTs) 外，真實世界證據 (Real-World Evidence, RWE) 提供了更貼近臨床的證據，本次演講也著重於複方三合一單一吸入劑治療在 COPD 治療的真實世界證據。

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The evolving role of IO treatment for ES-SCLC

郭 志熙 醫師 / Chih-His Kuo, M.D.

林口長庚肺腫瘤及內視鏡科主治醫師

廣泛期小細胞肺癌 (ES-SCLC) 的一線治療選擇在過去三十年間除了化學治療以外並未有太大的進展，CASPIAN trial 與 IMpower133 已證實了 durvalumab +EP / atezolozumab+EC，相比於化療可以顯著延長 overall survival 因此 durvalumab +EP/ atezolozumab+EC 已成為 ES-SCLC 的一線標準治療選擇而在 CASPIAN trial Subgroup analysis 包含是否併有腦部轉移部份皆看到一致的結果。這次 2021 ESMO 也宣布了 CASPIAN 的三年總生存期 (OS) 結果，Durvalumab 合併化療組在中位隨訪期為 39.4 個月後，在 ES-SCLC 病患第一線使用 Durvalumab 加上化療與單獨化療相比，其三年存活率為化療組的三倍 (17.6% 比上 5.8%)。過去 ES-SCLC 患者的治療選擇有限且預後不佳，這使得這些數據特別有意義。三年的 OS 結果更是目前 IO 用於 ES-SCLC 治療的最長隨訪期，CASPIAN 三年 OS 顯著的生存改善結果也是前所未有的成就，也強化了 Durvalumab 加上化療將成為 ES-SCLC 病患重要治療選擇。

Around the corner to CURE: stage III unresectable NSCLC patients' care and long-term survival benefit

陳 鴻仁 醫師 / Hung-Jen Chen, M.D.

中國醫藥大學附設醫院胸腔內科主治醫師 , 部定副教授

第三期不可開刀之非小細胞肺癌：免疫治療逐步往局部晚期邁進。對於第三期不可開刀的非小細胞肺癌病人而言，治療目標大多仍以治癒為主。雖然有些病人仍不可避免的復發，但仍有部分族群的病人可以獲得長期控制，甚至有治癒的可能。在過去我們知道，針對這群病人來說已近二十年沒有新的治療進展，而 PACIFIC 的結果首次打破了這個僵局應用放射線治療與免疫治療的交互作用，於同步放化療後接續 Durva 鞏固性治療，不管在 PFS 或 OS，相比於對照組，都有顯著的延長。自 2017 年首次發表時一鳴驚人的結果，轉眼五年過去， PACIFIC 是否能為第三期不可手術的病人帶來 “治癒” 的曙光，2021 ASCO 所更新的 5 年長期追蹤結果，亦觀察到，在同步放化療後使用 Durva 鞏固性治療所帶來的存活顯著好處，趨勢從始至終維持一致的臨床效益， 5 年 OS rate 仍達 42.9 %，超過四成的病人存活期可超過五年，且近三分之一的病人獲得了長期疾病控制，於 5 年追蹤追期時仍無疾病惡化。PACIFIC 試驗在以 “治癒” 為目的的治療領域當中，更讓人期待未來的可能。此外在不同的 RWD 中，也屢屢展現 PACIFIC 在真實世界中一致安全性與有效性。

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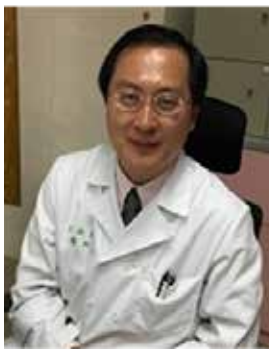

MOLD - Mycobacterial Obstructive Lung Disease

王 振源 醫師 / Jann-Yuan Wang, M.D., Ph.D.

臺大醫院內科部專任主治醫師
臺大醫學院醫學系內科臨床教授

流行病學的研究告訴我們，阻塞性呼吸道疾病 (obstructive lung disease) 的病人，會增加肺結核 (pulmonary tuberculosis) 和非結核分枝桿菌肺部疾病 (nontuberculous mycobacterial lung disease) 的風險；而相反的，結核菌、非結核分枝桿菌的肺部感染，也會進一步破壞肺部的結構，導致呼吸道的傷害，而造成阻塞性通氣障礙 (obstructive ventilatory defect)。而阻塞性通氣障礙加重之後，勢必引起更厲害的呼吸道發炎和感染，然後接續著更嚴重的呼吸道破壞、換氣障礙，如此惡性循環，周而復始，每下愈況！如何迅速察覺、快速診斷，並進一步避免傷害，是臨床上重要的課題。

Update on the new approach of inhaled asthma treatment

沈 聲燁 醫師 / Sheng-Yeh Shen, M.D.

台北馬偕紀念醫院 胸腔內科資深主治醫師 , 台北馬偕紀念醫院 胸腔內科病房主任
馬偕醫學院 兼任臨床助理教授

The Global Initiative for Asthma (GINA) recommends a medium-dose inhaled corticosteroid (ICS) with a long-acting β2-adrenoceptor agonist (LABA) as the preferred controller treatment for patients with asthma at GINA step 4, and high-dose ICS with LABA for GINA step 5; however, at least 40% of all patients remain symptomatic with reduced quality of life, decreased work productivity, and increased emergency or hospital-based medical care.

In patients inadequately controlled on medium-dose or high-dose ICS–LABA, the addition of a long-acting muscarinic receptor antagonist (LAMA) can provide further benefit. GINA recommends the LAMA tiotropium as an add-on treatment option for patients at GINA steps 4 and 5 with a history of exacerbations. The addition of tiotropium to ICS–LABA in patients with inadequately controlled asthma has been shown to improve lung function and delay time to first exacerbation, but this has traditionally required the use of two inhalers.

The use of a single inhaler for ICS–LABA can facilitate asthma management by contributing to adherence. The use of a once-daily ICS–LABA–LAMA combination in a single inhaler could be an effective treatment option for patients with asthma and potentially simplify asthma management. Earlier studies in patients with chronic disease, including asthma, have highlighted the importance of once-daily treatment regimens in terms of improved adherence and disease control.

Mometasone furoate, indacaterol acetate, and glycopyrronium bromide have been formulated as a single, once-daily ICS–LABA–LAMA combination (MF–IND–GLY), delivered via Breezhaler, for maintenance treatment of asthma. In this dry powder formulation, indacaterol–glycopyrronium delivers once-daily bronchodilation, and mometasone offers effective once-daily anti-inflammatory therapy with excellent therapeutic index

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Airway remodeling in asthma – when, how, and what to do from bench side to clinical practice

王 圳華 醫師 / Chun-Hua Wang, M.D.

Professor of Thoracic Medicine, Chang Gung Memorial Hospital
Professor of Medicine, Chang Gung University

Circulating fibrocytes act as precursors of myofibroblasts, contribute to airway remodelling in chronic asthma and migrate to injured tissues by expressing CXCR4 and CCR7. Anti-IgE therapy improves severe allergic asthma (SAA) control and airway remodeling in T2-high SAA. The effects of anti-IgE therapy on fibrocyte activities were investigated in this study.
The expression of CCR7, CXCR4, ST2 and α-SMA (α-smooth muscle actin) in both circulating and cultured fibrocytes from all patients with asthma was measured, and was repeated after omalizumab treatment in SAA. Fibrocytes recruitment, proliferation and transformation were also measured in response to anti-IgE therapy.
Omalizumab effectively improved asthma control and pulmonary function in T2-high SAA, associated with a decline in serum levels of IL-33 and IL-13. Omalizumab down-regulates CXCR4 and CCR7 expression of fibrocytes, which could suppress fibrocyte recruitment into the lungs.
Omalizumab reduced the number of circulating fibrocytes, cell and number of fibrocytes as well as α-SMA+ fibrocytes after 3–7 days of culture in SAA patients. IL-33 and IL-13 may be implicated in the effectiveness of omalizumab in inhibiting fibrocyte activation contributing partly to the clinical benefits in reducing lamina propria and basement membrane thickening.

New era of biological treatment for CRSwNPs: Focus on IgE perspective

林 怡岑 醫師 / Yi-Tsen Lin, M.D.

Rhinologist

Department of Otolaryngology, National Taiwan University Hospital, Taipei, Taiwan
College of Medicine, National Taiwan University, Taipei, Taiwan

Chronic rhinosinusitis (CRS) with nasal polyps (CRSwNP), also referred to as nasal polyposis, is a severe form of CRS. CRS is common and is estimated to affect up to 15% of the population based on a symptomatic definition and 3% to 6.7% of the population based on symptoms combined with endoscopic evaluation. A recent large single-center study from the United States reported that approximately 18% of patients with CRS have CRSwNP.
CRSwNP is associated with type 2 asthma, significant morbidity, decreased health-related quality of life (HRQoL), and substantial economic burden (amounting to more than $22 billion for CRS in the United States in 2014. Quality of life (QoL) impairment is comparable with that experienced by patients with chronic lower back pain. Many patients with CRSwNP have uncontrolled symptoms despite use of intranasal corticosteroids (INCS) or systemic corticosteroids (SCS), use of doxycycline to reduce inflammation or infection, or functional endoscopic sinus surgery (FESS). Furthermore, disease control is poor, with 20% to 80% of patients experiencing recurrence depending on follow-up duration.

IgE is thought to play a central role in CRSwNP pathogenesis by activating type 2 inflammatory cells such as mast cells, basophils, and eosinophils. Local IgE class switching by B cells and IgE production is well documented in tissue from patients with CRSwNP. Within the sinonasal mucosa, Staphylococcal enterotoxin–specificIgE and polyclonal IgE for inhalant allergens, as well as colonization by microbial species including Staphylococcus aureus, are associated with CRSwNP irrespective of atopic status. Locally produced IgE appears to be functional and involved in regulating chronic inflammation.

In real-world and randomized clinical studies, patients treated with the anti-IgEmAb, omalizumab, demonstrated reductions in CRS-related symptoms, endoscopic Nasal Polyp Score (NPS), and need for INCS use. Improvements were observed by week 4 and were similar to those observed in patients receiving FESS. In a randomized controlled trial of 24 patients with CRSwNP with comorbid asthma, omalizumab significantly improved endoscopic NPS, Lund-Mackay score (a validated measure of paranasal sinus occupation severity), and patient-reported outcomes irrespective of atopic status.

POLYP 1 and POLYP 2, two phase 3 pivotal studies, were conducted to evaluate the efficacy and safety of omalizumab versus placebo in adult patients with CRSwNP with inadequate response to INCS therapy. POLYP 1 and POLYP 2, met both coprimary end points, demonstrating statistically significant improvements in NPS and mean daily nasal congestion score (NCS) as well as patient-reported assessments of severity of symptoms in response to omalizumab versus placebo, on a background of intranasal mometasone, at week 24. Multiple secondary outcomes were also met. The improvements in SNOT-22 score illustrated the impact on patient QoL and place the results into an important context relative to other therapies such as SCS and surgery. Omalizumab was well tolerated, and AEs were consistent with those previously reported.

Omalizumab represents a promising new treatment option for patients with CRSwNP, for whom there is a substantial unmet need. The results from the POLYP 1 and POLYP 2 trials reinforce the findings of previous trials showing that omalizumab is a viable alternative treatment for patients with CRSwNP with inadequate response to intranasal corticosteroids.

Precision medicine update in Lung Cancer :diagnostic approaches& RET fusion

Time	Topic	Speaker	Moderator
12:10 12:40	Precision medicine update in LungCancer: diagnostic approaches	李健逢部長 奇美醫院	何肇基教授 臺大醫院
12:40 13:10	Precision medicine update in Lung Cancer: Look in to RET fusion in NSCLC	林建中副教授 成大醫院	洪仁宇副院長 高雄市立大同醫院
13:10 13:20	Panel Discussion & Closing	ALL	何肇基教授 洪仁宇副院長

Precision medicine update in Lung Cancer:diagnostic approaches

李 健逢 部長 / CHIEN-FENG LI, M.D., Ph.D.

Joint-Appointment Professor, Institute of Medical Science and Technology, National Sun Yat-sen University
Chair, Department of Medical Research, Chi Mei Medical Center
Chief, Core Laboratory of Trans-Omics for Precision Medicine, Chi Mei Medical Center

Precision medicine update in Lung Cancer: Look in to RET fusion in NSCLC

林 建中 副教授 / Chien-Chung Lin, M.D., Ph.D.

國立成功大學附設醫院內科副教授

Recent developments in precision oncology have increased the complexity of diagnostic and therapeutic decisions. Clinicians practicing precision medicine must carefully consider the cost-benefit analysis of this approach and plan their diagnostic and therapeutic course accordingly: What actionable information will result from testing? What testing method will provide maximal utilizable information at the lowest cost? What is the feasibility of implementing a therapy based on that information?
Clinicians can use a wide array of testing procedures that have well-documented clinical efficacy,

from histology-based IHC analyses to small-scale quantitative PCR assays. Employing these tests for initial screening, especially in settings with limited access to advanced technologies or ability to follow through on the data they provide, even for a faster stepwise diagnostic approach, could allow clinical oncologists to refine their approach to diagnosis and treatment in the precision medicine era.
NGS technology provides an unparalleled view of the genetic framework of a patient' s disease. It allows clinicians and researchers to identify a significant proportion of the full mutational burden of a tumor and uncover the various targets for which therapies can be used. This has created many opportunities for research and clinical investigation of this technology, opening the door for trials exploring the efficacy of a wide range of therapies.
Looking ahead, application of NGS technology to ctDNA isolated from simple blood samples continues to expand the landscape of precision medicine. The potential to identify and exhaustively characterize tumors with rapid, noninvasive diagnostic tools is incredibly appealing. Like NGS technology and the precision oncology movement as a whole, the inherent potential for paradigm-shifting clinical impact will continue to drive interest in this technology.
Biomarker testing is standard of care in NSCLC patients with adenocarcinoma because multiple targeted therapies are available. Rearranged during transfection (RET) rearrangements were identified as oncogenic drivers in NSCLC, and are more common among younger patients, adenocarcinoma histology, and patients with a history of never smoking. The prevalence is estimated to be 1-2% among patients with adenocarcinoma histology. The most common rearrangement is between intron 11 of the RET gene and intron 15 of the KIF5B gene, and the next most frequent rearrangement is with the CCDC6 gene. RET rearrangements lead to constitutive activation of the RET tyrosine kinase and increased cell proliferation, migration, and survival.
Phase II studies investigated the activity of multi-targeted tyrosine kinase inhibitors in patients with NSCLC with a confirmed RET rearrangement. These agents have limited potency against RET, and activity against the epidermal growth factor receptor and vascular endothelial growth factor pathways. These agents revealed modest activity, and were poorly tolerated due to the off-target toxicities. These struggles contributed to the development of more potent and specific RET tyrosine kinase inhibitors. Preliminary results from early phase trials of selpercatinib (LOXO-292) and pralsetinib (BLU-667) revealed promising efficacy and improved tolerability. The availability of these agents will make routine testing for RET rearrangements a priority.

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Patients at the heart of VTE treatment decision making: Latest evidence to clinical choices

王 奇彥 醫師
臺中榮民總醫院心臟血管中心主治醫師

Venous thromboembolism (VTE) includes deep vein thrombosis (DVT) and pulmonary embolism (PE), and VTE could be a common cause of vascular death in general population; moreover, VTE is also a common complications and cause of death in patients with cancer.
In the last decade, physicians were used to treat VTE with LMWH/Warfarin and LMWH in general population and cancer patients, respectively. However, with more and more RCTs of DOACs dedicated in VTE treatment and show the comparable with even better clinical benefit than conventional treatment, guidelines have recommended DOACs as first line in treating VTE.
This session is an overview of different DOACs trials and guideline recommendations in VTE treatment.

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Clinical remission of severe asthma: what to expect?

潘 奕宏 醫師 / Yi-Hung Pan, M.D.

安泰醫療社團法人安泰醫院胸腔內科主治醫師

隨著生物製劑在嚴重氣喘治療的研究進展，對治療目標的期待也日益增加，甚至有討論嚴重氣喘”clinical remission”的可能。本演講將探討何謂嚴重氣喘的”clinical remission”、生物製劑是否可以”clinical remission”作為治療目標，尤其在氣喘急性惡化、長期療效與安全性、降低口服類固醇的臨床效益。

Addressing evidence gaps: the latest data for relegating oral corticosteroids to a last resort

張 博瑞 醫師 / Po-Jui Chang, M.D., Ph.D.

林口長庚胸腔內科系呼吸道疾病主治醫師，林口長庚紀念醫院助理教授

With the advances in severe asthma biologics development, there are growing expectations for treatment outcomes, and there is discussion around the concept of clinical remission in asthma. In this symposium, we will discuss what is clinical remission for severe asthma, the opportunity to consider it as a treatment goal, and the clinical benefits of zero exacerbation, long term treatment, and more importantly elimination in oral corticosteroids use.

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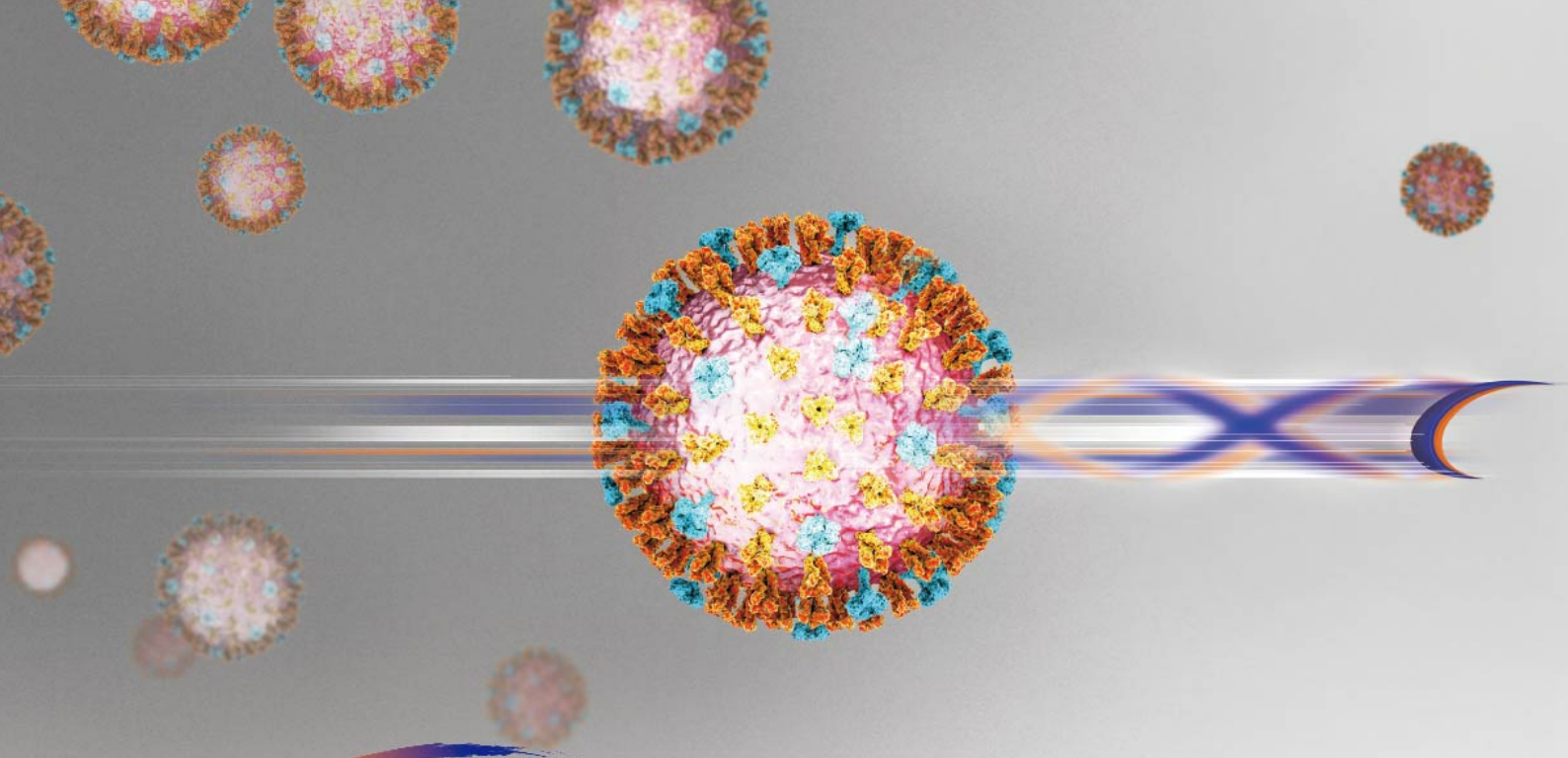

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英文產品名稱：Seretide 100 Accuhaler Inhalation Powder 衛署藥輸字第023202號；Seretide 250 Accuhaler Inhalation Powder 衛署藥輸字第023203號；Seretide 50/500 Accuhaler Inhalation Powder 衛署藥輸字第024849號；Seretide 50 Evohaler 衛署藥輸字第023480號；Seretide 125 Evohaler 衛署藥輸字第023482號；Seretide 250 Evohaler 衛署藥輸字第023481號。**中文產品名稱**：使肺泰100準納乾粉吸入劑；使肺泰250準納乾粉吸入劑；使肺泰50/500準納乾粉吸入劑；使肺泰50優氟吸入劑；使肺泰125優氟吸入劑；使肺泰250優氟吸入劑。**投藥方式**：口腔吸入劑。**適應症或用途**：SERETIDE 適用於可逆性呼吸道阻塞疾病(ROAD)之常規治療，包括適合使用支氣管擴張劑及皮質類固醇組合療法之患有氣喘的兒童與成人。這可能包括：正在使用長效乙型作用劑(β 2-agonist)及吸入型皮質類固醇之有效維持劑量的患者。正在接受吸入型皮質類固醇療法，而仍有症狀之患者。接受支氣管擴張劑之常規治療，而需要吸入型皮質類固醇之患者。SERETIDE Accuhaler 250及Seretide Evohaler 125、250另適用於嚴重慢性阻塞性肺部疾病(FEV1<50%預測值，FEV1/FVC<70%)之維持治療，包括慢性支氣管炎和肺氣腫；SERETIDE Accuhaler 50/500適 用於成人及十二歲以上青少年之嚴重氣喘及中至重度(FEV1 <60%)慢性阻塞性肺部疾病之維持性治療。**建議劑量**：• 使肺泰100/250/500準納乾粉吸入劑：成人及十二歲以上之青少年：每日兩次，每次吸一單位劑量。• 使肺泰100準納乾粉吸入劑：四歲以上之兒童：每日兩次，每次吸一下(50 mcg Salmeterol及100 mcg fluticasone propionate)。• 使肺泰50/125/250優氟吸入劑：成人及十二歲以上之青少年：每日兩次，每次吸二單位劑量。• 使肺泰50優氟吸入劑：四歲以上之兒童：每日兩次，每次吸二下(25 mcg Salmeterol及50 mcg fluticasone propionate)。目前還沒有四歲以下幼兒使用SERETIDE的資料。• 特殊患者群：老年患者，以及肝功能或腎功能不全之患者，使用SERETIDE時不需要調整劑量。**成分**：• 使肺泰準納乾粉吸入劑：50 mcg Salmeterol (as xinafoate)及100/250/500 mcg fluticasone propionate。• 使肺泰優氟吸入劑：25 mcg Salmeterol (as xinafoate)及50/125/250 mcg fluticasone propionate。**禁忌症**：禁止使用於對本劑任何一種成分有過敏史之患者。**注意事項**：甲狀腺毒症、低血鉀或糖尿病的病人使用前需事先告知醫師。• **副作用**：頭痛、肌肉痙攣、關節痛、口腔與喉嚨的念珠菌病、肺炎(慢性阻塞性肺部疾病患者)。**參考仿單版本編號**：Taiwan Seretide Evohaler Full PI, GDS35/IPI19. Taiwan Seretide Accuhaler Full PI, GDS36/IPI21.

REFERENCES：**1.**仿單版本編號: Taiwan Seretide Evohaler Full PI, GDS35/IPI19. Taiwan Seretide Accuhaler Full PI, GDS36/IPI21. **2.**Bateman ED, et al. Am J Respir Crit Care Med 2004;170:836–844.

公司名稱：荷商葛蘭素史克藥廠股份有限公司台灣分公司
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PM-TW-FPS-LBND-210003 Date of preparation - May 2021

Roche
雙靶
箭合璧
握希望
AVASTIN® 併用 Tarceva® 可作為
EGFR 突變的非小細胞肺癌
第一線治療
AVASTIN®
bevacizumab
Tarceva®
erlotinib
警語：
胃腸穿孔，外科手術和傷口癒合的併發症及出血胃腸穿孔：使用Avastin治療的病人發生胃腸穿孔(有些是致命的)的發生率為0.3-3.2%。發生胃腸穿孔應停止使用Avastin。外科手術和傷口癒合的併發症：在使用Avastin治療的病人有較高傷口癒合和外科手術併發症的發生率，包括嚴重和致命的併發症的發生率。病人有傷口裂開現象時應停止使用Avastin。目前仍未知為避免減弱傷口癒合能力並減少傷口裂開的風險所需停用Avastin至進行選擇性手術的適當時間間隔。在進行選擇性手術前至少28天，應暫停使用Avastin。在手術後至少28天且手術傷口完全癒合後再開始進行Avastin的治療。出血：在使用Avastin的病人發生嚴重或致命的出血(包括咳血、胃腸出血、神經系統出血、鼻出血和陰道出血)較頻繁(最高達5倍)。對於有嚴重出血或最近曾發生咳血的病人，不可投予Avastin來治療。
副作用：
出血：在針對各種不同適應症的所有臨床試驗中，所有以Avastin治療的病人有0.4%至6.9%發生NCI-CTC 3級至5級出血事件，而化學療法對照組病人則僅有0至4.5%的發生率。在Avastin臨床試驗中所出現的出血事件主要是腫瘤相關的出血及輕微的黏膜皮膚出血 (如鼻出血)。
高血壓：以Avastin治療的病人，其整體高血壓(所有級別)的發生率達42.1%，相較於對照組達14%。以Avastin治療的病人其NCI-CTC 3級和4級高血壓的整體發生率，為0.4%到17.9%。第4級高血壓(高血壓危象)的發生率，在以Avastin治療的病人中達1.0%，而單獨使用相同化學療法的病人達0.2%。高血壓一般都是以口服降血壓藥物予以適當的控制，例如血管收縮素轉換酶抑制劑、利尿劑及鈣離子通道阻斷劑，很少會造成Avastin停藥或住院。
蛋白尿：在臨床試驗中，有0.7%到54.7%接受Avastin治療的病人曾有蛋白尿的報告。蛋白尿的嚴重程度由無臨床症狀、短暫性、輕微的蛋白尿到腎病症候群都有。8.1%的治療組病人發生3級蛋白尿。4級蛋白尿(腎病症候群)發生在治療病人中達1.4%。有高血壓病史的病人在以Avastin治療時，發生蛋白尿的危險性較高。有證據顯示1級蛋白尿可能和Avastin的劑量有關。建議在以Avastin治療前進行蛋白尿的檢驗。在大多數的研究中，尿蛋白值≥2公克/24小時會導致Avastin的停用，直到恢復到<2公克/24小時為止。
過敏、輸注反應：在一些臨床試驗中，相較於單獨使用化學療法的病人，使用Avastin併用化學療法的病人較常有過敏性(anaphylactic)及類過敏性(anaphylactoidtype)反應的報告。Avastin在一些臨床試驗中這類反應的發生率是常見的(bevacizumab治療之病人的發生率達5%)。
衛署菌疫輸字第000807號
Stevens-Johnson syndrome /毒性表皮壞死溶解症(toxic epidermal necrolysis)的病例，在某些病例中是致死的。對於產生嚴重大水泡性、發泡性及脫皮性皮膚疾病的病人，應中斷或停止使用Tarceva治療。
眼睛疾病：曾有在使用Tarceva時發生角膜穿孔及潰瘍的報告。
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北市衛藥廣字第109010145號
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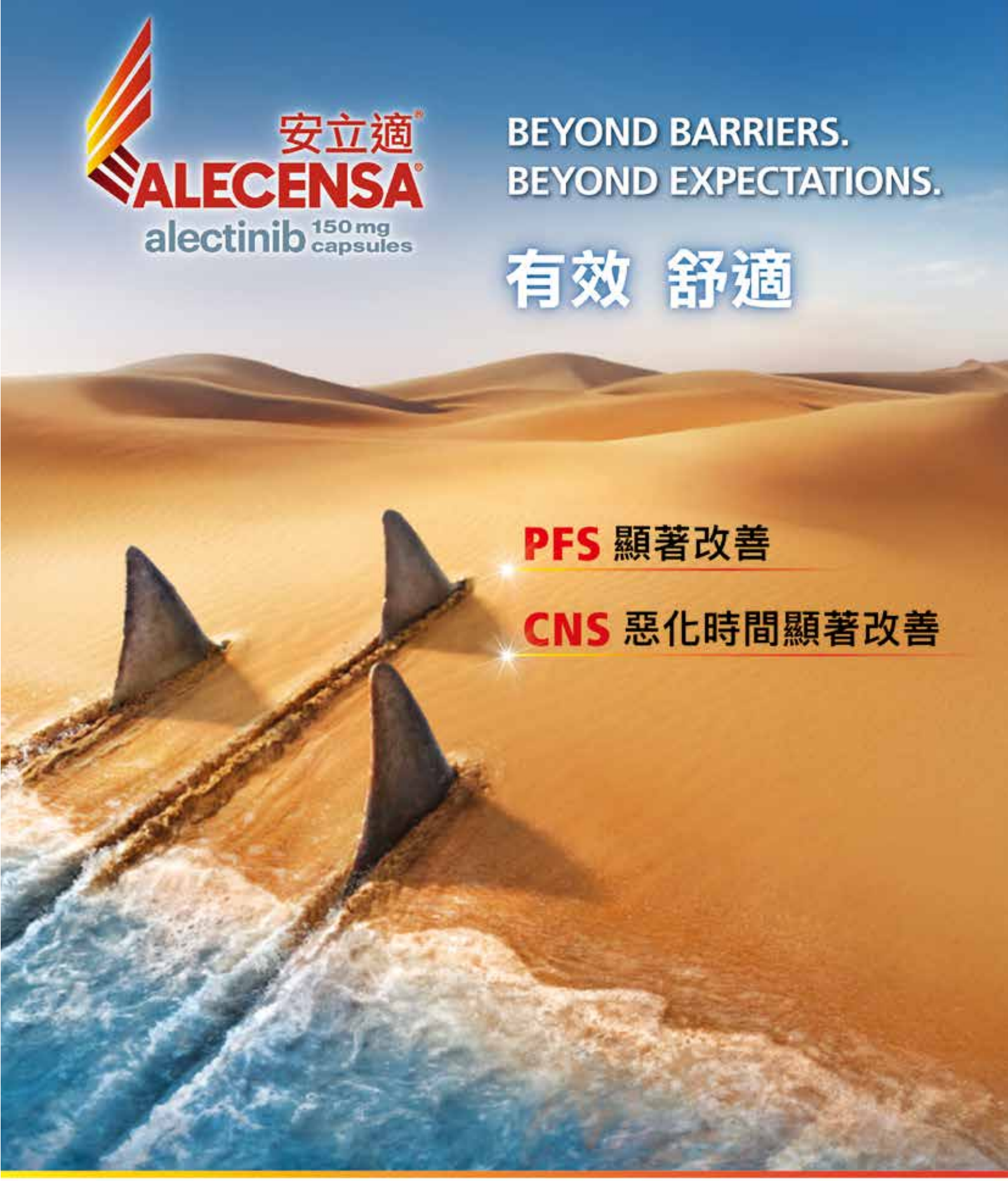

ALECENSA® 處方說明

適應症：ALECENSA® 適用於 ALK 陽性的晚期非小細胞肺癌 (NSCLC) 患者。

用法用量：ALECENSA® 的建議劑量為 600 毫克與食物併服每日兩次。應持續服用 ALECENSA®，直到出現疾病惡化的現象或無法耐受的毒性反應為止。如加打開膠囊或將膠囊內容物溶化使用。如果漏服一劑 ALECENSA®，或是在服用一劑 ALECENSA® 後發生預吐反應，應於規定的時間服用下一劑。

警語：可能不良反應包括肝毒性、間質性肺病 (ILD) / 肺炎、腎功能不全、心搏徐緩、橫紋肌溶與肌酸磷酸激酶 (CPK) 升高、胚胎-胎兒毒性等。

20-ALC-06-A

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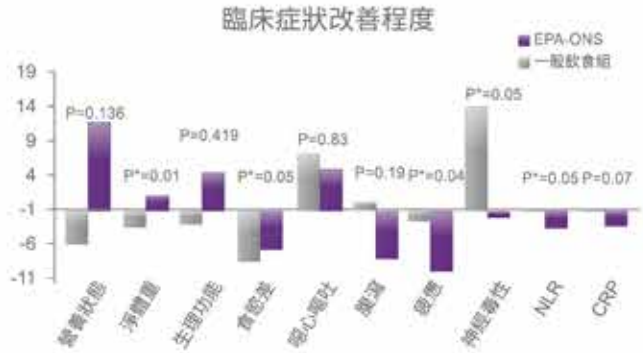
癌症治療副作用[1]緩解全能組

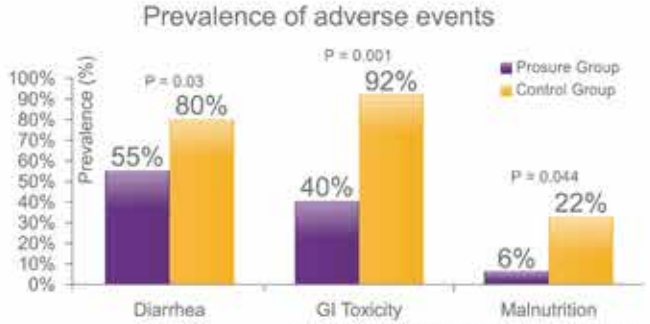
有效減緩副作用 幫助完成治療

亞培倍力素® ✓ 獨特醫學配方 符合7大癌症學會建議[2]
✓ 幫助改善營養狀態 減緩多種治療過程之不適[3,4]

92位晚期非小細胞肺癌患者，在2次化療期間，隨機分配給予Prosure(2罐/天)或等熱量之一般飲食



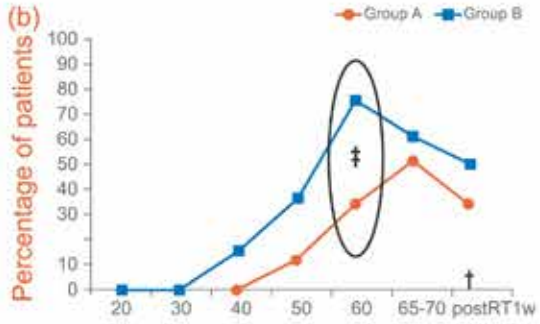
80位預計接受放、化療之晚期大腸直腸癌患者，分為兩組(n=40/group)，分別給予Prosure(2罐/天)或不使用任何營養品



Kibe D et al. *Clin Nutr Suppl* 2012; 7(S1):165 (PP068-MON).

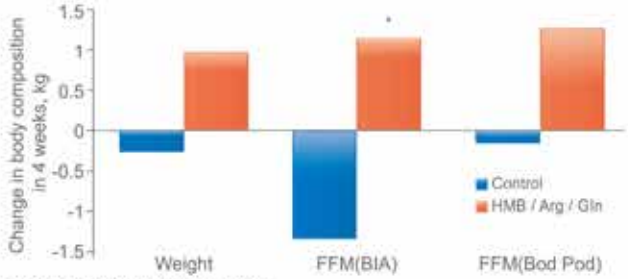
亞培基速得 ✓ 3合1胺基酸配方 百種傷口修復經驗[5]
✓ 協助預防放療皮膚炎、改善體重下降及受體組織流失[6,7]

40位(41-76 yrs)採用CCRT療法的頭頸癌患者於治療第1天至療程結束後1周分別補充基速得組每天2包或沒有補充特殊營養品



放射線劑量60Gy時，基速得組出現≥ Gr ade2 放射性皮膚炎比例明顯較低

- 32位體重下降至少5%之腫瘤病患，給予24週Abound (2包/天)或非必需胺基酸混合物，每4週進行一次體位及身體組成檢測。
- 於4週後，使用Abound之患者體重顯著上升，在BIA及Bod Pod下，除脂體重 (FFM, fat-free mass)均顯著增加。



BIA:bioelectrical impedance analysis
Bod Pod:air displacement plethysmography

*特殊營養食品，使用前請諮詢醫師或營養師 1.指可幫助患者提升營養狀態、降低發炎、維持體重、促進食慾、提升生活品質 2.係指符合 歐洲ESPEN、美國靜脈暨腸道營養學會ASPEN、西班牙腫瘤醫學會SEOM、美國飲食協會Oncology、美國營養學會AND、美國癌症學會、澳洲營養師協會建議癌症患者可攝取魚油EPA 3.*Clin Nutr Suppl* 2012; 7(S1):165. 4.Clin Nutr 2014; 33:1017-23..5.根據亞培收集傷口個數統計 6.Jpn J Clin Oncol 2014;44(5)422--427. 7.Am J Surg. 2002 Apr;183(4):471-9.

僅供醫療專業人員參考

TW.2021.20726

2021 台灣胸腔暨重症加護醫學會年會

暨台灣胸腔外科醫學會、台灣胸腔及心臟血管外科學會聯合會議暨台灣胸腔暨重症加護醫學會第 18 屆第 2 次會員大會

2021 Annual Congress of Taiwan Society of Pulmonary and Critical Care Medicine

And Taiwan Society of Thoracic Surgeons, Taiwan Association of Thoracic & Cardiovascular Surgery Joint Conference

Young Investigator Award

【**Young Investigator Award**】演講 8 分鐘，討論 2 分鐘

Yen-Hsiang Huang, M.D. 黃彥翔醫師台中榮民總醫院

The relative importance of predictive factors for single first-generation EGFR-TKI use for more than 5 years in patients with advanced non-small cell lung cancer: Taiwan multicenter TIPS-5 study

Yen-Hsiang Huang[1,2], Jen-Yu Hung[3,4,5], How-Wen Ko[6], Po-Lan Su[7], Chun-Liang Lai[8,9,10],Huang-Chih Chang[11,12], Te-Chun Hsia[13,14], Sheng-Hao Lin[15,16,17], Kuan-Li Wu[3,4,5,18], Cheng-Ta Yang[6,19], Wu-Chou Su[7,20,21], Yi-Chun Chu[8], Chin-Chou Wang[11,22,23], Wei-Yu Liao[24], Yen-Ting Lin[24,25,26], Ching-Hsiung Lin[15,16,17], Meng-Chih Lin[11,22], Kuo-Hsuan Hsu[27], Jeng-Sen Tseng[1,2,28], Tsung-Ying Yang[1], Kun-Chieh Chen[29,30,31],Mei-HsuanLee[32],Sung-LiangYu[25,33,34,35,36],Chao-ChiHo[24],Gee-ChenChang[2,28,29,30,31]

[1]DivisionofChestMedicine,DepartmentofInternalMedicine,TaichungVeteransGeneralHospital;
[2]InstituteofBiomedicalSciences,CollegeofLifeSciences,NationalChungHsingUniversity;
[3]DivisionofPulmonaryandCriticalCareMedicine,DepartmentofInternalMedicine,Kaohsiung Medical University Hospital, Kaohsiung Medical University; [4]DepartmentofInternalMedicine,KaohsiungMunicipalTa-TungHospital,KaohsiungMedical University;[5]DepartmentofInternalMedicine,SchoolofMedicine,CollegeofMedicine,KaohsiungMedical University;[6]DivisionofLungCancerandInterventionalBronchoscopy,DepartmentofThoracicMedicine,LinkouChang Gung Memorial Hospital;[7]DepartmentofInternalMedicine,NationalChengKungUniversityHospital,CollegeofMedicine, National Cheng Kung University;[8]Division of Pulmonology and Critical Care, Department of Internal Medicine, Buddhist Dalin Tzu Chi Hospital;[9]School of Medicine, Buddhist Tzu Chi University;[10]Institute of Molecular Biology Department of Life Science, National Chung Cheng University;[11]DivisionofPulmonaryandCriticalCareMedicine,DepartmentofInternalMedicine,Kaohsiung ChangGungMemorialHospital,ChangGungUniversityCollegeofMedicine;[12]Graduate Institute of Clinical Medical Sciences, Chang Gung University;[13]Department of Respiratory Therapy, China Medical University;[14]DivisionofPulmonaryandCriticalCareMedicine,DepartmentofInternalMedicine,ChinaMedical University Hospital;[15]DivisionofChestMedicine,DepartmentofInternalMedicine,ChanghuaChristianHospital;[16]InstituteofGenomicsandBioinformatics,NationalChungHsingUniversity;[17]Department of Recreation and Holistic Wellness, MingDao University;[18]GraduateInstituteofMedicine,CollegeofMedicine,KaohsiungMedicalUniversity; [19]Department of Respiratory Therapy, College of Medicine, Chang Gung University;[20]Institute of Clinical Medicine, National Cheng Kung University Hospital, College of Medicine, National Cheng Kung University;[21]Center of Applied Nanomedicine, National Cheng Kung University;[22]DepartmentofRespiratoryTherapy,KaohsiungChangGungMemorialHospital,ChangGung University College of Medicine;[23]Department of Respiratory Care, Chang Gung University of Science and Technology;[24]Department of Internal Medicine, National Taiwan University Hospital and National Taiwan University College of Medicine;[25]Graduate Institute of Clinical Medicine, National Taiwan University College of Medicine;[26]Department of Medicine, National Taiwan University Cancer Center;[27]DivisionofCriticalCareandRespiratoryTherapy,DepartmentofInternalMedicine,Taichung Veterans General Hospital;[28]Faculty of Medicine, School of Medicine, National Yang-Ming University;[29]DivisionofPulmonaryMedicine,DepartmentofInternalMedicine,ChungShanMedicalUniversity Hospital; [30]Institute of Medicine, Chung Shan Medical University;[31]School of Medicine, Chung Shan Medical University;[32]nstitute of Clinical Medicine, National Yang-Ming University;[33]DepartmentofClinicalLaboratorySciencesandMedicalBiotechnology,CollegeofMedicine, National Taiwan University;[34]Centers of Genomic and Precision Medicine, National Taiwan University;[35]Department of Laboratory Medicine, National Taiwan University Hospital;[36]InstituteofMedicalDeviceandImaging,CollegeofMedicine,NationalTaiwanUniversity

Background: The relative importance of predictive factors for advanced non-small cell lung cancer (NSCLC) patients on epidermal growth factor receptor (EGFR)-tyrosine kinase inhibitor (TKI) treatment remains unclear.

Materials and methods: We retrospectively enrolled advanced NSCLC patients with single first-generation EGFR-TKI treatment for ⩾5 years (Y) in Taiwan. Clinical data was collected and compared with those of another cohort with single first-line EGFR-TKI treatment for <5 Y. Plasma cell-free DNA (cfDNA) samples were collected from patient subsets, pre- and post-TKI, in the >5 Y group.

Results: Overall, 128 and 278 patients were enrolled in the ⩾5 Y and <5 Y groups, respectively. Significant factors in the multivariate analysis of patients' characteristics including Eastern Cooperative Oncology Group performance status 0–1, postoperative recurrence, without brain metastasis, oligometastasis (each score of 2), female sex, erlotinib use, and without bone metastasis (each score of 1), were incorporated into a risk scoring system. The area under the receiver operating characteristic curve was 0.82 [95% confidence interval (CI): 0.78–0.86]. Of the plasma cfDNA samples from 33 patients in the ⩾5 Y group, only 1 had a T790M in 25 patients without progressive disease. In 27 patients with single agent use for ⩾96 months, 22 (81.5%) received local treatment (surgery or radiotherapy) for the primary lung tumor before and during TKI treatment.

Conclusion: For NSCLC patients with single first-generation EGFR-TKI use for ⩾5 Y, factors with different relative importance exist and the risk-scoring model is feasible with modest accuracy. The role of local treatment for primary tumors in patients with long-term TKI use requires further investigation.

【**Young Investigator Award**】演講 8 分鐘，討論 2 分鐘

Yen-Ting Lin, M.D. 林彥廷醫師國立台灣大學醫學院附設醫院

Resistance profiles of anaplastic lymphoma kinasetyrosine kinase inhibitors in advanced non-small-celllung cancer: a multicenter study using targeted next-generationsequencing

Yen-TingLin[1,2,3],Chi-LuChiang[4,5],Jen-YuHung[6,7,8],Mei-HsuanLee[7],Wu-ChouSu[9],Shang-YinWu[9],
Yu-FengWei[10,11],Kang-YunLee[12,13],Yen-HanTseng[5,12],JianSu[14],Hsin-PeiChung[14],Chih-BinLin[15], Wen-Hui Ku[16], Tsai-Shin Chiang[16], Chao-Hua Chiu[4,5], Jin-YuanShih[1,2]

[1]GraduateInstituteofClinicalMedicine,NationalTaiwanUniversityCollegeofMedicine,Taipei, Taiwan;
[2]DepartmentofInternalMedicine,NationalTaiwanUniversityHospitalandNationalTaiwan University College of Medicine, Taipei,Taiwan; [3]DepartmentofMedicine,NationalTaiwanUniversityCancerCenter,Taipei,Taiwan;[4]Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan [5]SchoolofMedicine,NationalYangMingChiaoTungUniversity,Taipei,Taiwan; [6]Department of Internal Medicine, School of Medicine, College of Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan; [7]Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan; [8]Department of Internal Medicine, Kaohsiung Municipal Ta-Tung Hospital, Kaohsiung, Taiwan;[9]Department of Oncology, National Cheng Kung University Hospital, College of Medicine, National Cheng Kung University, Tainan, Taiwan; [10]School of Medicine for International Students, College of Medicine, I-Shou University, Kaohsiung, Taiwan; [11]Division of Chest Medicine, Department of Internal Medicine, E-Da Hospital, Kaohsiung, Taiwan;[12]Division of Pulmonary Medicine, Department of Internal Medicine, Shuang Ho Hospital, Taipei Medical University, New Taipei City, Taiwan; [13]Division of Pulmonary Medicine, Department of Internal Medicine, School of Medicine, College of Medicine, Taipei Medical University, Taipei, Taiwan; [14]Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, MacKay Memorial Hospital, Taipei, Taiwan;
[15]ChestSection,DepartmentofInternalMedicine,HualienTzuchiHospital,BuddhistTzuchiMedical Foundation, Taiwan; [16]Department of Molecular Medicine, Taipei Institute of Pathology, Taipei, Taiwan

Introduction: Anaplastic lymphoma kinase (ALK) - tyrosine kinase inhibitors (TKIs) crizotinib, ceritinib, alectinib, brigatinib, and lorlatinib are approved for advanced non- small cell lung cancer (NSCLC) with ALK rearrangement. However, the mechanisms of resistance remain largely unclear.

Methods: This prospective multicenter study analyzed cell-free DNA (cfDNA) and/or cancer tissues of patients with NSCLC after progression on ALK TKI(s), using targeted next-generation sequencing. Patients' clinicopathologic characteristics and treatment outcomes were analyzed.

Results: Overall, 88 patients were enrolled; 31 cancer tissue and 90 cfDNA samples were analyzed. Five (16%) ALK mutations (L1196M x2, I1171T, D1203N, G1269A/F1174L) and 3 possible bypass mutations (NRAS G12V, EGFR R108K, PIK3CA E545K) were found in 32 crizotinib-resistant cancers. Four (22%) ALK mutations (G1128A, G1202R, G1269A, I1171T/E1210K) and 3 possible bypass mutations (KIT D820E, MET E1012*, EGFR P265_C291del) were found in 18 ceritinib-resistant cancers. Four (17%) ALK mutations (G1202R x2, W1295C, G1202R/L1196M) and 1 possible bypass mutation (EGFR P753S) were found in 24 alectinib-resistant cancers. Two (11%) ALK mutations (G1202R/G1269A x2) and 2 possible bypass mutations (BRAF V600E, MET D1246N) were found in 18 lorlatinib-resistant cancers. In patients with simultaneous paired tissue and cfDNA samples (n=20), mutations were identified in 9 (45%) and 6 (30%) cases, respectively; the concordance rate was 45%.

Conclusions: The mechanisms of ALK TKI resistance were heterogeneous; ALK mutations were found in less than one-third of patients. Compound ALK mutations, which may confer lorlatinib resistance, may occur in crizotinib, ceritinib, and alectinib- resistant lung cancers.

【**Young Investigator Award**】演講 8 分鐘，討論 2 分鐘

Allen Chung-Cheng Huang, M.D. **黃宗楨醫師**林口長庚紀念醫院

First- or second-generation epidermalgrowth factor receptor tyrosine kinaseinhibitors in a large, real-world cohort ofpatients with non-small cell lung cancer

Allen Chung-Cheng Huang[1], Chi-Hsien Huang[1], Jia-Shiuan Ju[1], Bi-Hung Tung[1], Tzu-Hsuan Chiu[1],Chin-Chou Wang[2], Chien-Ying Liu[1], Fu-Tsai Chung[1], Yue-Fu Fang[1], Yi-Ke Guo[3], Chih-Hsi Kuo[1],Cheng-Ta Yang[1]

[1]Department of Thoracic Medicine, Chang Gung Memorial Hospital, Linkou Branch, Taoyuan, Taiwan

[2]Division of Pulmonary & Critical Care Medicine, Kaohsiung Chang Gung Memorial Hospital,Kaohsiung, Taiwan

[3]Data Science Institute, Imperial College, London, UK

Background: Limited large real-world cohorts of non-small cell lung cancer (NSCLC) patient withepidermal growth factor receptor (EGFR) mutation were reported regarding the comparison of firstand second-generation EGFR tyrosine kinase inhibitors (TKIs).

Methods: 612 advanced NSCLC patients with common EGFR mutation receiving first-linegefitinib/erlotinib and afatinib were grouped and propensity-score matched. Progression-freesurvival (PFS), overall survival (OS) and secondary T90M mutation were analysed.

Results: The gefitinib/erlotinib and afatinib groups each contained 206 patients after matching.Patients receiving afatinib, compared to gefitinib/erlotinib, showed a higher median PFS (16.3 vs.14.2 months; log-rank test p=0.020) and risk reduction of progression (HR 0.73 [95% CI, 0.57-0.94]; p=0.017). The median OS (42.0 vs. 34.3 months; log-rank test p=0.300) and risk reduction ofdeath (HR 0.84 [95% CI, 0.61-1.16]; p=0.294) did not significantly differ. The T790M positivity wassignificantly higher in the gefitinib/erlotinib group compared to the afatinib group (70.9% vs. 44.6%,p<0.001). Multivariate analysis demonstrated afatinib treatment independently predicted a lowerT790M positivity (OR 0.27 [95% CI, 0.14-0.53]; p<0.001), whereas PFS of EGFR-TKI treatment ≥12 months (OR 3.00 [95% CI, 1.56-5.98]; p=0.001) and brain metastasis (OR 2.12 [95% CI, 1.08-4.26]; p=0.030) were predictive of a higher T790M positivity. A sequential third-generation EGFRTKItreatment was administered in 43 patients in whom the median OS of second-third-generationand first-third-generation EGFR-TKI sequence were 38.8 and 29.1 months, respectively.

Conclusion: Afatinib, compared to gefitinib/erlotinib, demonstrated a higher treatment efficacy anda lower secondary T790M positivity in a real-world large cohort of Asian EGFR-mutated NSCLCpatients.

【楊思標教授紀念獎】演講 8 分鐘，討論 2 分鐘

Hung-Ling Huang, M.D. 黃虹綾醫師高雄市立大同醫院

Completion Rate and Safety of Programmatic Screeningand Treatment for Latent Tuberculosis Infection inElderly Patients With Poorly Controlled Diabetic Mellitus:A Prospective Multicenter Study

Hung-Ling Huang[1,2,3,4,a], Wei-Chang Huang[5,6,7,8,9,a],Kun-Der Lin[4,10], Shin-Shin Liu[11], Meng-Rui Lee[12,13,14], Meng-Hsuan Cheng[2,3,4], Chun-ShihChin[5], Po-Liang Lu[3,15], Chau-Chyun Sheu[2,3,4], Jann-Yuan Wang[13,14,b], I-Te Lee[9,16,17,18,b], Inn-Wen Chong[2,3,4,19,20]

[1]Kaohsiung Municipal Ta-Tung Hospital, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan; [2]Division of Pulmonary and Critical Care Medicine, Kaohsiung Medical University Hospital,Kaohsiung, Taiwan; [3]Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan; [4]Graduate Institute of Medicine, College of Medicine, Kaohsiung MedicalUniversity, Kaohsiung, Taiwan; [5]Division of Chest Medicine, Department of Internal Medicine, Taichung Veterans General Hospital, Taichung, Taiwan; [6]Department of Medical Technology, Jen-TehJunior College of Medicine, Nursing and Management, Miaoli, Taiwan; [7]Department of Industrial Engineering and Enterprise Information, Tunghai University, Taichung, Taiwan; [8]Ph.D. Program inTranslational Medicine, National Chung Hsing University, Taichung, Taiwan; [9]School of Medicine, Chung Shan Medical University, Taichung, Taiwan; [10]Endocrinology and Metabolism, Departmentof Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan; [11]Nursing Department, Taichung Veterans General Hospital, Taichung, Taiwan; [12]Department of Internal Medicine,National Taiwan University Hospital, Hsin-Chu Branch, Hsin-Chu, Taiwan; [13]Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan; [14]National Taiwan University,College of Medicine, Taipei, Taiwan; [15]Center for Liquid Biopsy and Cohort Research, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan; [16]Division of Endocrinology and Metabolism,Department of Internal Medicine, Taichung Veterans General Hospital, Taichung, Taiwan; [17]School of Medicine, National Yang-Ming University, Taiwan; [18]College of Science, Tunghai University,Taiwan; [19]Departments of Respiratory Therapy, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan; and [20]Adjunct Professor, Department of Biological Science and Technology National ChiaoTung University, Taiwan

Background. Poor control of diabetes mellitus (DM) increases active tuberculosis (TB) risk.
Understanding risk factors for latent TB infection (LTBI) in this population and intervention completion rates is crucial for policy making.

Methods. Under a collaborative multidisciplinary team consisting of public health professionals,endocrinologists, andpulmonologists, patients aged >45 years with poorly controlled DM (pDM), defined as having aglycated hemoglobin level of ≥9%
within the preceding year, were enrolled by endocrinologists from 2 hospitals; these patients underwentLTBI screening by usingQuantiFERON (QFT). Once-weekly isoniazid and rifapentine for 12 weeks (3HP) or daily isoniazid for9 months (9H) was administered
by pulmonologists. QFT-positivity predictors were evaluated using logistic regression. Completion ratesand safety were alsoinvestigated.

Results. Among 980 patients with pDM (age: 64.2 ± 9.7 years), 261 (26.6%) were QFT-positive. Age,DM duration, chronickidney disease stage ≥3, and dipeptidyl peptidase-4 inhibitor use, not using metformin, were associatedwith QFT-positivity.Preventive therapy (3HP: 138; 9H: 62) was administered in 200 (76.6%) QFT-positive patients. Thecompletion rates of 3HP and9H were 84.1% and 79.0%, respectively (P = .494). Nine (6.5%) and zero patients in the 3HP and 9Hgroups, respectively, developedsystemic drug reactions (P = .059); 78.3% and 45.2% had ≥1 adverse drug reactions (P < .001); andpost-treatment QFT conversionrates were 32% and 20%, respectively (P = .228).

Conclusions. LTBI prevalence exceeds 25% in elderly patients with pDM. Under care from acollaborative multidisciplinaryteam, the completion rate of preventive therapy, regardless of regimen could approach, or even exceed80% in this population.

2021 台灣胸腔暨重症加護醫學會年會

暨台灣胸腔外科醫學會、台灣胸腔及心臟血管外科學會聯合會議暨台灣胸腔暨重症加護醫學會第 18 屆第 2 次會員大會

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「胸腔醫學雜誌」優秀論文獎

【胸腔醫學雜誌】優秀論文獎第一名

Pi-Hua Lin RT 林碧華呼吸治療師高雄榮民總醫院呼吸治療科

Comparison of Effectiveness of Proportional AssistVentilation and Pressure Support Ventilation forWeaning Adult Patients from Prolonged MechanicalVentilation: A Randomized Controlled Trial

Pi-Hua Lin[1], Chiu-Fan Chen[2,3], David Lin Lee[2,4]
[1]Division of Respiratory Therapy, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan
[2]Division of Chest Medicine, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan
[3]Department of Internal Medicine, Taitung Branch, Taipei Veterans General Hospital, Taitung, Taiwan
[4]Department of Medicine, National Yang-Ming University, Taipei, Taiwan
Address reprint requests to: Dr. Chiu-Fan Chen, Division of Chest Medicine, Kaohsiung Veterans General HospitalNo. 386 Dazhong First Rd., Zuoying Dist., Kaohsiung City 81362, Taiwan

ABSTRACT

Background: Proportional assist ventilation with load-adjustable gain factors (PAV+) is apromising mode with better patient synchrony and weaning advantages. This study aimed tocompare the effectiveness of PAV+ and pressure support ventilation (PSV) for weaning adultpatients from prolonged mechanical ventilation (PMV).

Methods: Patients with PMV were recruited for this prospective trial. Patients wererandomly assigned to receive PAV+ or PSV as a weaning mode. Weaning outcomes andmortality were evaluated.

Results: A total of 36 patients completed the study (18 in the PAV+ group and 18 in thePSV group). The peak inspiratory pressure and tidal volume initially were significantly lowerin the PAV+ group than in the PSV group. Both peak inspiratory pressure and tidal volumedecreased during the weaning process in both groups, and the PAV+ group showed a smallertidal volume change. Outcome analysis showed that the PAV+ group possibly had betterresults in the 28-day weaning success rate, weaning duration, and hospital mortality than thePSV group, but significance was not achieved.

Conclusion: This study proved the effectiveness of the PAV+ mode for weaning patientswith PMV. PAV+ may be a potential mode for weaning patients with PMV in the future. ***(ThoracMed 2021; 36: 81-94)***

Key words: pressure support ventilation, prolonged mechanical ventilation, proportional assistventilation, respiratory failure, weaning

【胸腔醫學雜誌】優秀論文獎第二名

Shih-Yu Chen, M.D. 陳詩宇醫師國立台灣大學醫學院附設醫院內科部胸腔科

Change in End-Expiratory Lung Volume in Response to PEEP Adjustment and Extubation Outcome among Mechanically Ventilated Patients

Shih-Yu Chen[1], Hui-Chuan Chen[2], Sheng-Yuan Ruan[1], Chun-Ta Huang[1], Jung-Yien Chien[1], Ping-Hung Kuo[1], Huey-Dong Wu[1]

[1]Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, National Taiwan UniversityHospital and College of Medicine, Taipei, Taiwan
[2]Division of Respiratory Therapy, Department of IntegratedDiagnostic and Therapeutics, National Taiwan University Hospital, Taipei, Taiwan,
Shih-Yu Chen and Hui-Chuan Chen contributed equally to this work.
Address reprint requests to: Dr. Sheng-Yuan Ruan, Division of Pulmonary and Critical Care Medicine, Department ofInternal Medicine, National Taiwan University Hospital, No. 7, Chung-Shan South Road, Taipei 10002, Taiwan.

ABSTRACT

Introduction: End-expiratory lung volume (EELV) is measured at the average endexpiratorylevel in patients on mechanical ventilation. EELV may substantially change afteraltering positive end-expiratory pressure (PEEP) levels. The change in EELV between differentPEEP levels before extubation may serve as a predictor for extubation outcome.

Methods: This prospective observational study enrolled 75 intubated patients ready forextubation. EELV was measured at different PEEP levels before extubation using the nitrogenbreath washout method. Areas under the receiver operating curve (AUROC) were used toevaluate the discriminative capacity of EELV for extubation outcome.

Results: The median age of the study cohort was 71 [IQR, 58-81] years, and pneumonia(60%) was the leading cause of respiratory failure. After extubation, 12 patients (16%) requiredreintubation within 48 hours. The EELV measured at a PEEP of 5 cm H_2O was significantlyhigher than that measured at zero-PEEP (25.5 mL/Kg versus 23.3 mL/Kg, $p<0.001$). Thesuccessfully extubated patients had a greater change in EELV than those with extubationfailure (2.8 mL/Kg versus 0.9 mL/Kg, $p=0.09$). The discriminative capacity for the change inEELV was only acceptable in the total cohort (AUROC, 0.65, 95% CI, 0.49-0.82). Subgroupanalysis was performed for different etiologies of respiratory failure.

Conclusion: The change in EELV in response to PEEP adjustment was not a goodpredictor for extubation outcome in an unselected population, although the change in EELVappeared greater in successfully extubated patients than in patients with extubation failure.***(Thorac Med 2020; 35: 178-185)***

Key words: mechanical ventilation, end-expiratory lung volume (EELV), functional residual capacity (FRC),weaning parameters

【胸腔醫學雜誌】優秀論文獎第三名

Ching-Han Lai, M.D. 賴勁翰醫師成大醫院內科部

Meta-Analysis of Relationship Between EGFRMutations, Risk of Brain Metastasis and Survival inNSCLC Patients

Ching-Han Lai[1,6], Sheng-Yuan Wang[1,6], Szu-Chun Yang[1], Yi-Lin Wu[2],Fu-Chang Hu[3,4], Po-Lan Su[1], Jeng-Shiuan Tsai[1,5], Chien-Chung Lin[1,5]

[1]Department of Internal Medicine, National Cheng Kung University Hospital, College of Medicine, National ChengKung University, Tainan, Taiwan
[2]Department of Nursing, National Cheng Kung University Hospital, College of Medicine, National Cheng KungUniversity, Tainan, Taiwan
[3]Graduate Institute of Clinical Medicine and School of Nursing, College of Medicine, National Taiwan University,Taipei, Taiwan
[4]International-Harvard Statistical Consulting Company, Taipei, Taiwan
[5]Institute of Clinical Medicine, National Cheng Kung University Hospital, College of Medicine, National ChengKung University, Tainan, Taiwan
[6]These authors contributed equally to this work. Acronyms: BM, brain metastasis; CT, computed tomography; EGFR,epidermal growth factor receptor; GAM, generalized additive model; GOF, goodness of fit; MRI, magnetic resonanceimage; NA, not applicable; NSCLC, non-small cell lung cancer; OS, overall survival; TKI, tyrosine kinase inhib
Address reprint requests to: Dr. Jeng-Shiuan Tsai, Department of Internal Medicine, National Cheng Kung UniversityHospital, College of Medicine, National Cheng Kung University, No.138 Sheng-Li Road, Tainan 704, Taiwan

ABSTRACT

Introduction: To investigate whether epidermal growth factor receptor (EGFR) mutationsare associated with the risk of developing brain metastasis (BM) or with overall survival afterBM in non-small cell lung cancer (NSCLC) patients.

Methods: We systematically performed meta-analyses and meta-regression to examinethe associations. Seventeen studies involving 8,010 NSCLC patients were included foranalysis.

Results: Meta-analysis of 12 studies (5,962 patients) yielded a pooled odds ratio of 1.70(95% confidence interval (CI): 1.47–1.96, $p < 0.001$), and meta-regression indicated thatpatients with EGFR mutations had a higher risk of BM at initial diagnosis. Meta-analysis of 11studies (3,170 patients) yielded a pooled odds ratio of 2.20 (95% CI: 1.76–2.75, $p < 0.001$),and meta-regression indicated that patients with EGFR mutations also had a higher risk ofsubsequent BM. Finally, meta-analysis of 5 studies yielded a pooled hazard ratio of 0.29(95% CI: 0.22–0.39, $p < 0.001$), indicating EGFR mutations are associated with longer overallsurvival in NSCLC patients with BM.

Conclusion: Although EGFR mutations increased the risk of BM in NSCLC patients, theyalso predicted longer overall survival in those with BM. ***(Thorac Med 2021; 36: 106-122)***

Key words: EGFR mutation, brain metastasis, overall survival, NSCLC, meta-analysis, meta-regression

2021 台灣胸腔暨重症加護醫學會年會

暨台灣胸腔外科醫學會、台灣胸腔及心臟血管外科學會聯合會議暨台灣胸腔暨重症加護醫學會第 18 屆第 2 次會員大會

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優秀學術論文摘要

Intervention Bronchoscopy

Diagnosis

Thoracic Oncology

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA01

探討於支氣管鏡檢查時利用人工智慧協助判讀支氣管鏡超音波影像之合適性

曾怡瑄, 于鎧綸, 楊漢清, 劉家榮, 吳常瑋, 郭柏志, 李孟叡, 黃俊達, 柯政昌, 何肇基, 施金元, 余忠仁

國立清華大學資訊工程學系, 新竹台大分院胸腔內科, 台大醫學院臨床醫學研究所, 台大醫院胸腔內科

The feasibility of artificial intelligence on endobronchial ultrasound images interpretation during bronchoscopy

Yi-Shiuan Tseng[1], Kai-Lun Yu[2,3], Han-Ching Yang[2], Chia-Jung Liu[2], Chang-Wei Wu[2], Po-Chih Kuo[1], Meng-Rui Lee[2,4], Chun-Ta Huang[4], Jen-Chung Ko[2], Chao-Chi Ho[4], Jin-Yuan Shih[3,4], Chong-Jen Yu[2,4]

Department of Computer Science, National Tsing Hua University, Taiwan[1]

Department of Internal Medicine, National Taiwan University Hospital, Hsin-Chu Branch, Taiwan[2]

Graduate Institute of Clinical Medicine, College of Medicine, National Taiwan University, Taiwan[3]

Department of Internal Medicine, National Taiwan University Hospital, Taiwan[4]

Purpose: The radial endobronchial ultrasound (rEBUS) is an important technique for localizing lung lesions in transbronchial biopsy. However, the use of artificial intelligence (AI) for rEBUS images identification and differentiation remains to be investigated.

Materials and Methods: A total of 779 rEBUS images from 260 consecutive patients in National Taiwan University Hospital-Hsinchu branch (NTUH-HC) were collected for model training (587 images, 208 patients) and validation (182 images, 52 patients). A total of 380 rEBUS images from 215 patients in NTUH Taipei (NTUH-TPE) and 27 images from 6 patients in NTUH Biomedical Park (NTUH-BIO) were collected for external testing. We used a convolutional neural network (CNN), EfficientNet as the model architecture for classifying rEBUS images into malignant and benign. We first used the Hough circle transform to automatically locate the probe center. Image augmentation (e.g., rotating) was implemented to balance the numbers of images of malignant and benign. Finally, the augmented images from NTUH-HC were used to train the model and the performance was evaluated on images from NTUH-TPE/NTUH-BIO.

Results: In the internal validation in NTUH-HC for malignant lesion detection, the sensitivity, specificity, and area under the receiver operating characteristic curve (AUC) were 85%, 97%, and 0.88 (95% CI: 83% to 93%), respectively. For the external validation in NTUH-TPE, the model achieved a sensitivity, specificity, and the AUC of 21%, 91%, and 0.66 (95% CI: 61% to 72%), respectively. When testing on NTUH-BIO data, the model achieved a sensitivity of 29%, specificity of 100%, and AUC of 0.85 (95% CI: 70% to 99%).

Conclusions: The CNN-based algorithm was a feasible AI method to classify images of rEBUS during bronchoscopy and exerted high specificity across sites. The proposed method can potentially be used as an adjunct to EBUS in transbronchial biopsy, serving as a rule-in tool in malignant lesion detection.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA02

利用深度學習模型從胸部 X 光辨別非結核分枝桿菌菌種:一個概念驗證研究

陳靖元[1], 劉家榮[2,3], 吳常瑋[2,3], 耿立達[2,3], 郭柏志[1], 李孟叡[2,3], 王振源[3], 施金元[3], 余忠仁[2,3]

國立清華大學資訊工程學系[1], 新竹臺大分院內科部[2], 臺大醫院內科部[3]

Deep learning for identifying and differentiating nontuberculous mycobacterium species from chest x-rays: a proof-of-concept study

Ching-Yuan Chen[1], Chia-Jung Liu[2,3], Chang-Wei Wu[2,3], Li-Ta Keng[2,3], Po-Chih Kuo[1], Meng-Rui Lee[2,3], Jann-Yuan Wang[2,3], Jin-Yuan Shih[3], Chong-Jen Yu[3]

Department of Computer Science, National Tsing Hua University[1], Department of Internal Medicine, National Taiwan University Hospital Hsin-Chu Branch[2]; Department of Internal Medicine, National Taiwan University Hospital[3]

Purpose: Nontuberculous mycobacterial lung disease (NTM-LD) is an emerging disease which could lead to insidious deteriorating clinical course and cause lung destruction as well as function decline. NTM species identification is essential because it guides the management and treatment regimens. However, such a process is time consuming and may not be readily feasible in many hospital-based laboratories. In this study, we developed a two-stage transfer learning-based model for chest X-ray (CXR) for species identification in early stage.

Materials and Methods: The model was based on Densenet-121 architecture and pre-trained with a publicly available dataset, MIMIC-CXR, and two local datasets from National Taiwan University Hospital (NTUH) and its Hsinchu branch (NTUH-Hsinchu). In the first pre-training stage, 248,285 images from MIMIC-CXR were used to predict 14 radiographic findings. Thereafter, 900 images from NTUH were used to classify between NTM-LD (n=300), tuberculosis (n=300), and the others (n=300). Finally, in NTUH and NTUH-Hsinchu datasets, we selected 1,268 CXRs from the patients with NTM species present in their pulmonary samples (*M. gordonae*: 413; *M. kansasii*: 137; *M. abscessus*: 389; *M. avium* complex (MAC): 329). All images were cropped based on the automatic lung segmentation algorithm and were split into training (1,100 images, including 200 validation data) and test (168 images) sets. The model was then used to identify species from the CXRs in the test set and the diagnostic performance was measured using the area under the receiver operating characteristic curve (AUC).

Results: The model demonstrated an accuracy rate of 0.71 and AUC of 0.69 (95% confidence interval: 0.59-0.8) for MAC identification. With optimal cutoff, sensitivity and specificity were 0.57 and 0.76, respectively. Also, by balancing case number between species, our model exerted an AUC of 0.72 and accuracy rate of 0.63 on differentiating between *M. gordonae* and other NTM species.

Conclusions: By using two-stage transfer learning, data augmentation, and segmentation, our study revealed that while differentiating NTM species from chest X-rays remains difficult, deep learning still holds potential for early screening for NTM species, especially MAC and *M. gordonae* which are two representative species for typical NTM-LD and mere colonizers.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA03

探討 EGFR 突變之肺腺癌族群，腦脊髓檢體之基因突變及腦膜轉移發生時序性及其相關之預後

EGFR-mutant lung adenocarcinoma patients with leptomeningeal metastasis: detection of EGFR mutations in cerebrospinal fluids and the impact of timing of metastasis occurrence

廖培雅[1],歐偉凡[1],楊宗穎[1],徐國軒[1],陳焜結[2],張基晟[2],黃彥翔[1*],曾政森[1*]

Pei-Ya Liao[1], Wei-Fan Ou[1], Tsung-Ying Yang[1], Kuo-Hsuan Hsu[1], Kun-Chieh Chen[2], Gee-Chen Chang[2], Yen-Hsiang Huang[1*], Jeng-Sen Tseng[1*]

[1]Division of Chest Medicine, Taichung Veterans General Hospital; [2]Division of Pulmonary Medicine, Chung Shan Medical University Hospital & School of Medicine, Chung Shan Medical University; [*]Correspondence

Background: Lung cancer patients with leptomeningeal metastasis (LM) are associated with a worse outcome.[1,2] However, the relevance between the clinical presentations, brain image findings, and biomarker assessment of cerebrospinal fluids (CSF) is not well elucidated and the impact of timing of LM occurrence on the patients' outcome remains unclear.

Methods: Advanced *EGFR*-mutant lung adenocarcinoma patients with cytologically-confirmed LM from 2013 to 2019 at Taichung Veterans General Hospital were included for analysis. All patients were required to receive first-line EGFR-TKI treatment. We aim to explore the correlation of the severity of LM on brain MRI with the clinical presentations and results of CSF *EGFR* mutation testing and attempt to clarify the impact of timing of LM occurrence.

Results: A total of 43 patients were included. Twenty patients (46.5%) were female, 30 patients (69.8%) were non-smokers, and 28 patients (65.1%) had ECOG PS 0-1. LM occurred before (early-onset) and after (late-onset) first-line EGFR-TKI in 8 and 35 patients respectively. Amongst 42 patients whose CSF specimens were collected after progression to EGFR-TKI, 8 (19.0%) patients had detectable CSF T790M. The severity of LM on brain MRI was based on the number of areas being involved by LM (cerebellum, brainstem, cerebrum, and ventricle). There was no significant association of the severity of LM on brain MRI with clinical presentations (seizure, neurological deficit, and intracranial pressure) (P = 1.000, 0.160, and 0.283, respectively). The severity of LM on brain MRI significantly correlated with the semi-quantification of CSF tumor cells (P = 0.013). The semi-quantification of CSF tumor cells could predict the detection rate of *EGFR* mutation of CSF specimens (P = 0.042). In multivariate analysis, history of third-generation EGFR-TKI treatment predicted a significantly longer overall survival (aHR 0.24 [95% CI 0.09-0.67], P = 0.006). The timing of LM occurrence did impact the outcome; late-onset LM was associated a longer overall survival then early LM (aHR 0.31 [95% CI 0.10-0.94], P = 0.038).

Discussion: Amongst *EGFR*-mutant lung adenocarcinoma patients, the severity of LM on brain MRI correlated significantly with the semi-quantification of CSF tumor cells, which could predict the *EGFR* detection rate of CSF specimens. Patients with early-onset LM were independently associated with a worse outcome.

References:

1. Li YS et al. Leptomeningeal Metastases in Patients with NSCLC with EGFR Mutations. J Thorac Oncol 2016; 11:1962-9.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA04

細胞凋亡配體(PD-L1)的表現與 Osimertinib 在 EGFR T790M 突變之肺腺癌的治療療效無關

楊景堯[1], 廖唯昱[1], 何肇基[1], 陳冠宇[1], 蔡子修[1], 許嘉林[1], 蘇剛毅[2], 張逸良[3*], 吳振都[3*], 許家齊[4,5], 徐偉勛[4], 李日翔[4], 林家齊[4], 施金元[1], 楊志新[4], 余忠仁[1]

臺大醫院胸腔內科, 臺大醫學院醫學檢驗暨生物技術學系, 臺大醫院病理科, 腫瘤內科, 臺大醫學院腫瘤醫學研究所

PD-L1 is not Associated with Osimertinib Treatment Efficacy in EGFR mutant Lung Adenocarcinoma Harboring Acquired T790M Mutation

Ching-Yao Yang[1], Wei-Yu Liao[1], Chao-Chi Ho[1], Kuan-Yu Chen[1], Tzu-Hsiu Tsai[1], Chia-Lin Hsu[1], Kang-Yi Su[2], Yih-Leong Chang[3*], Chen-Tu Wu[3*], Chia-Chi Hsu[4,5], Bin-Chi Liao[4], Wei-Hsun Hsu[4], Jih-Hsiang Lee[4], Chia-Chi Lin[4], Jin-Yuan Shih[1*], James Chih-Hsin Yang[4], Chong-Jen Yu[1]

1 Department of Internal Medicine, National Taiwan University Hospital and National Taiwan University College of Medicine, Taipei City, Taiwan

2 Department of Clinical Laboratory Sciences and Medical Biotechnology, National Taiwan University College of Medicine, Taipei City, Taiwan

3 Department of Pathology, National Taiwan University Hospital National Taiwan University Cancer Center and National Taiwan University College of Medicine, Taipei City, Taiwan

4 Department of Oncology, National Taiwan University Hospital, Taipei City, Taiwan

5 Graduate Institute of Oncology, College of Medicine, National Taiwan University, Taipei, Taiwan

Background: High PD-L1 expression well predicts treatment response of immune checkpoint inhibitors in non-small cell lung cancer. On the contrary, PD-L1 is associated with poor efficacy of first- and second-generation TKI in frontline treatment of EGFR mutant lung cancer. Whether PD-L1 is also predictive of clinical outcomes of EGFR T790M+ patients treated with osimertinib is still undetermined.

Materials and Methods: We retrospectively enrolled EGFR mutant patients who acquired T790M mutation after first- or second-generation TKI and who were treated with osimertinib. The re-biopsied tissue before osimertinib were stained for PD-L1 expression using Ventanna SP263 antibody.

Results: A total of 134 patients were enrolled in our study, of whom 72 were del19, 58 were L858R, and 4 patients were G719X as the initial EGFR mutation subtypes. Positive PD-L1 expression (TPS ≥1%) were found in 21 of 134 (15.7%) patients. The proportion of PD-L1 positivity was similar in different biopsied sites, and seemed to be slightly higher in del19/T790M compared to L858R/T790M tumors (PD-L1≥1% in del19/T790M vs L858R/T790M: 12/74, 6/58, p=0.114). Kaplan meier estimate revealed no significant difference of progression-free survival (PFS) in PD-L1 positive versus PD-L1 negative patients (PFS in PD-L1≥1% vs 0%: 19.8 vs 9.7 months, p=0.668). Multivariate analysis using cox proportional hazard model yielded that only age (≥70 vs <70, HR 0.674, 95% CI 0.458~0.993, p=0.046) and L858R (vs del19, HR 1.551, 95% CI 1.043~2.307, p=0.030) were independently predictive of osimertinib-related PFS.

Conclusion: Unlike first- or second- generation EGFR TKI, the PFS of osimertinib did not show any correlation with PD-L1 expression in EGFR T790M-positive adenocarcinoma.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA05

白血球介素-17A 基因多型性對台灣非小細胞肺癌表皮生長因子受體突變和腫瘤進展的潛在影響

李凱靈 [1,2]，賴宗慶 [3]，楊順發 [4,5]，簡銘賢 [1,6,7,8]

台北醫學大學醫學院臨床醫學研究所, 台北醫學大學附設醫院胸腔內科,台北萬芳醫院胸腔內科,中山醫學大學醫學研究所,中山醫學大學醫學研究臨床研究中心,萬芳醫院胸腔醫學研究中心,台北醫學大學附設醫院中草藥研究中心,台北醫學大學癌症轉譯研究中

Potential Impacts of *Interleukin-17A* Promoter Polymorphisms on the *EGFR* Mutation Status and Progression of Non-Small Cell Lung Cancer in Taiwan

Kai-Ling Lee[1,2], Tsung-Ching Lai[3], Shun-Fa Yang[4,5],Ming-Hsien Chien [1,6,7,8]

[1]Graduate Institute of Clinical Medicine, College of Medicine, Taipei Medical University, Taipei; [2]Division of Pulmonary Medicine, Department of Internal Medicine, Taipei Medical University Hospital,Taiwan;[3]Division of Pulmonary Medicine, Department of Internal Medicine, Wan Fang Hospital, Taipei Medical University, Taipei; [4]Institute of Medicine, Chung Shan Medical University, Taichung; [5]Department of Medical Research, Chung Shan Medical University Hospital, Taichung; [6]Pulmonary Research Center, Wan Fang Hospital, Taipei Medical University, Taipei; [7]Traditional Herbal Medicine Research Center, Taipei Medical University Hospital, Taipei ;[8]TMU Research Center of Cancer Translational Medicine, Taipei Medical University, Taipei,Taiwan

Purpose: The present study was designed to investigate the possible associations among IL-17A genetic polymorphisms, EGFR mutation status, and the clinicopathologic development of LUAD in a Taiwanese population.

Materials and Methods: Our study population consisted of 277 LUAD patients harboring the wild-type (WT) EGFR or a mutant (MT) EGFR. Four single-nucleotide polymorphisms (SNPs) of IL-17A in the peripheral blood, including rs8193036(C > T), rs8193037(G > A), rs2275913(G > A), and rs3748067(C > T) loci, were genotyped using a TaqMan allelic discrimination assay.

Results: Our results showed that none of these IL-17A SNPs were correlated with the risk of developing mutant EGFR. However, patients with a smoking habit who carried the GA genotype of IL-17A rs8193037 had a significantly lower susceptibility to EGFR mutations (adjusted odds ratio (AOR): 0.225; 95% confidence interval (CI): 0.056~0.900, $p = 0.035$). Moreover, compared to individuals carrying the CC genotype of rs8193036 at IL-17A, T-allele carriers (CT + TT) were at higher risk of developing more- advanced stages (stage III or IV; $p = 0.020$). In the WT EGFR subgroup analysis, IL-17A rs8193036 T-allele carriers had higher risks of developing an advanced tumor stage ($p = 0.016$) and lymphatic invasion ($p = 0.049$). Further analyses of clinical datasets revealed correlations of IL-17 receptor A (IL-17RA) and IL-17RC expressions with a poor prognosis of LUAD patients with a smoking history or with higher levels of tumor-infiltrating lymphocytes.

Conclusions : Our results suggested that two functional promoter polymorphisms of IL-17A, i.e., rs8193036 and rs8193037, were associated with the EGFR mutation status and progression in LUAD patients, indicating that these two genetic variants might act as possible markers for predicting patients' clinical prognoses.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA06

EGFR 酪胺酸激酶抑制劑之抗藥性機轉：一個前瞻性次世代定序之研究

林彥廷,[1,2] 何肇基,[2] 徐偉勛,[3] 廖唯昱,[2] 楊景堯,[2] 陳健添,[4] 蕭雯,[4] 施金元 [1,2]

台大癌醫綜合內科部,台大醫院內科部,台大醫院醫學研究部,行動基因 [4]

Resistance Profiles of EGFR Tyrosine Kinase Inhibitors in Advanced Non-small Cell Lung Cancer: A Prospective Study by Targeted Next-generation Sequencing

Yen-Ting Lin,[1,2]Chao-Chi Ho,[2] Wei-Hsun Hsu,[3] Wei-Yu Liao,[2] Ching-Yao Yang,[2]Kien Thiam Tan,[4] Wen Hsiao,[4] Jin-Yuan Shih[1,2]

Department of Medicine, National Taiwan University Cancer Center, [1] Department of Internal Medicine, National Taiwan University Hospital,[2] Department of Medical research, National Taiwan University Hospital,[3]ACT Genomics[4]

Introduction: EGFR tyrosine kinase inhibitors (TKIs) gefitinib, erlotinib, afatinib and osimertinib are approved for first-line advanced non-small cell lung cancer (NSCLC) with activating EGFR mutation. However, resistance mechanisms other than secondary T790M are still largely unclear.

Methods: In this prospective study, we analyzed NSCLC patients' cancer tissues and corresponding cell-free DNA (cfDNA) after EGFR TKI progression by targeted next-generation sequencing (NGS), ACTDrug® + and ACTMonitor® Lung, respectively. Patients' clinicopathologic characteristics and treatment outcomes were analyzed.

Results: Of all 60 patients with paired tissue and blood NGS, 15 received gefitinib, 27 received erlotinib, 16 received afatinib and 2 received osimertinib as first-line therapy.The EGFR mutation concordance rates between tissue and cfDNA were 86% for exon 19 deletion, 78% for L858R and 91% for T790M, respectively. T790M were found in 52% (30/58) of patients receiving gefitinib, erlotinib and afatinib, with 5 patient had T790M detected only in cfDNA. The overall survival after cfDNA collection (OS) was longer in patients without detectable variants from cfDNA (p=0.005) in T790M-positive patients. Twenty-five patients were subsequently treated with osimertinib andthe progression-free survival (PFS) of second-lineosimertinib was not different between cfDNA T790M-positive or negative patients (p=0.20). However, both the PFS and OS were longer in patients without detectable variants from cfDNA than patients with variants detected from cfDNA (p=0.04 and p=0.02 respectively). Among the 28 (48%) patients without T790M, 4 had ERBB2 copy number gain (CNG), 5 had MET CNG and 5 had EGFR CNG. One patient with MET CNG kept erlotinib and added-on capmatinib. Partial response (PR) achieved, with a PFS of 12.4 months. One patient treated with gefitinib had ERBB2 CNG at progression. She received afatinib plus bevacizumab, with PR and a PFS of 7.5 months.

For patients received first-line osimertinib, one had CCDC6-RET fusion and EGFR CNG. The other had MET CNG and EGFR CNG. Both of them received sequential atezolizumab, bevacizumab, pemetrexed and carboplatin. The PFS was 5.3+ and 4.6 months, respectively.

Conclusions: NGS at EGFR TKI progression provides more information for sequential anticancer therapy. Adding cfDNA NGS to tissue NGS may help to identify more T790M patients. Non-detectable variants in cfDNA NGS might predict better outcome in T790M-positive patients.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA07

共生的 EGFR 突變對帶有 L858R 突變的 NSCLC 患者接受 EGFR TKI 治療療效的影響

吳尚俊 [1,2], 余忠仁 [2,3], 楊志新 [4,5,6], 施金元 [2]

台大癌醫中心綜合內科部,台大醫院內科部,台大癌醫中心腫瘤醫學部,台大醫院腫瘤醫學部,台灣大學腫瘤醫學研究所

The impact of concomitant *EGFR*mutationson the treatment effectiveness of EGFR TKIs for NSCLC patients with L858R

Shang-Gin Wu[1,2], Chong-Jen Yu[2,3], James Chih-Hsin Yang[4,5,6], Jin-Yuan Shih[2]

[1]Department of Internal Medicine, National Taiwan University Cancer Center

[2]Department of Internal Medicine, National Taiwan University Hospital

[3]Department of Internal Medicine, National Taiwan University Hospital Hsinchu Branch

[4]Department of Oncology, National Taiwan University Cancer Center

[5]Department of Oncology, National Taiwan University Hospital

[6]Graduate Institute of Oncology, Cancer Research Center, National Taiwan University

Purpose: Patients harboring NSCLC with L858R have shorter progression-free survival (PFS) than those with a deletion in exon 19 (del-19). In addition, there were more patients with complex *EGFR* mutation that contained L858R than those containing del-19. Therefore, we aimed to investigate the impact of concomitant *EGFR* mutations on the treatment effectiveness of EGFR TKIs for patients with L858R.

Materials and Methods: From 2005–2018, lung adenocarcinoma tissue samples were collected for *EGFR* mutation analysis using RNA-based direct Sanger sequencing of *EGFR* exons 18–21. Patients with single or complex *EGFR*-L858R mutation and who received EGFR TKIs as first-line treatment were enrolled. We analyzed patients' clinical characteristics, treatment responses, progression-free survival (PFS), and overall survival (OS).

Results: We collected 223 patients with a single L858R mutation and 69 patients with complex L858R mutations. More patients with complex L858R mutations received afatinib than those with single L858R (17.4% versus 2.7%, $p < 0.001$). The response rates of EGFR TKIs were the same between patients with single and complex L858R mutations (83.0% versus 82.6%). There was no significant difference in PFS (9.2 months versus 9.6 months; $p = 0.245$) and OS (24.1 months versus 24.6 months; $p = 0.135$) between the patients with single and complex L858R mutations. For subgroup analysis of different EGFR TKI treatments, there was still no difference in PFS and OS between the two groups. Only for gefitinib-treated patients, patients with complex L858R had longer OS than those with single L858R (24.9 months versus 21.7 months; $p = 0.046$).

Conclusions: The concomitant *EGFR* mutation had no impact on treatment effectiveness for patients with L858R mutation.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA08

表皮生長因子接收器基因突變的晚期非小細胞肺癌病人接受第一線 osimertinib 或 afatinib 治療對臨床預後的影響

黃彥翔[1,2], 徐國軒[3],曾政森[1,2,4],陳焜結[5,6,7],張基晟[2,4,5,6,7],楊宗穎[1]

台中榮民總醫院內科部胸腔內科,國立中興大學生物醫學研究所,台中榮民總醫院內科部呼吸治療科,國立陽明大學醫學系,中山醫學大學附設醫院內科部胸腔內科,中山醫學大學醫學研究所,中山醫學大學醫學院

The Difference of the Clinical Outcomes between Osimertinib and Afatinib in Advanced EGFR mutant Non-Small-Cell Lung Cancer Patients

Yen-Hsiang Huang[1,2] , Kuo-Hsuan Hsu[3], Jeng-Sen Tseng[1,2,4], Kun-Chieh Chen, MD, PhD[5,6,7], Gee-Chen Chang[2,4,5,6,7], Tsung-Ying Yang[1,3]

Division of Chest Medicine, Department of Internal Medicine, Taichung Veterans General Hospital[1], Institute of Biomedical Sciences, National Chung Hsing University[2], Division of Critical Care and Respiratory Therapy, Department of Internal Medicine, Taichung Veterans General Hospital[3], Faculty of Medicine, School of Medicine, National Yang-Ming University[4], Division of Pulmonary Medicine, Department of Internal Medicine, Chung Shan Medical University Hospital[5], Institute of Medicine, Chung Shan Medical University[6], School of Medicine, Chung Shan Medical University[7]

Purpose: The main objective of present study was to compare the clinical efficacies between first-lineosimertinib and afatinib treatment in *epidermal growth factor receptor(EGFR)* – mutant non-small cell lung cancer (NSCLC) patients.

Materials and Methods: From January 2018 to December 2020, we retrospectively enrolled advanced NSCLC patients who harbored exon 19 deletion or L858R with osimertinib or afatinib as first-line treatment.

Results: A total of 149 patients participated in this study. Osimertinib group included 52 patients, while 97 patients received afatinib. The median follow-up time was 18.0 months in the osimertinib group and 19.8 months in the afatinib group. Both groups were comparable regarding baseline characteristics. The median progression-free survival (PFS) was 18.8 months and 14.9 months in osimertinib and afatinib group, respectively (HR 0.82; 95% CI, 0.52 to 1.29, p = 0.397). After propensity score matching, there was still no statistical difference of PFS between osimertinib and afatinib group (18.8 months versus 14.9 months, p=0.379). The median overall survival (OS) was not reached in both groups with a comparable hazard ratio for death (HR 0.99; 95% CI, 0.47 to 2.10, p = 0.985). In patients with brain metastasis at baseline, the median PFS was 22.1 months in osimertinib group, and 11.7 months in afatinib group (HR 0.61; 95% CI, 0.32 to 1.18, p = 0.146). In patient without brain metastasis, the median PFS was 18.8 months and 20.8 months in osimertinib and afatinib group, respectively (HR 1.04; 95% CI, 0.55 to 1.97, p = 0.985).

Conclusions: Our research demonstrated that there was no strong evidence to present that patients with osimertinib as first-line treatment experienced longer PFS and OS than patients treated with afatinib. However, there was a trend that osimertinib provided better clinical benefit than afatinib in patients with brain metastasis at baseline. We still need clinical trials to confirm our findings.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA01

藉由氣管支架置放合併葉克膜成功治療醫源性氣管傷害–個案報告

廖先啟[1], 莊仁豪[3], 蕭偉伶[2], 陳克誠[3]

台大醫學院附設醫院創傷醫學部[1], 台大醫學院附設醫院護理部[2], 台大醫學院附設醫院外科部[3]

Successful Treatment of Iatrogenic Tracheal Injury with Stent Placement and Extracorporeal Membrane Oxygenation – A Case Report

Hsien-Chi Liao, MD MPH[1], Jen-Hao Chuang, MD[3], Wei-Ling Hsiao, RN[2],Ke-Cheng Chen, MD PhD[3]

[1]Department of Traumatology, National Taiwan University Hospital and National Taiwan University College of Medicine

[2]Department of Nursing, National Taiwan University Hospital and National Taiwan University College of Medicine

[3]Department of Surgery, National Taiwan University Hospital and National Taiwan University College of Medicine

Case presentation:

A 16-year-old male with a history of attention deficit hyperactivity disorder was admitted to our emergency department after a severe traffic accident.His Injury Severity Score was 26, and initial Glasgow Coma Scale was E4V4M5 with agitation. Endotracheal intubation was performed immediatelyto protect his airway. After transfer to the intensive care unit, computed tomography confirmed diffuse subcutaneous emphysema and showed severe pneumomediastinum with heart compression. Besides, pneumoperitoneum was diagnosed. Emergent bronchoscopy revealed a significant tracheal defect at the carina level with exposure of the subcarinal soft tissue. The patient suffered from desaturation and progressing subcutaneous emphysema for two days despite ventilator support with high FiO2. In order to restore sufficient hemodynamics and oxygenation, veno-venous extracorporeal membrane oxygenation (V-V ECMO) was implanted, and a Dumon® Y-shaped, 150*320 mm silicone stent (Novatech® , La Ciotat, France) was trimmed to shape then placed into his trachea through a rigid bronchoscope.

The patient's respiratory status improved afterward, and he was weaned off ECMO four days later. Once his condition was stabilized, his chest tubes were removed, and endotracheal extubation was performed with bronchoscopy assistance on the tenth post-operative day, after the weaning parameters indicated that the patient was ready to breathe spontaneously.

Conclusion:

This case report describes a young man who suffered an iatrogenic tracheal and bronchial injury during emergency intubation. The injury was not immediately detected, and we initially attempted extracorporeal membrane oxygenation to improve his respiratory failure. Since his condition continued to deteriorate, imaging studies were performed that showed a defect in the carina area. The patient recovered quickly after the bronchoscopic insertion of a Dumon® Y-stent. We believe that our report makes a significant contribution to the literature because these injuries are life-threatening, and swift diagnosis and action are required.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA02

組織病理根據診斷咳血病因:病例介紹

李瑞源 1

台中醫院

Diagnosis of hemoptysis with Histopathology basis: case demonstration

Ruei Yuan Li1

Ministry of Health and Welfare Taichung Hospital

Introduction: Hemoptysis is variable include infections and lung neoplasms, vascular, blood or systemic diseases. The etiology of hemoptysis is made from history, physical and laboratory examinations, bronchoscope, chest X-ray, CT, even arteriography. The ausation may come from non-neoplastic conditions such as infection, COPD, and vascular or neoplastic disease. Tissue biopsy aid the clinician in achieving the final diagnosis.

Material and Method*:* case presentation

The patient is a 73 year-old man was admitted due to mild blood sputum since 2months ago. He has past history of 1.Hypertension 2.CAD-1 S/P PCI+ DES for LAD on1071207. 3.Psoriasis regular under medicine treatment. He had admitted due to 1.Interstitial pulmonary disease, 2.Asthma, 3.Bronchiectasis, 4.Solitary pulmonary nodule, 5.Atherosclerosis. monthes ago. This time, he was admitted due to persistent blood sputum. There was no headache, chest pain, dyspnea or night fever. Due to the symptoms persisted, he visited OPD for help.as previous bronchial brushing cytology revealed atypical cells 2 month ago. Under the impression of suspected bronchial mucosa neoplastic illness, he arrange admitted for further evaluation and treatment., Bronchoscopy mucosa biopsy on hemorrhage site on Rt 2nd carina sent all specimen for analysis included microbiology and pathology study.

Result:

Invasive fungal infections that present with hyphae in tissues. AFS stain/culture/ PCR(-) ,neoplastic cell(-) BAL culture:alph-hemolyic streptococcus

Previous : HRCT of lung: no definite lung parenchyma lesion

Conclusion*:* CXR, CT, b**ronchoscope even** angiography **all are** indicated for hemoptysis. Evaluation for identifying whether if active bleeding is still and airway paten . The common causes of hemoptysis are bronchiectasis, TB, lung tumor and fungus infection.Histopathology helps to detect the etiology, particularly in cases of hemoptysis causes correlated with the clinical and imaging results.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA03

虛擬支氣管鏡導航合併支氣管鏡超音波導引肺切片於周邊肺病灶之診斷價值 : 單一醫學中心之經驗

詹博強, 林慶雄, 林俊維, 黃國揚, 林聖皓

彰化基督教醫院胸腔內科

Diagnostic Value of Virtual Bronchoscopic Navigation Combined With Endobronchial Ultrasound Guided Transbronchial Lung Biopsy for Peripheral Pulmonary Lesions : A single medical center experience

Po-Chiang Chan, Ching-Hsiung Lin, Chun-Wei Lin, Guo-Yang Huang, Sheng-Hao Lin

Division of Chest Medicine, Department of Internal Medicine, Changhua Christian Hospital, Changhua, Taiwan

Background: The diagnostic yield of peripheral pulmonary lesions (PPLs) by traditional EBUS is insufficient. To improve the diagnostic accuracy of EBUS, several techniques have been applicated in clinal practice. The aim of this study is to evaluate the diagnostic value of virtual bronchoscopic navigation (VBN) combined with endobronchial ultrasound (EBUS) guided transbronchial lung biopsy for solitary peripheral pulmonary lesions.

Methods: A total of 38 patients with peripheral lung lesions (diameter range, 7.5-66 mm; diagnosed using computed tomography) who underwent virtual bronchoscopic navigation (VBN) assisted endobronchial ultrasound (EBUS) were selected from a single medical center between March 2020 and July 2021. The target-reach rate and diagnosed yield were evaluated.

Results: Among 38 patients, 30 cases had positive bronchus sign presented on chest CT scan, and the target-reach rate (confirmed by radial EBUS) was 80.0% (24/30) for these patients. For patients with negative bronchus sign, the target-reach rate was 37.5% (3/38). The total target-reach rate was 71.1% (27/38). 27 patients underwent endobronchial ultrasound (EBUS) guided transbronchial lung biopsy. The pathologic result was 13 malignancies and 8 benign lesions. The diagnostic yield of VBN assisted EBUS-TBLB was 77.8% (21/27).

Conclusions: The result of our study suggest that VBN system is a useful technique for guiding the endobronchial route to reach the target. The combination of VBN and EBUS-TBLB is a safe and effective diagnosis technique for the peripheral pulmonary lesions.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA04

台灣第一例支氣管鏡熱蒸氣消融術治療嚴重肺氣腫病例報告

張立禹[1],羅偉誠[1,2], 于鎧綸[1], 楊漢清[1], 柯政昌[1], 何肇基[3], 余忠仁[1]

臺大醫院新竹分院胸腔內科, 胸腔外科, 臺大醫院胸腔內科

The First Case of Bronchoscopic Thermal Vapor Ablation for Emphysema in Taiwan: A Case Report

Lih Yu Chang[1], Wei-Cheng Luo[1,2*], Kai-Lun Yu[1], Han-Ching Yang[1], Jen-Chang Ko[1], Chao-Chi Ho[3], Chong-Jen Yu[1]

Chest Department1, Chest Surgeon Department2, National Taiwan University, HsinChu Branch, Chest Department3, National Taiwan University Hospital.

Purpose: For severe emphysema that could not be controlled well under medical treatment, surgical bullectomy is the only non-medical treatment for lung volume reduction in Taiwan. Recently, bronchoscopic thermal vapor ablation (BTVA), one method of the bronchoscopic lung volume reduction (BLVR), was introduced into Taiwan. We present the first BTVA experience in Taiwan.

Materials and Methods: A 66 years-old male patient was diagnosed as emphysematous type chronic obstructive pulmonary disease (COPD) for years. He received Tiotropium/ Formeterol/ Budesonide inhalation and oral aminophylline for disease control, but the quality of life was still not satisfied. After quantitative computerized tomography (CT) analyzing, we performed BTVA to RB3 segment. For evaluating the effect of BTVA, we compared the results of quantitative CT, pulmonary function test, 6 minute walking distance (6-MWD), St. George's Respiratory Questionnaire (SGRQ) before intervention and 3 month after intervention.

Results: After intervention, the patient only suffered from minimal hemoptysis for 2 days. No other significant adverse effect was noted. He felt quality of life improving about 1 month after intervention. Although the results of pulmonary function and lung volume showed no significant change, the SGRQ decreased 34.13 (50.3 to 16.17).

Conclusions: BTVA is an effective and safe treatment choice of lung volume reduction.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA05

以支氣管鏡介入術成功治療復發之惡性中央氣道阻塞病例報告

王咏璇 [1]

花蓮慈濟醫院胸腔內科 [1]

SUCCESSFUL TREATMENT OF RECURRENT CENTRAL AIRWAY OBSTRUCTION CAUSED BY HUGE CARINAL TUMOR-CASE REPORT

Yung Hsuan, Wang[1,]

Division of Chest Medicine, Hualien Tzu Chi Hospital[1]

Introduction: Malignant central airway obstruction (CAO) can be a devastating manifestation of primary lung cancer or metastatic disease which may cause fatal respiratory failure. We present here a case of lung cancer that totally obstructed the bilateral main bronchus and was treated with self-expandable metallic stent (SEMS). Tumor size ever reduced, then recurrent which caused critical condition again then treated with bilateral main bronchus SEMS successfully.

Case presentation: This is a 65-year-old male initially came to the emergency room due to deteriorated dyspnea with productive cough for 3 weeks. Chest CT revealed right upper lung collapsed and a tumor located at the carinal area which caused nearly total obstruction of right main bronchus (RMB) and left main bronchus (LMB). Tumor biopsy reported moderately-differentiated squamous cell carcinoma. Staging was cT4N2M1a, stage IVA. The immunohistochemical stain showed ROS-1 (-), ALK(D5F3) (-), PD-L1(SP263) (+, 15%), p63 (+++), and TTF-1 (-).

For rescue critical central airway obstruction, a self-expandable metallic stent (SEMS) was placed at LMB. Rapid tumor growth which totally obstructed RMB and further growth over the proximal orifice of left SEMS was noticed. Electrocautery was used for further tumor removal. Concurrent chemo-radiotherapy were initiated. After 45 days of treatment, tumor size was shrinking and left SEMS was removed. Patient discharged with both main bronchus patent and received oral Vinorelbine and Gemcitabine with Cisplatin regularly. However, recurrent tumor growth with both main bronchus severe stenosis that caused progressive dyspnea developed 10 months later post left SEMS removal. For rescue critical stenosis airway, bronchoscopic balloon dilatation was performed over LMB to create lumen for further stent placement. Two SEMS were placed over the left and right main bronchus via bronchoscope successfully.

Discussion: Malignant CAD is classified as extraluminal and endoluminal, or combined lesions. Mechanical debulking, thermal tools, cryotherapy and airway stents are methods that can be used to restore airway patency. Assessment of risks and benefits of each intervention in different patients is important which may also need multiple teamwork. Due to the patient had high risk of surgery, we performed bedside airway stents placement via flexible bronchoscopy smoothly and successfully.

Conclusions: This is a case of malignant central airway obstruction with nearly total obstructed bilateral main bronchus and recurrent obstruction 10 months later post first SEMS placement. Bronchoscopic intervention was considered as a difficult skill in such critical patients. We successfully used flexible bronchoscopy to complete tumor removal by electrocautery and placed bilateral bronchial stents when the tumor recurrent.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA06

肺部隱球菌症：兩病例報告與文獻探討

陳蕙君[1] 楊家福[3] 陸希平[2] 楊志勻[1] 顏家祺[2]

高雄市立民生醫院內科[1] 外科[2] 高雄楊家福診所[3]

Pulmonary Cryptococcosis: Report of Two Cases and Review of Literature

Hui-Chun Chen[1], Jia-Fu Yang[3], Shi-Ping Luh[2], Chih-Yun Yang[1], Chia-Chi Yen[2]

Department of Surgery[1]& Medicine[2], Kaohsiung Municipal Min-Sheng Hospital. Jia-Fu Yang's Clinic[3].

Purpose: Pulmonary cryptococcosis, a form of pulmonary fungal infection caused by Cryptococcus, can occurs in immuno-compromised as well as immune-competent patients. It can be manifested as a solitary nodule or multifocal pulmonary consolidations or infiltrates, is still underdiagnosed due to limitations in diagnostic tools. Herein two such cases having been successfully diagnosed and treated are reported.

Materials & Methods:

Case 1. A 65 year-old man, was accidentally found a solitary pulmonary nodule at the right lower lung field during routine health examination. Computed tomography of chest revealed a small subcentimeter lesion with pleural retraction. No definite diagnosis was made after survey include serum tumor markers, tuberculosis test (TB-PCR) and cryptococcal antigen (CrAg). His nodule was not reduced in size after several months of TB treatment.

Case 2. A 60 year-old man, complained of progressive dry cough, chest tightness and respiratory distress in two months. CxR and chest CT scan revealed multifocal lung consolidations, patchy and infiltrative lesions. No definite diagnosis was made after survey. The TB-PCR and CrAg are negative.

Results: These two patients underwent excisional or incisional biopies through video-assisted thoracoscopic surgery (VATS). Pulmonary cryptococcosis was successfully diagnosed and subsequent anti-fungal treatment (fluconazole orally) was administered for 6 months. Their problems were solved or symptoms were remarkably improved.

Conclusions: Pathological tissue prove is still required to confirm the diagnosis of pulmonary cryptococcosis, due to limitations of other reliable diagnostic tools. Accurate diagnosis is cornerstone to exclude other benign or malignant diseases as well as to treat effectively.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA07

肺門處過誤腫瘤內視鏡手術成功切除病例經驗與文獻探討

陸希平[1] 陳蕙君[2] 楊志勻[2] 顏家祺[1]

高雄市立民生醫院外科[1] 內科[2]

Enucleation of pulmonary hamartoma near the hilum by video-assisted thoracoscopic surgery (VATS): Report of a case and review of literature

Shi-Ping Luh[1], Hui-Chun Chen[2], Chih-Yun Yang[2], Chia-Chi Yen[1]

Department of Surgery[1]& Medicine[2], Kaohsiung Municipal Min-Sheng Hospital.

Purpose: Pulmonary hamartomas (PHs) are benign neoplasms composed of cartilage, connective tissue, muscle, fat, and bone. Over 90% of them are located at the periphery of lung, and most of these patients are asymptomatic.

Materials and Methods: a 67 year-old man complained of progressive chest tightness and shortness of breath. Chest X-ray and CT scan revealed a 3-cm soft tissue mass with tiny calcification was noted at the central peri-hilar regions of the right middle lobe of lung.

Results: Enucleation of the mass was successfully performed by video-assisted thoracoscopic surgery (VATS), without resection of adjacent lung tissue. Pulmonary hamartoma was proved by histopathological examination. He was discharged 5 days postoperatively and follow up at our clinic for 6 months uneventfully

Conclusions: Pulmonary hamartoma can be seen in central lung hilar region. Pre-operative imaging evaluation and intra-operative findings will be cornerstone to avoid unnecessary lung resection.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA08

少見肺部血管鈣化-肺動脈骨水凝栓篩的臨床表現：病例報告及文獻回顧。

高傳紘[1], 賴寶民[1], 陳昭宏[1]，吳昭賢[1]

[1]台南新樓醫院內科加護病房

Unusual Pulmonary vascular caldification- A Presentation of Pulmonary cement embolism: A Case Report and Literature Review.

Chuan-hung Kao[1], Pao-min Lai[1], Chao-hung Chen[1], Chao-Hsien Wu[1]

[1]Section of ICU, Department of Internal Medicine, TainanSin-LauHospital

Introduction

Pulmonary cement embolism is one kind of bone cement implantation syndrome (BCIS), which is a fatal complication of orthopedic surgery, involving pressurized bone cement. The incidence of BCIS is approximately 20%, and 0.5-1.7% in severe reaction resulting in cardiovascular collapse. Here we presented a woman with pulmonary cement embolism, happening after T spine vertebroplasty.

Case Report

The 77 year-old woman has past history of HTN, old stroke, dementia, liver cirrhosis/CHC. She was admitted due to consciousness disturbance. Sepsis/pneumonia was impressed and antibiotics were prescribed. However, she complained of lower limbs weakness and urinary incontinence. Spinal MRI was arranged, which showed T12 bursting fracture with thecal sac compression. Posterior spinal fixation and vertebroplasty were performed. After operation however, she suffered from dyspnea and ventilator support with BiPAP was used. CXR showed hyperdensity lesion along with pulmonary trunk and vessel. Cement embolism was impressed. ChestCT later also confirmed the diagnosis.

Discussion

The clinical features of pulmonary cement embolism include hypoxia, shock, pulmonary HTN, arrhythmia, and even cardiac arrest. The 30-day mortality after cardiovascular collapse requiring CPR is 88%. The leakages of cement are thought to be caused by the injection of polymethylmethacrylate that is still too liquid or by applying too much pressure while injecting the material.

If BCIS happens, CXR and CT showed multiple radiographically dense opacities with a tubular and branching shape scattered sporadically or distributed diffusely throughout the lungs. The treatment of BCIS is supportive care, which includes administration of 100% inspired oxygen, fluid resuscitation to maintain RV preload, and inotropes to support ventricular contractility. BCIS is a time-limited phenomenon. Human and animal studies strongly suggest that pulmonary artery pressure normalises within 24 hours. Aggressive stabilisation and supportive therapy are the cornerstones in managing BCIS.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA09

一個成因於成人史迪爾氏症候群的肋膜積水案例個案報告
A Case Report of A Rare Cause of Pleural Effusion Related to Adult Still's Disease

閻俊如 [1,2],蔡毓真 [3]
高雄醫學大學附設醫院 [1] 專科暨手術專責護理室 [2] 胸腔內科
高雄市立大同醫院 [3] 內科
Chun-Ju Yen [1, 2], Yu-Chen Tsai [3]
[1]Specialist Nurse and Surgical Nurse Practitioner Office, [2]Division of Pulmonary and Critical Care Medicine, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan
[3]Department of Internal Medicine, Kaohsiung Municipal Ta-Tung Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan

Introduction: Adult Onset Still's Disease (AOSD) is a relatively rare inflammatory immune disease of unknown cause. The ratio of men to women is similar, and the prevalence age is bimodal distribution, usually 15-25 years old and 36-46 years old. Intermittent high fever (greater than 39 degrees) for more than a week, skin rash and joint pain (More than two weeks) are the main manifestation. In addition, the clinical manifestations include sore throat, rash, lymph node or hepatosplenomegaly. This disease does not response well to anti-inflammatory drugs and does not response to antibiotics. Herein, we reported a case resented with fever and pleural effusion.

Case Presentation: This 43-year-old female denied any systemic disease before. She presented to our hospital with fluctuating fever with chills for 10 days. The others associated signs and symptoms included sore throat, odynophagia, chest tightness, shortness of breath, general arthralgia. Skin rash over forehead, upper chest wall, back, groin and buttock was noted while fever episode. Lab test showed leukocytosis with elevated CRP. Chest CT showed bilateral pleural effusion and infiltration. Empiric antibiotic was prescribed, but in vain. The autoimmune profile showed high ferritin but the anti-CTD, RA factor, and ANA were within normal range. AOSD was diagnosed by Yamaguchi criteria. After steroid treatment, her fever subsided. Then she received regular rheumatology OPD follow up for further treatment.

Discussion: The prognosis of AOSD is usually favorable but manifestations of the disease affecting the lungs, heart, or kidneys may occasionally cause severe life-threatening complications. The medicine used for the treatment of hands is corticosteroids and NSAIDs.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA10

雙側肋膜積液合併多發性縱隔淋巴結病變的鑑別診斷包括菊池藤本病病

黃健修

大林慈濟醫院胸腔內科,台灣佛教慈濟醫學基金會

The Differential Diagnosis of Bilateral Pleural Effusion and Multiple Mediastinal Lymphadenopathies Includes Kikuchi-Fujimoto Disease

Chienhsiu Huang

Department of Internal Medicine, Division of Chest Medicine, Dalin Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Chiayi, Taiwan

Abstract:

Kikuchi-Fujimoto disease is an uncommon lymphohistiocytic disorder that frequently presents with acute or subacute clinical disease course. Cervical lymphadenopathy is the most common involved lymph node. Very rare cases of pathologic diagnosis of Kikuchi-Fujimoto disease with bilateral pleural effusion and multiple mediastinal lymphadenopathies have been reported in the literature. In this article, we report the case of a 60-year-old male presented with bilateral pleural effusion and multiple mediastinal lymphadenopathies. He received video-assisted thoracoscopic surgery of the right pleura and thoracoscopic excision of the mediastinal lymph node. The pathologic findings from the lymph node and pleura were compatible with Kikuchi-Fujimoto disease. He was treated with oral hydroxychloroquine and oral prednisolone. A computed tomography scan of the chest 4 months later showed regressive mediastinal lymphadenopathy and bilateral pleural effusion. Our case is a first reported case of Kikuchi-Fujimoto disease diagnosis by the pathology of the lymph node and pleura in the literature. Results from our case suggest that Kikuchi-Fujimoto disease should be included in the differential diagnosis of bilateral pleural effusion and multiple mediastinal lymphadenopathies.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA11

Establishing hybridization chain reaction coupled plasmonic sensing for quantitative measurements of cell-free mitochondrial DNA

Hui-Yun LO[1],Kuei-Pin Chung [2], Tzu-Heng WU[1], Chii-Wann LIN[1], Jung-Yien Chien[3]

[1] Department of biomedical engineering, National Taiwan University, Taiwan

[2] Department of Laboratory Medicine, National Taiwan University Hospital and College of Medicine, National Taiwan University, Taiwan

[3] Department of Internal medicine, National Taiwan University Hospital, Taiwan

Background: Cell-free mitochondria DNA (mtDNA) levels is a promising prognostic biomarker but lack of an efficient method for detecting mtDNA hampers the clinical applicability of mtDNA. We aim to develop a novel nucleic acid quantification technique for mtDNA measurements, using hybridization chain reaction (HCR).

Method: HCR targeted at *MT-ND1* (mitochondrial NADH-ubiquinone oxidoreductase chain 1) nucleotide sequence was established by an algorithm published by our group, in combination with off-line script and NUpack/BLAST servers. Imaging based Surface Plasmon Resonance (iSPR) biosensor was used as a validation sensor platform.

Results: Based on the nearest neighbor simulation on the binding kinetics, stem-to-toehold ratio of the hairpin molecule was set at 18 bp: 6 bp and verified by gel electrophoresis. The result confirms that the fragment size was boosted by the chain reaction from 25 bp to more than 3,000 bp, under 15 minutes of reaction time. BLAST search result indicated that the target sequence is highly authentic to mitochondrial DNA, and is not aligned to the reference nuclear genome of human. Using the iSPR sensing platform, synthetic nucleotide fragment of *MT-ND1* can be detected with a dynamic range spanning from 25 pM to 500nM and a detection time around 40 minutes under high ionic strength buffer. To minimize overall detection time, crowding effect agent, such as polyethylene glycol, was added, and the reaction rate was efficiently accelerated. Spiked samples, containing *MT-ND1* target sequence and 2% bovine serum albumin, was prepared, and tested on the platform. The data revealed minimal non-specific binding (<0.0001 refractive index unit).

Conclusions: Herein we present our preliminary data about novel *MT-ND1* detection platform, which showed several merits over conventional methods, particularly improved detection limit and decreased detection time. The results indicate that our method is promising and of great potential in mtDNAquatification in biofluid samples.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA12

脈衝振盪儀器與傳統肺功能在支氣管擴張劑測試陽性之間的關聯性-回朔性研究

呂俊佑 [1]

彰化基督教醫院胸腔內科

Correlation between impulse oscillometry and spirometry in positive bronchodilator response - a retrospective study

Chun-Yu, Lu[1]

[1]Changhua Christian Hospital, Division of Pulmonary Medicine

Background: Bronchodilator response (BDR) in spirometry is an important indicator for diagnosing asthma. However, not everyone can use spirometry as a diagnostic tool. The impulse oscillometry measures respiratory system impedance. The relevance in asthma between spirometry and impulse oscillometry had been reported.

Objective: To identify the agreement between Bronchodilator response (BDR) in spirometry and impulse oscillometry.

Methods: The study was a retrospective evaluation of collecting data in a medical center between August 1, 2019 and March 31, 2021. Patients performed impulse oscillometry and spirometry before and after 400 ㎍g salbutamol administration in the outpatient clinic.

Results: A total of 348 all Asian subjects were included in the study. The agreement between BDR measured by spirometry vs pre R5- post R5 > 40% was moderate (k = 0.67). There was no agreement between BDR measured by spirometry vs absolute change in R5 ≥ –1.40 ·s/L (k = 0.024), X5 (k = 0.073) and AX (k = 0.055).

Conclusions: The BDR cutoffs published for IOS was not much suitable for the patient in our medical center. After we adjusted the BDR cutoffs for IOS in our medical center, the result revealed low sensitivity, but high specificity and demonstrated 60 -70% accuracy.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA13

右心房血管肉瘤合併栓塞性肺轉移仿若非典型肺炎

Right atrial angiosarcoma with embolic lung metastases masquerading as atypical pneumonitis

Chung-Fu Lin[1], Wei-An Liao[2], Chia-Ying Lin[3], Ying-Tzu Huang[4], Tang-Hsiu Huang[1]

[1]Department of Internal Medicine, [2]Department of Pathology, [3]Department of Medical Image, [4]Department of Oncology, National Cheng Kung University Hospital, College of Medicine, National Cheng Kung University, Tainan, Taiwan

Purpose: We report the clinical presentation, differential diagnosis, radiographic features, and histological findings of a patient with primary cardiac angiosarcoma with multiple embolic lung metastases.

Materials and Methods: We reviewed the medical records, laboratory, histological and serial radiographic data of the patient. Pertinent information and images were collected and presented in a thematic poster.

Results: A 48 year-old non-smoking male noodle maker presented with cough, exertional dyspnea, and intermittent hemoptysis, lasting for several weeks. There was no fever, chest pain, skin eruption, or swelling of the extremities. Considering his disease course, his frequent occupational exposure to organic (sometimes moldy) particulates, and his radiographic findings (extensive peripheral ground-glass opacities exhibiting a crazy-paving pattern on the CT images), reactive diffuse parenchymal lung disease (particularly exposure-induced atypical pneumonitis) was suspected initially in this patient, although for which hemoptysis was rather unusual. Diagnostic bronchoalveolar lavage recovered bloody lavage fluid with mixed-type cellularity but without clinically-significant lymphocytosis or eosinophilia. Surgical lung biopsy via video-assisted thoracoscopy was then performed, and the histological examination revealed many tumor thrombi in the pulmonary arterioles, with associated infarction and alveolar hemorrhage involving the nearby parenchyma. The tumor cells were either spindled-shape or epithelioid in appearance, and immunohistochemically they were positive for CD34 and Fli-1 but negative for CK, CK7, TTF-1, P40, myogenin, MDM2, and CDK4. The subsequent CT-angiography identified the main tumor in the right atrium, which had also locally invaded the main pulmonary trunk. Surgical resection was deemed to be too risky, and the patient received treatment with pazopanib and paclitaxel. Shortly after the treatment began, the patient has exhibited significant improvement both clinically and radiographically. He still receives regular outpatient follow-ups and treatments at our hospital.

Conclusions: Primary cardiac angiosarcoma is extremely rare and mostly found in right atrium. The prognosis is very poor, while the diagnosis can be challenging particularly if the radiographic manifestation is atypical. Complete surgical resection could improve overall survival but can be difficult, and neoadjuvant chemotherapy should be considered to facilitate surgical resection.

Keywords: cardiac angiosarcoma, tumor embolism, ground-glass opacity, crazy-paving pattern

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA14

特發性多發性卡斯爾曼氏病合併肋膜積液:病例報告

于鐘淇[1],楊文祺[1,3],陳鍾岳[1,2],柯建佑[1,3]

[1]義大醫院內科,[2]義守大學醫學系,[3]義大醫院血液腫瘤科

Idiopathic Multicentric Castleman's disease with unusual presentation of pleural effusion: Case Report

Chung-Chi Yu[1], Wen-ChiYang[1,3] ,Jung-Yueh Chen[1,2], Chien-Yu Ker[1,3]

[1]Department of Internal Medicine, E-Da Hospital, Kaohsiung, Taiwan

[2]College of Medicine, I-Shou University, Kaohsiung, Taiwan

[3]Department of hematology and oncology, E-Da Hospital, Kaohsiung, Taiwan

40 yearold man with history of asthma and hypertension.
He was admitted with chief complaint of cough, slightly dyspnea on exertion with and intermittent intermittent fever over for one week. He Denied denied recent body weight loss, night sweating, or changes in energy.
Laboratory data showed elevated LDH, beta2-microglobulin, and C-reactive protein,. anemia, Normocytic anemia, polyclonal hypergammaglobulinemia, and hypoalbuminemia were noted, . and negative to autoimmune Autoimmune markers, hepatitis B markers and anti-HIV were negative. Liver and renal function were normal. Negative reported for aAll microbiology culture reported negative and blood tests for liver, renal function showed no abnormalities. Chest X-ray revealed Increased infiltration over bilateral lower lung fields and left side pleural effusion with basal pleural change, and computed tomography (CT) scan showed Suspect conglomerate lymphadenopathies involved mediastinal and retroperitoneal spaces, extension into bilateral iliac and presacral region and partially collapsed left upper and lower lobes and massive left pleural effusion with left pleural thickening. Spiking fever persisted despite strong antibiotics to cover typical and atypical pathogens. We send pleural effusion sample was sent for cytology and reported negative for malignant cells, numerous small lymphocytes admixed with some large atypical lymphoid cells, but normal lymphocytes predominant was noted.
For fever unknown origin evaluation, Gallium-67 Inflammation Scan revealed increased radioactivity in the right neck level Ib, mediastinal, bilateral hilar, pericardial, para-aortic, celiac, bilateral internal iliac, right external iliac, bilateral inguinal and left proximal femur lymph nodes. The patient underwent right side inguinal lymph node dissection. Histology showed marked vascular proliferation between follicles of the lymph node and vessels were characteristically hyalinized and sclerotic. Further workup showed the sample was negative for HHV-8 and EBV-encoded RNA (EBER). Lymph node demonstrating plasmacytic histopathology and diagnosed idiopathic multicentric CD (iMCD). Under the diagnosis of Castleman's disease, CHOP(cyclophosphamide, doxorubicin, vincristine, prednisolone) regimen was administered. Fever subsided soon after chemotherapy. He was recovered well and was followed up at hematology and oncology clinic. Castleman's disease (CD) is a primary lymphoproliferative disease affecting lymph nodes with rare reported cases in the extra-nodal site. Symptoms and laboratory findings very vary depending on the variant of disease, related to an increased release of cytokines. Surgical resection and pathological evaluation remain the diagnostic method in the assessment of CD.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA15

台灣與英國肺功能參數影響因子之探討及比較

潘科婷[1,2], Giovanni Leonardi[3,4], 唐士恩[1,5], 黃坤崙[1,5], Mark Unstead[6] and Ben Croxford[2]

台灣國防醫學院航太及海底醫學研究所[1]; 英國倫敦大學學院[2]; 英國衛生安全署[3]; 英國倫敦衛生與熱帶醫學院[4]; 台灣三軍總醫院胸腔內科及高壓氧中心[5]; 英國皇家柏克薛爾醫院[6]

Comparison of factors affecting parameters of pulmonary function test between Taiwan and UK

Ke-Ting Pan[1,2], Giovanni Leonardi[3,4], Shih-En Tang[1,5], Kun-Lun Huang[1,5], Mark Unstead[6] and Ben Croxford[2]

Institutions: [1]Graduate Institute of Aerospace and Undersea, National Defence Medical Centre, Taipei, Taiwan; [2]Bartlett Faculty of the Built Environment, UCL, London, the United Kingdom; [3]Centre for Radiation, Chemical and Environmental Hazards, UK Health Security Agency, Didcot, United Kingdom; [4]London School of Hygiene and Tropical Medicine London, London, the United Kingdom; [5]Department of Internal Medicine and Hyperbaric Oxygen Therapy Center, Tri-Service General Hospital, Taipei, Taiwan; [6]Royal Berkshire Hospital, Berkshire, the United Kingdom

Purpose: We aim to investigate the selected demographic, physiological and behavioral factors affecting parameters of pulmonary function test (PFT), focusing on DL_{CO}, V_A and K_{CO} in both datasets in Taiwan and the UK.

Materials and Methods: We collected the selected demographic, physiological and behavioral factors and PFT data from medical records in Tri-Service General Hospital (TSGH) in Taiwan from June 2017 to May 2018 and Royal Berkshire Hospital (RBH) from January to June 2019 in the UK. There were 1943 subjects in the TSGH group and 691 subjects in the RBH group. Then, we analyzed factors that might affect the PFT data. All data were recorded in Excel and analyzed by STATA.

Results: We have created the predictive models for DL_{CO}, V_A and K_{CO} based on two hospitals' datasets, and therefore the estimated DL_{CO}, V_A and K_{CO} for each individual with different characteristics could be calculated. For example, the predictive model for DL_{CO} in TSGH: (Male) 6.607-0.216×Age(yr) +0.119×Height(cm)+0.107×weight(kg); (Female) -3.089-0.121×Age(yr) +0.131×Height(cm)+0.119×weight(kg) and the predictive model for DL_{CO} in RBH: (Male) -4.963-0.189×Age(yr) +0.243×Height(cm); (Female) -10.651-0.142×Age(yr)+0.240×Height(cm). The results showed that males had a higher value of DL_{CO} and V_A than females; DL_{CO} and V_A were positively associated with height; DL_{CO} and K_{CO} were negatively associated with age. Asian population showed a slightly lower value of DL_{CO} compared to the Caucasian population, which could be explained by V_A and height differences. Smoking status may not affect DL_{CO}. However, we expected a more significant difference in older groups as older smokers have lower DL_{CO} than younger ones: the combined effect of aging and smoking on DL_{CO} could be an area for further research.

Conclusions: Overall, we found that sex, age, height and weight affected the PFT data, including DL_{CO}, V_A and K_{CO} in both TSGH and RBH groups. Further research on the combined effects of aging and smoking on PFT data could be explored.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA16

年輕女性合併發燒及左頸腫大

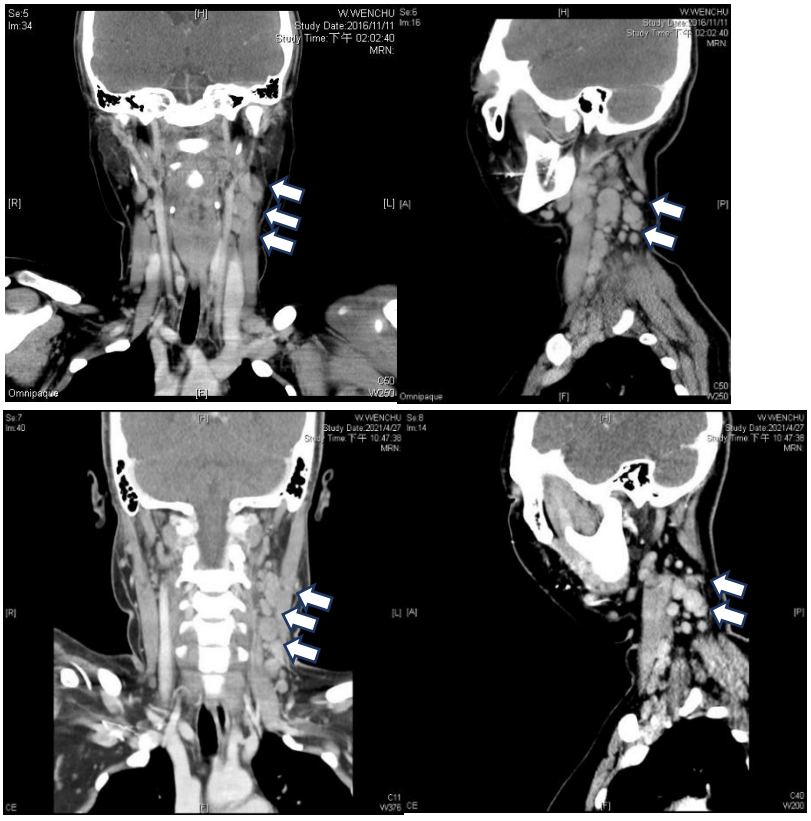
Young girl with fever and left neck swelling

涂聖葳, 鍾均芙, 李穗豪, 陳友木, 黃國棟, 王逸熙, 賴建豪*, 林孟志

Division of Pulmonary & Critical Care Medicine, Department of Internal Medicine; Kaohsiung Chang Gung Memorial Hospital

A 12-year-old girl who had no congenital disease before and received vaccination as schedule, presented to pediatric out-patient clinic with left neck swelling and intermittent fever for about 2 weeks. She had no contact or traveling history. There were no upper airway symptoms, diarrhea, skin rash or body weight loss. Physical examination showed diffuse movable left neck lymphadenopathy without tenderness, redness nor local heat; no injected throat, no enlarge tonsillar, no splenomegaly. Lab data showed leukopenia, elevated lactate dehydrogenase, negative anti-nuclear antibody, negative cytomegalovirus IgG/IgM, negative Epstein-Barr virus nuclear antibody. Head and neck computed tomographyscan with contrast revealed multiple enlarge lymph nodes over bilateral level II, III, IV, V, left side predominant, including left supraclavicular area. Lymph node biopsy was performed. Patient was arranged dischargement after symptoms resolve with clinic following up. Pathological result showed lymphoproliferative disorder, suggested Kikuchi disease. The lymphadenopathy resolved spontaneous 2 weeks later.

However, the patient came to our hospital again with the same symptoms 5 years later. The same diagnosis was made after repeated biopsy. The lymphadenopathy resolved spontaneous 2 weeks later again without any sequela.



Head and neck CT coronary view and sagittal view on 2016(up) and 2021(down)

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA17

尿中鎳含量與氣喘病人血中免疫球蛋白 E 有關

李忠恕 [1, 2], 邱立忠 [2,*]

[1] 土城醫院委託長庚醫院經營之胸腔內科; [2] 林口長庚胸腔內科

Urinary Nickel Level is Associated with Blood Immunoglobulin E among Asthma patients

Chung-Shu Lee [1, 2], Li-Chung Chiu [2, *]

[1] Department of Pulmonary and Critical Care Medicine, New Taipei Municipal Tucheng Hospital, New Taipei City, Taiwan

[2]Department of Thoracic Medicine, Chang Gung Memorial Hospital, Chang Gung University, School of Medicine, Taipei, Taiwan

Purpose: Nickel compounds are used as extensively in different industrial managements and referred as the generator of oxidative stress. We aim to identify the relationship between urinary nickel level and the status of asthma.

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Materials and Methods: We analyzed 132 asthma patients with their urine in the tertiary medical center. Demographic data were collected. Asthma patients were divided into high urinary nickel (>2 μg/L) group and low urinary (= or < 2μg/L) nickel group.

Results: In high urinary nickel group, there was high blood IgE (521 IU/mL) level compared with low urinary nickel group (Blood IgE: 221 IU/mL), P=0.030.

Conclusions: We identified urinary nickel level was associated with blood IgE level among asthma patients. Further studies were needed to confirm our finding.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA18

根據 Lung-Mol GPA 擬定表皮生長因子突變陽性非小細胞肺癌合併腦轉移的理想治療策略

鄭文建，沈宜成，廖偉志，陳家弘，涂智彥，夏德椿，陳鴻仁

中國醫藥大學附設醫院胸腔暨重症系

The Optimal Therapy Strategy *EGFR*-Mutated Non-Small-Cell Lung Cancer Patients with Brain Metastasis According to Lung-Mol GPA

Wen-Chien Cheng, MD; Yi-Chen Shen, MD; Wei-Chih Liao, MD, PhD; Chia-Hung Chen, MD, PhD; Chih-Yen Tu, MD, PhD; Te-Chun Hsia, MD, PhD; Hung-Jen Chen, MD

Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, China Medical University Hospital

Purpose: The treatment options for epidermal growth factor receptor (EGFR)-mutated non-small-cell lung cancer (NSCLC) with brain metastases (BMs) include EGFR-tyrosine kinase inhibitors (TKIs), stereotactic radiosurgery (SRS), whole-brain radiotherapy (WBRT), brain surgery (BS), and anti-angiogenesis therapy. As treatment options evolve, the optimal treatment strategies should be discussed based on the graded prognostic assessment for lung cancer using molecular markers (Lung-mol GPA).

Materials and Methods: 150 EGFR-mutant NSCLC patients with BM who received first- or second-generation EGFR-TKIs as first-line treatment between January 2012 and October 2019 were included in this analysis.

Results: After multivariate analysis, patients with Lung-mol GPA ≥ 3; who received afatinib or erlotinib as first-line treatment; underwent SRS therapy; underwent combined more local treatments (SRS, WBRT or BS); or were sequentially treated with osimertinib, regardless of T790M status, were associated with improved overall survival (OS). Furthermore, SRS plus EGFR-TKI provided more OS benefits in patients with Lung-mol GPA ≥ 3. Anti-angiogenesis plus EGFR-TKI provided a potential OS benefit in patients with Lung-mol GPA <3.

Conclusions: The study demonstrated that EGFR-mutant NSCLC patients with BMs could be precisely treated according to Lung-mol GPA. Sequential osimertinib was associated with prolonged survival, regardless of T790M status, as was the combination with local brain treatments.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA19

寡轉移非小細胞癌之原發性肺腫瘤切除的順序探討

石柏軒[1],黃建勝[2,5,6],陳慧珊[3],徐博奎[2],邱昭華[4], 許瀚水[1],蔡俊明[4],陳育民[4]
台北榮民總醫院外科部, 胸腔外科, 胸腔部; 國立陽明交通大學

Sequence For Surgical Resection of Primary Lung Tumor For Oligometastatic Non-Small Cell Lung Cancer

Bor-Shiuan Shyr, MD[1], Chien-Sheng Huang, MD PhD[2,5,6], Hui-Shan Chen, PhD[3], Po-Kuei Hsu, MD PhD[2], Chao-Hua Chiu[4], MD, Han-Shui Hsu, MD PhD[2], Chun-Ming Tsai, MD PhD[4], Yuh-Min Chen,MD PhD[4]

[1]Department of Surgery, Taipei Veterans General Hospital; Taipei, Taiwan

[2]Division of Thoracic Surgery, Department of Surgery, Taipei Veterans General Hospital; Taipei, Taiwan

[3]Department of Health Care Administration, Chang Jung Christian University, Tainan City, Taiwan

[4]Division of Thoracic Oncology, Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan

[5]School of Medicine, National Yang-Ming Chiao Tung University, Taiwan

[6]School of Medicine, National Yang-Ming University, Taiwan

Purpose: Differing surgical series for the treatment of primary lung tumor with synchronous oligometastatic stage IV non-small cell lung cancer (NSCLC) have been published; however, outcomes remain ambiguous.

Materials and Methods: Patients with synchronous oligometastatic stage IV NSCLC treated from 2005 to 2017 were enrolled to identify the impact of treatment sequence (primary lung resection versus systemic treatment) on progression-free survival (PFS) and overall survival (OS).

Results: Fifty-one patients received tumor resection (84% adenocarcinoma, 55% non-smokers, and 65% driver gene mutation). Resection occurred before or after systemic treatment in 33 (64.7%) and 18 (35.3%) patients, respectively. Patients who received resection first were older (62.1 vs. 54 years) and at a less advanced intrathoracic stage (18% vs.44%). No significant differences were noted regarding perioperative complication (30% vs. 28%), length of hospital stay (9.0 vs. 10.5 days), percentage of disease progression (91% vs. 94%), overall death (70% vs. 78%), median PFS (14.0 vs. 22.8 months) and OS (44.6 vs.53.2 months). Patients with single-organ metastasis had significantly longer PFS and OS than those with oligometastases (17.5 vs. 12.8 months, p=0.040 and 55.6 vs. 39.8 months, p=0.035), respectively. Multivariable Cox analysis identified non-solitary metastasis as the only independent predictor of PFS (hazard ratio 2.27; 95% CI, 1.07-4.81, p=0.033).

Conclusions: Primary lung resection before or after induction systemic therapy may benefit patients with oligometastatic NSCLC. Future randomized clinical trials examining the effect of treatment sequence is recommended.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA20

一個重度抽菸的 40 歲男子有右下肺腫瘤伴隨非常高的 CA199 及免疫染色出現 CDX-2 罕見的肺腺癌合併腸分化的案例報告

A Very High Serum CA199 and Immunoreactive for CDX2 in a 40-Year-Old Smoker with Right Lower Lung Mass – A Rare Pulmonary adenocarcinoma with Enteric Differentiation (PAED)

王姿文 [1,2], 楊志仁 [2]
高雄醫學大學附設醫院 [1] 專科暨手術專責護理室 [2] 胸腔內科
Tzu-Wen Wang [1, 2], Chih-Jen Yang[2]
[1] Specialist Nurse and Surgical Nurse Practitioner Office, [2]Division of Pulmonary and Critical Care Medicine, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan

Introduction: Pulmonary enteric adenocarcinoma (PEAC) is an extremely rare subtype of non-small cell lung cancer (NSCLC), PEAC is defined as a type of primary pulmonary adenocarcinoma, which contains more than 50% enteric differentiation component, and the cancer cells must be positive for one or more immunohistochemical markers of gastrointestinal tumors. Up to now, only nearly 216 cases have been reported.

Case Presentation: Therein, we presented a heavy-smoker 40-year-old man who suffered from general pain since Feb, 2020 and visited our chest clinic, a lung mass in the right lower lobe of lung with invasion to right hilum and subcarinal region was disclosed on chest CT. PET/CT showed a high grade FDG-avid in malignant tumor without other sites involvement and a high serum tumor markers CEA 6.35ng/mL, CA19-9 3074.5 U/mL. Bronchoscopy revealed adenocarcinoma, and the immunohistochemical stains revealed an immunoreactive for CK7 and CDX-2, negative for TTF-1, and negative for all driver mutations in the specimen and confirmed by next generation sequencing. In addition, Esophagogastroduodenoscopy, colonfiberscopy, small Intestine series image and abdomen echography all revealed no evidence of gastrointestinal tumor. Therefore, Pulmonary enteric adenocarcinoma (PEAC), cT4N0M0, stage IIIA was diagnosed. He underwent a neoadjuvant chemotherapy with Vinorelbin and cisplatin and we also arranged radiotherapy with 7000cGy/35f for him. Thereafter, prominent tumor shrinkage and markedly declined serum CEA and CA 199. He therefore underwent a VATS based right bilobectomy on June 2021 and received adjuvant chemotherapy. Till now, he lived without recurrence and received regularly follow-up.

Discussion: PAED is a very rare subtype of lung adenocarcinoma, the diagnosis had been made on a comprehensive review of radiology images, endoscopy, histopathology and IHC, and clinical evaluation to exclude the possibility about colorectal primary. In addition, tumor markers such as CEA, CA125, and CA199 and specially IHC stains - positive for CDX2 and negative for CK7, TTF-1. The prognosis of PEAC depends on patients' clinical stages. Only a few articles mentioned that chemotherapy had been applied to PEAC patients and the survival time for clinical stage IV patients after chemotherapy treatment was wide, ranging from 2 to 12 months in some retrospective review. As there were no studies or case reports that involved PEAC patients at various stages of chemotherapy who had also received surgery. In this case, we carefully presented whole picture of the stage IIIA PEAC and he is well till now.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA21

一線使用標靶藥物在台灣 EGFR 突變陽性晚期非小細胞肺癌患者中的真實世界有效性分析

林俊維 [1], 黃國揚 [1],林慶雄 [1,2], 林聖皓 [1,2]

彰化基督教醫院胸腔內科 1, 中興大學生科所 2

Real World Effectiveness of First Line Tyrosine Kinase inhibitors in Patients with EGFR Mutant Positive Advanced Non–small-cell Lung Cancer in Taiwan

Chun-Wei Lin, MD[1], Kuo-Yang Huang, MD[1], Ching-Hsiung Lin, MD, PHD [1,2], Sheng-Hao Lin, M.D. PHD[1,2]

Division of Chest Medicine, Department of Internal Medicine, Changhua Christian Hospital, Changhua1, Institute of Genomics and Bioinformatics and Department of Life Sciences, National Chung Hsing University2

Purpose: We aimed to compare and analyze the time to treatment failure (TTF) and overall survival (OS) of different first line EGFR-TKIs to treat EFGR mutant positive advanced non-small cell lung cancer in the real world.

Materials and Methods: Patients with EGFR mutant positive advanced Non–small-cell Lung Cancer were retrospective reviewed between 2011 and 2018. The exclusion criteria were (1) no first line TKI therapy and (2) TKI therapy < 30 days.

Results: The 434 patients were included into our analysis. The percentages of different first line target therapies were 48.73% (269) for gefitinib, 17.39(96) for erlotinib and 12.5% (69) for afatinib. Elderly, female and never smoked patients pretended to accept gefitinib therapy initially. The mean tumor size was smaller in gefitinib group than erlotinib and afatinib. More patients (63.77%) in the afatinib group refused chemotherapy than gefitinib (49.44%) and erlotinib (45.83%) groups. There was no significant difference in TTF and OS analysis between the 3 different TKIs. In the subgroup analysis of brain metastasis, patient with erlotinib therapy has longer TTF (13.26, 95%CI 9.32-17.2)) than gefitinib (9.53, 95% CI 8.25-10.81). But, the result didn't reach statistical significance (p value=0.08).

Conclusions: In the real word, there was no significant difference in the effectiveness of gefitinib, erlotinib and afatinib in the aspects of TTF and OS. In NSCLC patients with brain metastasis, erlotinib pretends had better disease control and longer TTF than gefitinib. The significance maybe interfered by small case numbers of Erlotinib group(N=29). The results maybe be verified by large cohort study in the future.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA22

呼吸道檢體中存在非結核分枝桿菌不會影響肺癌的預後:回溯性配對世代研究

廖庭淯 [1],王振源 [2], 施金元 [2]

台大醫院新竹台大分院內科部 [1], 台大醫院內科部 [2]

Presence of nontuberculous mycobacteria in respiratory specimen does not change the outcome of lung cancer: A retrospective matched cohort study

Ting-Yu Liao, MD[1]; Jann-Yuan Wang, MD, PhD[2]; Jin-Yuan Shih, PhD[2]

[1]Departments of Internal Medicine, National Taiwan University Hospital Hsin-Chu Branch, National Taiwan University College of Medicine, Hsin-Chu, Taiwan

[2]Department of Internal Medicine, National Taiwan University Hospital, National Taiwan University College of Medicine, Taipei, Taiwan

Rationale: Patients with lung cancer may sometimes have nontuberculous mycobacteria (NTM) isolated from their respiratory specimens. We aimed to investigate whether the presence of NTM in respiratory tract changes the clinical features and outcome of patients with lung cancer.

Methods: Between 1 January 2015 and 31 December 2018, patients with lung cancer diagnosed in a medical center in northern Taiwan was retrieved. Among them, those whose respiratory specimens were culture-positive for NTM were identified (NTM group). For each one in the NTM group, a lung cancer patient without NTM who matched in age, sex, respiratory specimen type, histology type, stage, and initial treatment was selected (control group). Survival of the two groups were compared by using Kaplan-Meier method and cox proportional hazards regression analysis.

Results: During the study period, a total of 6821 patients with lung cancer were identified. Among them, 4260 (62.5%) underwent sputum mycobacterial culture, and 110 (2.6% in 4260) had at least one NTM isolate. The median age was 72 years (range, 63 – 78). The most common NTM species was *Mycobacterium avium* complex (50%). Compared with the control group, NTM group had a higher prevalence of previous pulmonary tuberculosis history (9 vs. 1, p=0.018). There was not difference in 2-year survival between then NTM and control groups. The hazard ratio of presence of NTM for death was 1.18 (95% CI: 0.72 – 1.95) in patients with lung cancer.

Conclusions: NTM is present in about 2.6% of patients with lung cancer, and probably has no negative impact on survival.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA23

EGFR 突變之肺腺癌病患接受第三代 *EGFR*-TKI 治療後產生組織學轉變之研究

李柏昕[1], 陳焜結[2], 徐國軒[3], 黃彥翔[1,4], 曾政森[1,4,5,*], 楊宗穎[1,4,5], 張基晟[2]

台中榮總胸腔內科, 呼吸治療科; 中山醫學大學附設醫院胸腔內科; 國立中興大學; 國立陽明大學

Po-Hsin Lee[1], Kun-Chieh Chen[2], Kuo-Hsuan Hsu[3], Yen-Hsiang Huang[1,4], Jeng-Sen Tseng[1,4,5,*], Tsung-Ying Yang[1,4,5], Gee-Chen Chang[2]

Histological transformation after acquired resistance to 3rd-generation *EGFR*-TKI in patients with *EGFR*-Mutant lung adenocarcinoma

[1]Division of Chest Medicine, Taichung Veterans General Hospital; [2]Division of Pulmonary Medicine, Chung Shan Medical University Hospital & School of Medicine, Chung Shan Medical University; [3]Division of Critical Care and Respiratory Therapy, Taichung Veterans General Hospital; [4]Institute of Biomedical Sciences, National Chung Hsing University; [5]Faculty of Medicine, School of Medicine, National Yang-Ming University

Purpose: Third-generation epidermal growth factor receptor (*EGFR*) tyrosine kinase inhibitor (TKI) is one of the standard-of-care therapies in patients with *EGFR*-mutant lung adenocarcinoma. However, acquired resistance inevitably developed. Though histological transformation has been reported as one of the mechanisms of resistance, the incidence of transformation and the clinical consequences of these patients remain unclear.

Materials and Methods: This retrospective study was conducted on patients with *EGFR*-mutant lung adenocarcinoma receiving 3rd-generation *EGFR*-TKI at Taichung Veteran General Hospital. We enrolled patients treated with 3rd-generation *EGFR*-TKI and received re-biopsy after the treatment during the period from January 2014 to June 2021.

Results: A total of 55 patients were analyzed. The median age was 58 years. Of them, 34 (61.8%) patients were female, 44 (80%) patients were non-smokers, and 8 (14.5%) patients received 3rd-generation *EGFR*-TKI as first-line treatment. There were 22 (40%) patients with exon 19 deletion, 19 (34.5%) with L858R substitution, and 9 (16.4%) with primary T790M. In addition to patients with primary T790M, there were another 30 (54.5%) patients with acquired T790M before 3rd-generation *EGFR*-TKI treatment. The median treatment time of 3rd-generation *EGFR*-TKI before re-biopsy was 11.0 months. Eight (14.5%) patients had histological transformation. Four transformed into squamous cell carcinoma (SqCC) while the other 4 into small cell lung carcinoma (SCLC). Both the overall survival from 3rd-generation *EGFR*-TKI initiation (30.8 vs. 41.2 months) and from re-biopsy (6.6 vs. 12.9 months) to mortality were numerically shorter amongst the transformation population. There was no difference in survival between patients with SqCC and SCLC transformation. All patients in transformation group did not respond to the next line of treatment for the histological change.

Conclusions: Repeat biopsy to identify histological transformation should be considered in patients with progression to 3rd-generation *EGFR*-TKI. Histological transformations could contribute to the acquired resistance and implied a worse prognosis.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA24

肺癌病患接受全身性治療後產生 B 型肝炎病毒再活化之研究

李柏昕[1], 陳焜結[2], 徐國軒[3], 黃彥翔[1,4], 曾政森[1,4,5,*], 楊宗穎[1,4,5], 張基晟[2]

台中榮總胸腔內科, 呼吸治療科; 中山醫學大學附設醫院胸腔內科; 國立中興大學; 國立陽明大學

Po-Hsin Lee[1], Kun-Chieh Chen[2], Kuo-Hsuan Hsu[3], Yen-Hsiang Huang[1,4], Jeng-Sen Tseng[1,4,5,*], Tsung-Ying Yang[1,4,5], Gee-Chen Chang[2]

Hepatitis B virus reactivation in lung cancer patients receiving systemic treatment

[1]Division of Chest Medicine, Taichung Veterans General Hospital; [2]Division of Pulmonary Medicine, Chung Shan Medical University Hospital & School of Medicine, Chung Shan Medical University; [3]Division of Critical Care and Respiratory Therapy, Taichung Veterans General Hospital; [4]Institute of Biomedical Sciences, National Chung Hsing University; [5]Faculty of Medicine, School of Medicine, National Yang-Ming University

Purpose: Amongst chronic hepatitis B (CHB) patients without prophylactic nucleos(t)ide analogue (NUC) use, cytotoxic chemotherapy, and tyrosine kinase inhibitor (TKI) have been known to be risk factors for hepatitis B virus (HBV) reactivation. However, the incidence of HBV reactivation in patients with resolved HBV infection after these therapies remained unknown.

Materials and Methods: This retrospective study was conducted on patients with newly diagnosed lung cancer receiving systemic treatment during the period from Jan 2011 to Dec 2020. We enrolled patients with positive hepatitis B core antibodies (anti-HBc).

Results: A total of 1960 patients with positive anti-HBc were analyzed. There were 366 patients with CHB and 1594 patients with resolved HBV infection (1280 with positive anti-HBs and 314 without anti-HBs). In patients with either CHB receiving prophylactic NUC before systemic treatment or resolved HBV infection, no subjects developed HBV reactivation. The incidence of HBV reactivation in those without prophylactic NUC receiving chemotherapy (S[+],C/T) and TKI (S[+],TKI) were 14.3% and 14.4%, respectively. All the patients developing HBV reactivation after chemotherapy had history of TKI treatment. The difference in the cumulative HBV reactivation rates between CHB and resolved HBV infection groups was significant (P<0.001). In patients with resolved HBV infection, HBV reactivation occurred in only one patient (after TKI) in anti-HBs(-) group (S[-],C[+],anti-S[-]) and one patient (after chemotherapy) in anti-HBs(+) group (S[-],C[+],anti-S[+]). In the multivariate analysis, the odds ratios for HBV reactivation in patients with (S[+],C/T), (S[+],TKI), and (S[-],C[+],anti-S[-]) were 215.4 (95% CI 21.2-2182.6, P<0.001), 196.4 (95% CI 25.5-1514.3, P<0.001), and 4.6 (95% CI 0.3-73.5, P=0.285), as compared with patients with (S[-],C[+],anti-S[+]). There was no significant difference of overall survival among patients with and without HBV reactivation.

Conclusions: The incidence of HBV reactivation in lung cancer patients with resolved HBV infection receiving systemic treatment is low. Further studies are required to evaluate the necessity of prophylactic NUC use. Currently, we recommended regularly monitoring these patients' liver function and HBV viral load during the treatment course.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA25

COVID-19 大流行對肺癌患者臨床照護及預後的影響: 台灣中部醫學中心經驗分析

曾政森[1,2,3]，徐國軒[4]，黃彥翔[1,2]，許育偉[5]，吳碧珠[6]，湯冬梅[5,6]，楊宗穎[1,2,*]

[1]台中榮總胸腔內科; [2]國立中興大學; [3]國立陽明交通大學; [4]台中榮總呼吸治療科; [5]台中榮總癌症防治中心; [6]台中榮總護理部

Impact of the COVID-19 pandemic on patient care and outcome of lung cancer: experiences of a tertiary center in Taiwan

Jeng-Sen Tseng[1,2,3], Kuo-Hsuan Hsu[4], Yen-Hsiang Huang[1,2], Yu-Wei Hsu[5]; Pi-Chu Wu[6]; Tung-Mei Tang[5,6]; Tsung-Ying Yang[1,2,*]

[1]Division of Chest Medicine, Taichung Veterans General Hospital; [2]National Chung Hsing University; [3]National Yang Ming Chiao Tung University;[4]Division of Critical Care and Respiratory Therapy, Taichung Veterans General Hospital; [5]Cancer Prevention and Control Center, Taichung Veterans General Hospital; [6]Department of Nursing, Taichung Veterans General Hospital

Background: The coronavirus disease 2019 (COVID-19) has had a devastating effect on the healthcare system. Owing to the COVID-19 pandemic, Taiwan's Central Epidemic Command Center raised the nationwide epidemic alert to level 3 in May 2021. The strengthened measures and restrictions were implemented throughout Taiwan. We aimed to assess the impact of the COVID-19 pandemic on changes in patient care and outcome of lung cancer.

Method: We included lung cancer patients at Taichung Veterans General Hospital during the period of COVID-19 pandemic in 2021 and the corresponding period in 2020. Outcome parameters included the changes in service volume, scheduling time of clinical services, and the short-term outcome of lung cancer patients.

Results: The numbers of inpatient admissions and outpatient visits of lung cancer decreased by 20.4% and 14.5%, respectively, during the COVID-19 pandemic. There were no significant differences in the amplitude of declines of admissions and outpatient visits between hospital-wide and lung cancer services (P = 0.230 and 0.933, respectively). The dynamic trends corresponded to the severity of the nationwide epidemic. The admission waiting time was longer as compared with the corresponding period in 2020 (18.3±34.1 vs. 11.4±27.1 hours, P < 0.001) and the time of admission was significantly postponed (14.6±3.6 vs. 13.8±3.1 o'clock, P < 0.001). The absolute numbers of patients being hospitalized after 16:00 increased by 26.1%. There was no significant prolongation in the scheduling time of inpatient image studies, biopsy procedures, and outpatient chemotherapy. Lung cancer operations and clinical trial visits did not drop. Importantly, there was no robust increase in patients experiencing disease progression and lung cancer deaths during this period.

Conclusion: The impacts of the COVID-19 pandemic are nationwide and universal. Although the admission time was postponed, the necessary services for diagnosis, tumor status assessment, and treatments could be performed and prescribed timely, which explains the preservation of outcome. The increased workload of night shift staff reminds the importance of manpower reallocation.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA26

晚期非小細胞肺癌患者接受血管新生抑制劑產生血栓的發生率、危險因子和預後分析

歐偉凡[1], 廖培雅[1], 黃彥翔[1], 徐國軒[1], 楊宗穎[1], 陳焜結[2], 張基晟[2], 曾政森[1,*]

臺中榮民總醫院內科部胸腔內科[1], 中山醫學大學附設醫院胸腔內科

Incidence, risk factors, and outcome of advanced NSCLC patients receiving antiangiogenetic therapy with thromboembolic events

Wei-Fan Ou[1], Pei-Ya Liao[1], Yen-Hsiang Huang[1], Kuo-Hsuan Hsu[1], Tsung-Ying Yang[1,], Kun-Chieh Chen[2], Gee-Chen Chang[2], Jeng-Sen Tseng[1,*]

[1]Division of Chest Medicine, Taichung Veterans General Hospital; [2]Division of Pulmonary Medicine, Chung Shan Medical University Hospital & School of Medicine, Chung Shan Medical University; [*]Correspondence.

Background: Antiangiogenetic therapy combined with chemotherapy or tyrosine kinase inhibitor is widely used in advanced non-small cell lung cancer (NSCLC) patients. Lung cancer, *per se*, and antiangiogenetic therapy were both associated with an increased risk of thromboembolic (TE) events. The purpose of this study is to investigate the incidence, risk factors, and outcome of advanced NSCLC patients receiving antiangiogenetic therapy with TE.

Methods: This is a retrospective study including inoperable stage IIIB and stage IV NSCLC patients receiving antiangiogenetic therapy from March 2013 to May 2021 at Taichung Veterans General Hospital. All TE events were confirmed by objective image studies. We further categorized TE into disease-related (disease progression when TE developed) andtreatment-related TE (disease under control when TE developed).

Results:A total of 427 patients were included;345 patients (80.8%) received bevacizumab, 24 patients (5.6%) received ramucizumab, and 58 patients (13.6%) ever received both. The overall incidence of TE was 10.1% (n = 43); of them, 28 (6.6%) and 15 (3.5%) were categorized into disease- and treatment-related TE, respectively. Multivariate analysis suggested that the use of hormone, which indicated synthetic progesterone as appetite-enhancing agents, independently predicted a higher TE incidence amongst patients with disease-related TE(aOR 2.79, 95% CI 1.13-6.92; P = 0.027), while proteinuria was significantly associated with treatment-related TE (aOR 4.30, 95% CI 1.13-16.42; P = 0.033).As compared with patients without TE (31.4m, 95% CI 27.4-35.4), disease-related TE independently predicted a shorter overall survival (21.6m, 95% CI 15.0-28.2; aHR1.30, 95% CI 1.05-1.61; P = 0.017), but patients with treatment-related TE had comparable survival time (32.7m, 95% CI 5.7-59.8) with that of subjects without TE (aHR 1.05, 95% CI 0.57-1.95, P = 0.876). Deep vein thrombosis (DVT) accounted for the most common types of TE (60.5%), but 46.2% of them did not occur in the typical lower extremities. Amongst patients with continuous use or rechallenge of antiangiogenetic therapy, 18.2% had recurrent TE events.

Conclusion: For lung cancer patients receiving antiangiogenetic therapy with TE, it should be further differentiated whether it is treatment- or disease-related, because the treatment- and disease-related TE had different risk factors and their impacts on patients' outcome were also diverse.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA27

肺腺癌罕見突變(EGFR L833V/H835L**)對於得舒緩與泰格莎治療反應良好**

張凌愷[1],施金元[2]

[1] 台大醫院新竹分院生醫醫院胸腔科, [2] 台大醫院胸腔科

Sustained partial response of erlotinib and osimertinib in patient with lung adenocarcinoma harboring EGFR L833V/H835L mutations

Ling-Kai Chang[1], Jin-Yuan Shih[2]

[1]Department of Internal Medicine, National Taiwan University Hospital Hsin-Chu Branch BioMedical Park Hospital, Hsin-Chu, Taiwan

[2]Department of Laboratory Medicine, National Taiwan University Hospital, Taipei, Taiwan

Great effort in molecular-targeted therapies in lung adenocarcinoma has been made in past decades. The epidermal growth factor receptor (EGFR) is the most well known mutation in lung adenocarcinoma, from exons 18-21. To improved clinical significance of rare EGFR mutation, we need more evidence in treatment and clinical behavior of rare EGFR mutations. We report a patient with non-small cell lung cancer (NSCLC) harboring EGFR exon 21 L833V/H835L compound mutation which response to erlotinib and osimertinib. The experience was different with the presentation in previous article.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA28

L858R 突變的轉移性肺腺癌患者使用 dacomitinib 加 bevacizumab 聯合治療-病例報告

鄧紀剛[1], 陳傑龍[1], 陳鼎翰[1], 吳秉儒[1], 陳家弘[1,3], 陳致宇[1], 鄭文建[1*], 廖偉志[1,2,3], 夏德椿[1,3], 涂智彥[1,3], 徐武輝[1,4]

中國醫藥大學附設醫院胸腔內科[1], 中國醫藥大學附設醫院高壓氧中心[2], 中國醫藥大學醫學系[3], 中國醫藥大學呼吸治療學系[4]

Combination therapy with dacomitinib and bevacizumab in a L858R-mutated, metastatic lung adenocarcinoma patient: A case report

Chi-Kang Teng[1], Chieh-Lung Chen[1], Ting-Han Chen[1], Biing-Ru Wu[1], Chia-Hung Chen[1,3], Chih-Yu Chen[1], Wen-Chien Cheng[1*], Wei-Chih Liao[1,2,3], Te-Chun Hsia[1,3], Chih-Yen Tu[1,3], and Wu-Huei Hsu[1,4]

[1]Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, China Medical University Hospital, [2]Hyperbaric Oxygen Therapy Center, China Medical University Hospital, [3]School of Medicine, China Medical University, [4]Department of Respiratory Therapy, China Medical University, Taichung, Taiwan

Introduction: To our knowledge, dual inhibition of the epidermal growth factor receptor (EGFR) and vascular endothelial growth factor (VEGF) pathways in EGFR-mutated, metastatic non-small-cell lung cancer (NSCLC) is supported by previous randomized controlled trials (RCTs), including RELAY (erlotinib plus ramucirumab), and NEJ026 (erlotinib plus bevacizumab). Yet, there is no published report of combination therapy with dacomitinib, a second-generation irreversible EGFR TKI plus anti-angiogenic therapy.

Case report: A 73-year-old male, ex-smoker, visited our hospital complaining of hemoptysis for one week, accompanied with dyspnea on exertion. The chest computed tomography (CT) demonstrated a large mass in RUL up to 10.6 centimeters in diameter, mild right pleural effusion with pleural calcification, and enlarged lymph nodes in right paratracheal and right hilar regions. Bronchoscopic endobronchial ultrasound (EBUS) biopsy was done and reported adenocarcinoma. The driver gene tests found mutation of L858R. We started first-line TKI with dacomitinib, and soon added on anti-angiogenesis Bevacizumab one week later. The followed-up image 3 months later showed decreased primary tumor size and improved brain metastasis. There were also no obvious side effects.

Discussion: Dacomitinib is an irreversible pan-HER TKI that targets EGFR, ErbB2 and ErbB4 kinase domains of the EGFR signaling pathway. Because of poor treatment outcomes in patients with L858R mutation receiving EGFR-TKI, a combination strategy may provide improved clinical benefits. In our case, the patient got benefit of combination therapy with dacomitinib plus bevacizumab, which was compatible to previous studies of EGFR TKIs plus anti-angiogenesis without obvious side effects.

Conclusion: Our case revealed the effectiveness of combination therapy with dacomitinib plus bevacizumab in a L858R-mutated, metastatic lung adenocarcinoma patient.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA29

原發性肺滑液肉瘤–病例報告

陳靜宜 [1,2], 黃明賢 [3]

[1] 義大醫院呼吸胸腔內科, [2] 義守大學醫學院, [3] 義大癌治療醫院呼吸胸腔內科

Primary pulmonary synovial sarcoma - A case report

Ching-yi Chen[1,2], Ming-Shyan Huang[3]

[1.] Division of Pulmonary Medicine, Department of Internal Medicine, E-Da Hospital,

[2.] Medical College, I-Shou University, Kaohsiung, Taiwan

[3.] Division of Pulmonary Medicine, Department of Internal Medicine, E-Da Cancer Hospital

Introduction：

Primary pulmonary synovial sarcoma is a very rare, but highly aggressive tumor with multiple metastasis when confirming the diagnosis. There are four subtypes: monophasic fibrous, monophasic epithelial, biphasic, and poorly differentiated subtypes. Histopathology, immunohistochemistry, and cytogenetics are essential for confirmation of its diagnosis. The diagnosis is established only after sarcoma like primary lung malignancies and metastatic sarcoma have been excluded.

Case Report：

This is a 72-year-old man with hypertension and old stroke. He was referred from local hospital for abdominal fullness with the finding of multiple pancreas cysts and pancreatic duct dilation. However, chest X-ray and computerized tomography revealed right lower lung tumor with lung to lung metastasis and multifoci metastatic lymphadenopathies. Lung tumor biopsy was performed and the microscopic finding showed a spindle cell tumor characterized by monomorphic plump spindle cells forming fascicular architectures with focal collagens deposition. Immunohistochemical studies were focally positive for CD56, CD99, BCL2, and diffusely positive for Cytokeratin AE1/AE3, EMA, TLE1. S-100 protein, Synaptophysin, and CD34 were absent. FDG-PET whole body scan revealed right lower lung tumor with satellite tumor t same lobe and bilateral mediastinal lymph nodes, celiac lymph nodes, retroperitoneal lymph nodes, bilateral iliac lymph nodes involved. The final diagnosis of this patient is monophasic synovial sarcoma of right lower lung with same lung lobe and multiple lymph nodes metastasis.

Conclusion：

Not all lung tumors are bronchogenic carcinoma, although rare, synovial sarcomas may occur in few patients. Clinically they cannot be differentiated from other tumors. The conclusive diagnosis of synovial sarcomas should depend on histopathology, immunohistochemistry, and cytogenetics.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA30

縱膈腔精原細胞瘤併皮膚轉移–病例報告

陳靜宜 [1,2], 黃明賢 [3]

[1] 義大醫院呼吸胸腔內科, [2] 義守大學醫學院, [3] 義大癌治療醫院呼吸胸腔內科

Cutaneous metastasis from mediastinal seminoma - A case report

Ching-Yi Chen[1,2], Ming-Shyan Huang[3]

[1.] Division of Pulmonary Medicine, Department of Internal Medicine, E-Da Hospital,

[2.] Medical College, I-Shou University, Kaohsiung,Taiwan

[3.] Division of Pulmonary Medicine, Department of Internal Medicine, E-Da Cancer Hospital

Introduction：

Cutaneous is an unusual site of metastases from solid organ malignancies. We report a case diagnosed with mediastinal seminoma, associated with cutaneous metastasis, which was treated with chemotherapy initially and salvage Pazopanib.

Case Report：

This is a 36-year-old man without known systemic or family medical history. He suffered from left anterior chest pain and productive cough for one month. Chest X-ray and computed tomography revealed left anterior mediastinum mass with focal lymphadenopathies. The chest echography guided mass biopsy was performed which confirmed the diagnosis of seminoma. The patient underwent chemotherapy and radiotherapy as schedule. However, computed tomography revealed disease progression and skin nodular lesion was noted with the biopsy proved the cutaneous metastasis of seminoma. Therapy was switched to Pazopanib with durable response.

Conclusion：

Mediastinal seminomas are a relatively rare malignant disorder and chemoradiotherapy of primary mediastinal seminoma gives satisfactory treatment results with good local control rate. Here we present a case of mediastinal seminoma refractory to chemoradiotherapy with cutaneous metastasis and has durable response to Pazopanib.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA31

標靶藥引發晚期肺癌之肝炎處理:案例報告

李瑞源 1

台中醫院

Overcome rare TKI side effect –DILI By rechallenge strategy : case report

Ruei Yuan Li1

Ministry of Health and Welfare Taichung Hospital

Introduction: TKIs represent important therapy in this era of oncology. Despite clinical benefit, TKIs produce a range of adverse events, including skin rash and diarrheae.t.c. Among these, drug-induced liver injury which required careful management to gain benefit.

Materials and Methods:

EGFR is indicated for treatment of patients with locally advanced or metastatic NSCLC with mutation type. We report a case of acute hepatitis due to administration of erlotinib(150mg)per-day in 67-year-old lady diagnosed as got NSCLC stageT4N3M1Cwith metastasis to brain and bone for 222 days . Jaundice with ac hepatitis was noted, and timely diagnosis then withdrawal of the drug.

Result: We report a case of DILI secondary to erlotinib with significant hyperbilirubinemia(3mg/dl) in absence other liver metabolized drug and liver metastases. After erotilib for 24 day with liver protection therapy. Gradually we re-challenged erlotinib with 50mg gradual every 10 days then fully 150 mg dosage was prescribed. During the period, no disease progression, no further DILI were observed. Hereafter, her LFT were within acceptable range. The patient tolerated without any detectable hepatic injury, and presented good disease control

Discussion: Confirmation of DILI requires exclusion of bile duct obstructing, CHF, shock, viral infection e.t.cT. With drug-induced liver injury, early withdrawal of TKI medication in NSCLC patients, with subsequent rechallenge is recommended. EGFR mutations exhibit a higher response rate and longer PFS when treated with a TKI, compared with chemotherapy .DILI is a common occurrence in clinical practice, increased susceptibility underlying liver disease. Withdrawal of any possible drug is the most importance step about DILI. These require periodic liver chemistry monitoring andt discontinuation for specified liver chemistry elevations TKI in NSCLC is required to effectively control the disease .Drug discontinuation will increase the risk of tumor progression. TKIs exhibit side effects that require careful management in treatment setting.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA32

免疫治療於晚期肺腺癌後誘發急性腎衰竭救援:案例分享

李瑞源 1

台中醫院

Acute renal injury during Immunotherapy of NSCLC rescue- Case sharing

Ruei Yuan Li 1

Ministry of Health and Welfare Taichung Hospital

Introduction First lines of anticancer therapy is the application of immune checkpoint inhibitors update.. Major concern is that it risks the development of autoimmunity and end organ injury. Usage of immune checkpoint inhibitors has seen the emergence of IRAEs developed in various organs are affected like skin ,GI ,and endocrine system commonly reported .IRAEs affecting the kidney are less common reported. Materials and Methods:The 52 years old male had past history of (1)T2DM (2) Bipolar disorder(3) hyperlipidemia (4)CVA with right hemiparesis(5) LUL adenocarcinoma stageIVT4N3M1c with bone metastasis and T8 spinal metastasis tumor with epidural extension and cord compression s/p T8 laminectomy and biopsy showed adenocarcinoma. MRI showed Osseous metastasis in T8 vertebra with epidural extension and cord compression.These days, the patient was admitted for 19th pembrolizumab I/O .From base blood panel screening .he was suddenly to find AKI (BUN/CR 42/6.8 base line).Result:After hold all medicine metabolized by the kidneys, intermittent pulse and oral steroid after integral medical opinions with Nephrologist and Urologist. His blood creatinine recovered from 6.8 mg/dl (stage5) down to 1.29mg/dl(stage3A his original e-GFR stage2) in 7 days. The renal crisis was temporarily lifted. Discussion:Immune Checkpoint Inhibitor–related AKI: Cortazar e.t.c, reported 13 patients with nephrotoxicity at approximately 1–6 months after I mono or combination therapy. Kidney recovery in ten patients with AIN who were treated with corticosteroids was complete in two and partial in seven.The presence or absence of other immune-related adverse events does not always predict what the underlying kidney lesion will be. The same is true for urinalysis/urine sediment findings, although the presence of sterile pyuria/leukocyte casts along with other immune-related adverse events may represent AIN. Steroid therapy was associated with resolution of renal injury in all patients and over a short period. AKI developed at anywhere from 3 to 18months following checkpoint inhibitor exposure. Re-exposure to immune therapy in who developed AKI is an unresolved issue. It may be reasonable to reinitiation s if AIN responded well to steroid. Discussion with oncology/nephrology assess the risks and benefits ifrestarting immunotherapy may be an option but has not been studied.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA33

晚期非小細胞肺癌病人使用免疫檢查點抑制劑與化學治療相關副作用-系統性文獻回顧與網絡統合比較分析

陳靜宜[1,4], 黃繼賢[2,3,4], 陳宛君[5,6], 黃明賢[7], 魏裕峰[4,6,7]

[1]義大醫院呼吸胸腔內科, [2]義大醫院家庭醫學部, [3]日本名古屋大學健康與社區醫學部, [4]義守大學醫學院, [5]義大醫院藥劑部, [6]義守大學生物技術與化學工程研究所, [7]義大癌治療醫院內科部

Comparative safety of immune checkpoint inhibitors and chemotherapy in advanced non-small cell lung cancer: a systematic review and network meta-analysis

Ching-Yi Chen[1], Chi-Hsien Huang[2,3,4], Wang-Chun Chen[5,6], Ming-Shyan Huang[7], and Yu-Feng Wei[4,6,7]

[1]Division of Chest Medicine, Department of Internal Medicine, E-Da Hospital

[2]Department of Family Medicine, E-Da Hospital, Kaohsiung City, Taiwan

[3]Department of Community Health and Geriatrics, Nagoya University Graduate School of Medicine, Japan

[4]School of Medicine for International Students, College of Medicine, I-Shou University, Kaohsiung, Taiwan

[5]Department of Pharmacy, E-Da Hospital, I-Shou University, Kaohsiung, Taiwan

[6]Institute of Biotechnology and Chemical Engineering, I-Shou University, Kaohsiung, Taiwan

[7]Department of Internal Medicine, E-Da Cancer Hospital, Kaohsiung, Taiwan

Backgrounds: Immune checkpoint inhibitors (ICIs) alone or in combination with chemotherapy (CT) is the standard of care for first-line therapy in metastatic non-small cell lung cancer (NSCLC) patients without actionable mutation. Safety ranking of different ICIs and CT combination regimens has not been investigated. This network meta-analysis was armed to provide a toxicity profile and safety ranking.

Methods: Phase 2 and 3 Randomized clinical trials (RCTs) comparing different ICIs regimens (alone or combination) or CT for the first-line treatment of advanced NSCLC from different databases were retrieved until 1 July 2021. Comparisons between different ICI and CT combination regimens were made by Bayesian network meta-analyses. Outcomes of interest were the cumulative incidence of treatment-related adverse events (TRAEs), serious TRAEs (grade 3-5), immune-related adverse events (irAEs), and serious irAEs (grade 3-5). Odds ratios (ORs) and 95% credible intervals (Crl) as summary statistics to quantify the effect of different ICIs combination regimens.

Results: We included 23 trials from 2016 to 2021 with a total of 14,378 patients. The incidence of any TRAEs and serious TRAEs ranked from high to low were ICI-CT, ICI-ICI-CT, CT alone, ICI-ICI, and ICI monotherapy. For any irAE and serious irAE, the ranking was ICI-ICI, ICI monotherapy, ICI-CT, and CT alone.

Conclusions: Add-on CT to ICI produce a higher incidence of any grade or serious TRAEs than ICI-ICI combination or ICI monotherapy. However, ICI-ICI-CT regimen did not produce higher TRAEs than ICI-CT combination. Notably, the incidence of any grade and serious irAE reduced when add-on CT to ICI monotherapy. These findings provide evidence for clinical decision-making when considering different ICI combination regimens for advanced NSCLC patients.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA34

GioSwinG study: EGFR 突變接續型雙標靶亞洲臨床證據
第一線 afatinib 治療產生 T790M 後接續使用 osimertinib 之臨床實證分析
Second-line osimertinib following T790M-mediated acquired resistance to first-line afatinib in Asian patients with *EGFR* mutation-positive NSCLC: combined analysis of the UpSwinG and GioTag real-world studies

James Chih-Hsin Yang[1], Hyun Ae Jung[2], Shin Yup Lee[3], Seung Hyeun Lee[4], Min Ki Lee[5], Yong Chul Lee[6], Maximilian J Hochmair[7], Angela Märten[8], Satoru Miura[9], Sanjay Popat[10,11], Cheng-Ta Yang[12]
Dept. of Medical Oncology, National Taiwan University Cancer Center and Dept. of Oncology, National Taiwan University Hospital, Taipei, Taiwan[1], Division of Hematology-Oncology, Dept. of Medicine, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, South Korea[2], Dept. of Internal Medicine, School of Medicine, Kyungpook National University, Daegu, South Korea[3], Division of Pulmonary and Critical Care Medicine, Dept. of Internal Medicine, Kyung Hee University Medical Center, Kyung Hee University School of Medicine, Seoul, South Korea[4], Dept. of Internal Medicine, Pusan National University School of Medicine, Busan, South Korea[5], Dept. of Internal Medicine, Research Center for Pulmonary Disorders, Jeonbuk National University Medical School, Jeonju, South Korea[6], Dept. of Respiratory & Critical Care Medicine, Karl Landsteiner Institute of Lung Research & Pulmonary Oncology, Vienna, Austria[7], Boehringer Ingelheim International GmbH, Ingelheim am Rhein, Germany[8], Dept. of Internal Medicine, Niigata Cancer Center Hospital, Niigata, Japan[9], Lung Unit, Royal Marsden National Health Service Foundation Trust, London, United Kingdom[10], The Institute of Cancer Research, London, United Kingdom[11], Dept. of Thoracic Medicine, Chang Gung Memorial Hospital, Taoyuan, Taiwan[12]

Purpose: While 2nd- and 3rd-generation EGFR TKIs have shown superior clinical benefit versus first-generation EGFR TKIs in patients with *EGFR* mutation-positive NSCLC, 1st-line treatment of choice remains unclear. Sequential use of second- and third-generation TKIs could be an effective strategy in patients with T790M-mediated resistance to first-line treatment. Two recent non-interventional trials, GioTag and UpSwinG, demonstrated highly encouraging time-to-treatment failure (TTF) and overall survival (OS) in patients receiving sequential afatinib and osimertinib, especially in Asian patients (median TTF: 28.8–37.1 months; median OS: 42.3–44.8 months). Here, we have undertaken a combined analysis of Asian patients from GioTag and UpSwinG. **Methods:** In both studies (NCT03370770; NCT04179890), existing medical/electronic records were identified for consecutive EGFR TKI-naïve patients with *EGFR* mutation-positive NSCLC (Del19 or L858R) treated with 1st-line afatinib/2nd-line osimertinib in real-world clinical practice (all T790M-positive). Patients with active brain metastases were excluded. Primary objective: TTF. Key secondary objectives: OS and ORR. **Results:** 168 patients were analyzed. Most patients were recruited from South Korea or Japan (52%/21%). At the start of afatinib treatment: median age (range) 61.5 years (35–88); female 58%; ECOG PS (0/1/≥2) 29%/62%/9%; brain metastases 17%; Del19/L858R 65%/35%. At the start of osimertinib treatment: ECOG PS (0/1/≥2) 22%/61%/17%; brain metastases 14%. Overall, median TTF was 30.0 months (afatinib 14.5 months; osimertinib 11.1 months) and median OS was 45.2 months. Survival rate at 2/3 years was 81%/63%. Outcomes were best in Del19 patients (median TTF/OS: 31.2/63.5 months; Table). **Conclusions:** Sequential afatinib/osimertinib shows encouraging activity in Asian patients with *EGFR* mutation-positive NSCLC and T790M-mediated acquired resistance, especially those with a Del19 mutation. Activity was observed across 'real-world' patients, including those with poor ECOG PS and/or brain metastases. ECOG PS and incidence of brain metastases remained stable prior to, and after, afatinib.

	Median TTF, mos (95% CI)	Median OS, mos (95% CI)
Overall, n=168	30.0 (24.5–32.5)	45.2 (41.7–71.1)
Del19, n=109	31.2 (25.8–38.2)	63.5 (42.3–71.1)
L858R, n=59	25.1 (20.5–30.4)	39.1 (29.3–48.5)
No brain metastases*, n=138	30.4 (25.1–33.5)	45.2 (41.7–71.1)
Brain metastases*, n=28	23.9 (20.3–NR)	26.4 (19.1–29.6)
ECOG PS <2†, n=131	30.6 (25.1–36.0)	48.5 (41.8–71.1)
ECOG PS ≥2†, n=13	29.6 (15.6–NR)	33.1 (17.1–NR)

*Brain metastases status was unknown in two patients; †ECOG PS was unknown in 24 patients. NR = not reached.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA35

經鼻高流量氧氣導管在癌症病人的應用

林協霆[1], 黃崇仁[2]
和信治癌中心醫院一般內科部

The use of high-flow nasal oxygen in cancer patients

Hsieh-Ting Lin[1]; Chung-Jen Huang[2]
[1]Department of internal medicine, Koo Foundation Sun Yat-Sen Cancer Center, Taipei, Taiwan
[2]Division of pulmonary medicine and intensive care medicine, Koo Foundation Sun Yat-Sen Cancer Center, Taipei, Taiwan

Background: High-flow nasal cannula (HFNC) is a state-of-the-art respiratory support technique which delivers high flow, heated and humidified controlled concentration of oxygen via the nasal route. However, there are few data about its use in cancer patient, especially in patient with DNR/DNI coding.
Method: A retrospective study to evaluate the efficacy, safety, and tolerability of HFNC therapy for cancer patients was performed in a single cancer center.
Result: Twenty-nine patients underwent HFNC therapy from 2014 to 2021 were enrolled. The cancer diagnosis was mainly lung cancer (n = 14) and esophageal cancer (n = 4). 12 patients (41 %) showed a good response to HFNC therapy, and remaining 17 patients (59 %) failed to respond to the initial HFNC therapy. there are 13 patients with the code of DNR/DNI, and 10 patients was supported by HFNC till the end of life. Most patients and health care providers are satisfied with the quality of life in the difficult period.
Conclusion: HFNC provides good respiratory support for patients with hypoxemic respiratory failure and may be an alternative to NIV for DNI patients when considering the quality of life. It is safe and effective in different scenarios and can be used for palliative cancer care or post-op unstable cancer patients.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA36

非小細胞癌粟粒性肺轉移合併表皮生長因子受體突變之分析

張明閎,江國華

台南永康奇美醫院胸腔內科

Analysis of non-small cell lung cancer with miliary intrapulmonary metastasis in patients harboring epidermal growth factor receptor mutations

Ming-Hung Chang, Kuo-Hwa Chiang

Division of Chest Medicine, Department of Internal Medicine, Chi Mei Hospital, No.901, Zhonghua Rd., Yongkang Dist., Tainan City 710, Taiwan (R.O.C.)

Purpose: Miliary intrapulmonary carcinomatosis is an unique feature of lung metastasis in non-small cell lung cancer (NSCLC), indicating hematogenous dissemination. Some studies reported more frequency of epidermal growth factor receptor (EGFR) mutation and worse prognosis in these patients.

Materials and Methods: Cases were identified from Chi-Mei medical center cancer registry for the period 2015-2019. Inclusion criteria were NSCLC with contra-lateral lung metastasis and completion of EGFRexamination. Patients with miliary or non-miliary lung metastasis, harboring EGFR mutation were enrolled for survival analysis of tyrosine kinase inhibitor (TKI) prescription.

Results: From 401 NSCLC patients with contra-lateral lung metastasis, 85 patients with miliary type had higher proportion of EGFR mutation compared with non-miliary type(78.8% versus 62.9%, P=0.006). 225 patients harboring EGFR mutation with TKI prescription were enrolled for assessing time to discontinuation of TKI(TD-TKI), progression-free survival (PFS) and overall survival (OS). TD-TKI were 14.0 months [95% confidence interval (CI) 11.5-16.4] and 18.6 months (95% CI 15.5-21.7) in patients with miliary and non-miliary metastasis, respectively. PFS were 12.1 months(95% CI 10.0-14.3) and 17.3 months(95% CI 14.2-20.3) in miliary and non-miliary group. OS were 22.8 months(95% CI 18.1-27.4) and 29.0 months(95% CI 25.1-32.8) in miliary and non-miliary group.

Conclusions: NSCLC with miliary lung metastasis had higher chance of EGFR mutation and further study was necessary for survival evaluation.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA37

病例報告：使用 Crizotinib 治療後併發嗜酸性白血球血症、肺炎及嗜酸性白血球性腸炎

Hypereosinophilia, Pneumonitis and Eosinophilic Colitis Occur after Crizotinib Treatment: A Case Report

Chiung-Hsin Chang[1],Cheng-Han Yang[2], Tsung-Hsing Chen[3], Ying-Hao Wen[4], How-Wen Ko[1], Cheng-Ta Yang[1,5]

Department of Thoracic Medicine, Linkou Chang Gung Medical Hospital, Taoyuan, Taiwan[1];

Department of Anatomy and Pathology,Linkou Chang Gung Medical Hospital, Taoyuan, Taiwan[2];

Department of Gastroenterology, Linkou Chang Gung Medical Hospital, Taoyuan, Taiwan[3];

Department of Laboratory Medicine, Linkou Chang Gung Medical Hospital, Taoyuan, Taiwan[4];

Department of Thoracic Medicine, Taoyuan Chang Gung Medical Hospital, Taoyuan, Taiwan[5]

Anaplastic lymphoma kinase (ALK) inhibitors have become the standard of treatment for advanced non-small cell lung cancer (NSCLC) patients with positive ALK immunohistochemical (IHC) staining. However, treatment-related adverse effects are increasing. Severe adverse effects always interrupt cancer treatment. Here, we presented a 66-year-old male who experienced hypereosinophilia, pneumonitis, and eosinophilic colitis after crizotinib administration for 1 week. He had right lower lung adenocarcinoma with left supraclavicular lymph nodes and lung-to-lung metastases which were diagnosed in June 2017. Epidermal growth factor receptor (EGFR) mutation test revealed L858R and de novo T790M mutations. ALK-IHC stain showed positive. Initially, he received 6 cycles of pemetrexed plus cisplatin with a stable disease response. After first-line treatment, crizotinib was applied and the addition of osimertinib was recommended. One week after taking crizotinib, he complained of exertional dyspnea and bloody diarrhea. Chest X-ray disclosed increased infiltrations in both lungs. Laboratory data showed white blood cell count (WBC): 30700/mL, eosinophil: 69.1%, hemoglobin (Hb): 4.8 g/dL. Chest computer tomography (CT) revealed patchy ground glass opacities in bilateral upper lung fields. Bronchoalveolar lavage (BAL) and transbronchial lung biopsy (TBLB) reported no eosinophil accumulation nor infiltration except mild fibrosis with some neutrophils. Crizotinib was discontinued immediately. His dyspnea was improved soon after 3-day intravenous steroids and blood transfusion, but mild watery diarrhea persisted. He was then treated with osimertinib for 1 month, followed by combination therapy with osimertinib and alectinib for 1 more month. Diarrhea persisted and became worsen when combination therapy started. Colonfibroscopy was performed and biopsy of ascending colon proved eosinophilic colitis. Osimertinib and alectinib were therefore withdrawn and diarrhea was subsided. After that, pemetrexed monotherapy was prescribed. He has received 59 cycles in the following 3 years with a relatively stable condition. Crizotinib is an approved targeted therapy for the treatment of ALK-, ROS1-, or c-MET-positive advanced NSCLC. Physicians should be cautious for severe drug-related adverse effects. Hypereosinophilia and pneumonitis can be managed by steroids. For patients who receive ALK inhibitors and experience severe diarrhea, eosinophilic colitis should be considered.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA38

生物製造之癌症晶片應用於肺癌患者用藥預測平台

陳家弘[1,2],涂智彥[1,2*], 陳怡文[3], 謝明佑[3], 廖偉志[1,2,4], 吳秉儒[1], 鄭文建[1], 陳致宇[1], 陳偉峻[1,4], 夏德椿[1,4,5], 徐武輝[1,25], 方信元[6]

中國醫藥大學附設醫院胸腔內科, 胸腔外科, 高壓氧中心, 多維列印醫學研究及轉譯中心 ; 中國醫藥大學醫學系, 呼吸治療學系

Biofabricated the lung cancer patient-specific tumor-on-a-chip system for medical prediction

Chia-Hung Chen[1,2], Chih-Yen Tu[1,2*], Yi-Wen Chen[3], Ming-You Shie[3], Wei-Chih Liao[1,2,3], Biing-Ru Wu[1], Wen-Chien Cheng[1], Chih-Yu Chen[1], Wei-Chun Chen[1,4], Te-Chun Hsia[1,3,4], Wu-Huei Hsu[1,2]and Hsin-Yuan Fang[5]

[1]Division of Pulmonary and Critical Care Medicine, China Medical University Hospital [2]School of Medicine, China Medical University, [3]X-Dimension Center for Medical Research and Translation,[4]Hyperbaric Oxygen Therapy Center, China Medical University Hospital [5]Department of Respiratory Therapy, [6]Department of Thoracic Surgery, China Medical University, Taichung, Taiwan

Purpose: Patient-specific ex vivo models of human tumors that reconstruct the pathological characters and complicated ecology of primary tumor could assist decide the most suitable cancer treatment planning for individual patients. The biofabricated tumor-on-a-chip cell culture technology can be used to create in vitro human orthotopic models of non-small-cell lung cancer (NSCLC), vascular endothelial cells and decellularized extracellular matrix that repeat tumor microenvironment to mimic cancer growth and drug delivery. The aim of this study is to assess the the tumor-on-a-chip can be used to predict the respone of lung cancer treatment.

Materials and Methods: This prospective study was conducted in a China medical university hospital and involved in lung cancer patients. Tumor biopsy was performed for tumor-on-a-chip before lung cancer treatment. All Chemotherapy and tyrosine kinase inhibitor (TKI) therapy were test the repsonse on tumor-on-a-chip. The final tumor response was evaluated after treatment for 3 months.

Results: There were 24 lung cancer paitnes enrolled in our study. The mean age was 64.4 years and 12 patient were males. Of them, 19 patient were adenocarcinoma (14 patients with EGFR mutation) and 5 patients were squamous cell carcinoma. 11 patients were prescribed TKI therapy and 14 patiens were prescribed chemotherapy for treatment. Initial treatment response included partial response (n=8), stable disease (n=9) and progressive disease (n=7). Compared with the tumor-on-a-chip result revealed : actual positive and predicted positive (n=15), actual negative and predicted negatvie (n=6), actual positive and predictive negative (n=2), actual negative and predicted positive (n=1). The accuracy, sensitivity and specificity was 87.5%, 88.2% and 85.7%

Conclusions: The patient-specific lung tumor-on-a-chip might be beneficial for the association of effective therapies for the lung cancer patient treatment in clinical settings.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA39

探討晚期具有上皮生長因子(EGFR)基因突變之肺腺癌病人在接受第一線 afatinib 藥物與後續藥物的選擇與治療成效

梁勝鎧 [1,2],李孟叡 [3], 楊景堯 [3], 廖唯昱 [3], 何肇基 [3], 陳冠宇 [3],施金元 [3*], 余忠仁 [3]

台大醫院新竹分院胸腔內科, 台大癌醫分院綜合內科, 台大醫院胸腔內科

Investigating the clinical outcomes of advanced *EGFR* mutant lung adenocarcinoma patients using afatinib as first-line treatment and subsequent treatment option

Sheng-Kai Liang[1,2], Meng-Rui Lee[3], Ching-Yao Yang[3], Wei-Yu Liao[3], Chao-Chi Ho[3], Kuan-Yu Chen[3], Jin-Yuan Shih[3,*], Chong-Jen Yu[3]

Department of Internal Medicine, National Taiwan University Hospital Hsinchu Branch, Hsinchu, Taiwan[1], Department of Medicine, National Taiwan University Cancer Center, Taipei, Taiwan[2], Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan[3]

Objectives: Afatinib as a second-generation EGFR tyrosine kinase inhibitor (TKI) could irreversibly bind to ErbB family and definitely demonstrate the favorable efficacy for treating patients with advanced *EGFR* mutant lung adenocarcinoma. We continuously investigated a real-world cohort of patients treated with first-line afatinib at single medical center and comprehensively analyzed the subsequent treatment options and various clinical outcomes.

Materials and Methods: From May 2014 to June 2019, we retrospectively recruited advanced lung adenocarcinoma patients with *EGFR* mutations receiving afatinib as first-line treatment at National Taiwan University Hospital. We excluded those patients with unknown of *EGFR* status, switching TKI drugs during first-line treatment, concomitant immunotherapy or chemotherapy, and taking afatinib less than 7 days. They were all followed till July 2021.

Results: Of 446 patients screened, 360met the inclusion criteria of advanced *EGFR* mutant lung adenocarcinoma with afatinib as a first-line treatment (median age of 61.8 years [range, 28-89], 212 females [58.9%], 255 never smokers [70.8%], and 110 patients [30.6%] with brain metastasis at diagnosis). The EGFR mutation status of all patients were reported as 280 (77.8%) common mutations (19DEL and L858R), 15 (4.2%) complex mutations with common mutations, and 65(19.0%) rare mutations (L861Q, G719A, Exon 20 insertion…). The median progression-free survival (PFS) was 13.5 months and overall survival was 44.3 months. After afatinib failure, 246 of 305 patients (80.7%) received subsequent treatment (including 130 chemotherapy, 115 any TKI, and 1 immunotherapy). Further, 166 patients received rebiopsy and 75 were found to have acquired *EGFR* T790M (45.2%). The PFS was 7.3 months of all acquired T790M patients taking Osimertinib as treatment, and further 3.0, 6.7, and 12.7 months of PFS were found in subgroup patients with rare, common, and complex mutations with common mutations (p=0.02), respectively. The PFS of alimata plus platinum-based drug was 5.2 months (95% CI, 4.52-5.91).

Conclusions: Among patients with *EGFR* mutant lung adenocarcinoma using afatinib as first-line treatment in real-world practice, the duration of PFS and OS was superior to the results of clinical trials. Of 80.7% patients after afatinib failure receiving subsequent therapy, the PFS of Osimertinib for T790M positive patient and alimta/platinum drugs were 7.3 and 5.2 months, respectively.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA40

肺復健運動介入對改善肺癌手術病人術後併發症之成效：傾向分數配對世代研究

蔡芝瑜[1]，吳俊廷[2]，何蕙如[3]，黃馨儀[4]，洪朝明[5]，郭躍虹[6]

1 義大癌治療醫院癌症中心/2 義大癌治療醫院胸腔內科/肺部復原中心 3 義大癌治療醫院胸腔外科/4 義大癌治療醫院癌症規劃發展中心/5 義大癌治療醫院一般外科/6 義大醫院放射腫瘤科

Pulmonary Rehabilitation Improve Postoperative Complication of Lung Cancer Patients: A Propensity Score Matched Cohort Study.

Jhih-Yu Tsai[1], Jiun-Ting Wu[2], Hui-Ju Ho[3], Hsin-I Huang[4], Chao-Ming Hung[5], Yao-Hong Kuo[6]

Cancer Center[1], Division of Pulmonary Medicine/Pulmonary Rehabilitation Center[2], Department of Thoracic Surgery[3], Center of Cancer Program Development[4], Department of General Surgery, E-Da Cancer Hospital[5]; Department of Radiation Oncology, E-Da Hospital[6]

Background

Lung cancer surgery was associated with postoperative complication and worse performance status. Pulmonary rehabilitation has been shown to be beneficial of the postoperative status. We conducted a retrospective study to evaluate the effectiveness of pulmonary rehabilitation after lung cancer surgery.

Materials and Methods

Patients who experienced video assisted thoracoscopic lobectomy or tri-segmentectomy for lung cancer at E-Da Cancer Hospital were enrolled in this study. After July 2020, the pulmonary rehabilitation program was implemented. In addition, the six-minute walk test (6MWT) was also performed at regular time points (before surgery, 1, 2, and 3 months after surgery). Patients with wedge resection, segmentectomy (except >= 3), bi-lobectomy, and pneumonectomy were excluded. The primary endpoints were re-admission rate in 1 month and the length of admission after surgery. The secondary endpoints were the signs of infection. Propensity score matching with age, sex, and the location of primary tumor was done. All statistical analysis was done with R (4.0.4). Match-based regression was used as the advice of {MatchIt} package manual.

Results

From Sep. 2015 to Aug 2021, totally 348 patients experienced thoracic surgery at E-Da Cancer Hospital. Among these, 19 patients had pulmonary rehabilitation. After excluding inadequate surgery and etiology, 14 patients with rehabilitation (group A) and 28 patients without rehabilitation (group B) were matched optimally. Between group A and B, there was no significant difference of re-admission rate (adjusted HR: -1.8, $p = 0.21$) or length of admission (adjusted estimate: -1.7, $p = 0.33$). In secondary endpoints, the pulmonary rehabilitation was associated with the less occurrence of pulmonary infection ($p < 0.001$) and less postoperative fever ($p < 0.001$). The series of 6MWT showed most patients (8/9) returned to the preoperative level in 3 months.

Conclusions

The pulmonary rehabilitation is beneficial of less fever and infection to lung cancer patients in the postoperative period. With pulmonary rehabilitation, most patients recovered to the pre-operative status of performance.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA41

第四期肺腺癌 EGFR 第 20 號外顯子插入突變病人經化學治療惡化 使用 amivantamab 治療之病例報告

沈孟芳[1],溫岳峰[2], 陳若蘭[1], 莊子儀[1],
中國醫藥學附設醫院新竹分院胸腔科, 台大新竹分院,

A Patient of stage IV non-small cell lung cancer harboring Exon 20 insertion treated with Amivantamab after chemotherapy fail

Meng-Fang Shen[1], Yueh-Feng Wen[2], Jo-Lan Chan[1], Tzu-Yi Chuang[1]
Division of Pulmonary and Critical Care Medicine, China Medical University Hsopital Hsinchu Branch[1],
Division of Pulmonology, National Taiwan Unniversity Hospital, Hsinchu Branch[2]

Introduction: Exon 20 inerstion was the third most common type of EGFR mutation in NSCLC, after Exon 19 deletion and Exon 21 L858R point mutation.() However, unlike classsical EGFR mutation, it showed promary resistance to conventional EGFR TKI. Standard therapy for Exon 20 insertion patient is chemotherapy. FDA had just approved Amivantamb(EGFR-cMet bispecific antibody) for EGFR exon 20 insertion NSCLC patient according to phase1 CRYSALIS trial in 2021. It showed that in patient with EGFR exon20 mutant NSCLC, amivantamab induced an objective response rate in 40% of patient with a median duration of response of 11.1 months. Here we presented a case of Exon 20 insertion NSCLC patient who was treated with amivantamab after chemotherapy failed.

Case Report: A 51 y/o woman was diagnosed as stage IV lung adenocarinoma with pleura and pericardium metastasis. Real time PCR with cobas system showed exon20 insertion. 5 cycles of chemotherapy with cisplatin and pemetrexed was performed but disease progressed. Chemotheraoy regimen was switched to docetaxel for total 6 cycles with partial response. And then chemotherapy was discontined for 3 months temporarily due to personal reason. However, rapid progression was noted later and was refractory to further line chemotherapy. Patien did not receive further analysis for Exon 20 insertion subtype due to economic consern. 3 months ago, we start to treat the patient with amivantamab. Treatment is still ongoing and treatment reponse will be evaluated recently.

Conclusion: For NSCLC horbaring Exon 20 insertion patient, there were several newly-developed medication recently. In the era of precision medicine, it is important to know whether all patient within this molecular subtpye will reponse universally to these medication. Moreover, long term durability of EGFR exon 20 inertion medication and further resistance mechanism remain unknown.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA42

使用 GSEA (Gene Set Enrichment Analysis) 來探索 Metformin 在肺癌的應用及相關機轉

王俊隆[1,2], 籃英維[2], 李建融[3], 陳全木[2]

[1] 臺中榮民總醫院胸腔內科, [2] 國立中興大學生命科學系, [3] 國立中興大學基因體暨生物資訊學研究所

Metformin Related Anti-Tumorigenesis in Lung Cancer Cell Line by GSEA Method

Jiun-Long Wang[1,2], Ying-Wei Lan[2], Jian-Rong Li[3], Chuan-Mu Chen[2]

[1] Division of Chest Medicine, Department of Internal Medicine, Taichung Veterans General Hospital, Taichung 40705. [2] Department of Life Sciences, National Chung Hsing University, Taichung 402.

[3] Institute of Genomics and Bioinformatics, National Chung Hsing University, Taichung 401, Taiwan

Purpose:

We attempt to explore anti-tumorigenesis pathway by metformin in lung cancer setting. We utilize the GSEA (Gene Set Enrichment Analysis) as a useful tool for approach.

Materials and Method:

First, we design lung cancer cell line (A549) exposure to metformin under normoxia and hypoxia status. Second, we harvest the cell line post treatment and extracted RNA and transfer to cDNA gradually. We analyze the cDNA microarray by means of **G**ene **S**tudy **E**nrichment **A**nalysis (**GSEA**) method. We focus on the anti-angiogenesis aspects involved in lung cancer develop and treatment.

Results:

We preliminary find the metformin possess the anti-angiogenesis function by suppression **hypoxia induced factor(HIF)-1α and PGK1** expression and proved by microarray (heat map) and western blot analysis. Further in vivo study is anticipated to elucidate the anti-tumor effect of metformin.

Conclusion:

We found Metformin can counteract the angiogenesis pathway，especially when exposure to hypoxia condition. Further approach the signal transduction and real mechanism between metformin and hypoxia environment involved in the anti-tumorigenesis needs further investigation.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA43

在第四期外顯子 19 遺失之肺腺癌病人使用泰格莎快速惡化之後發現原生型 MET 擴增以截剋癌，妥復克和癌思停混合治療之病例報告

莊子儀 [1,3*], 溫岳峰 [2,3], 沈孟芳 [1], 陳若蘭 [1]

中醫大新竹附醫胸腔重症科, 台大新竹分院, 台大醫院內科部,

Combination of crizotinib, afatinib and bevacizumab in exon 19 deletion EGFR-mutant stage IV lung adenocarcinoma with de novo MET amplification post-osimertinib rapid progression: a case report

Tzu-Yi Chuang[1, 3 *], Yueh-Feng Wen[2,3], Meng-Fang Shen[1], Jo-Lan Chen[1]

Division of Pulmonary and Critical Care Medicine, China Medical University Hsing-Chu Hospital[1], Division of Pulmonology, National Taiwan University Hospital Hsing-Chu Branch[2], Department of Medicine, National Taiwan University Hospital[3]

Introduction: Osimertinib is one of the standard tyrosine kinase inhibitor (TKI) for patients with stage IV lung adenocarcinoma harboring epidermal growth factor receptor (EGFR) mutations exon 19 deletion without brain metastasis. The duration of the response is limited in time due to the development of resistance mechanisms such as MET amplification. This report describes the successful treatment with the combination of crizotinib and afatinib with bevacizumab in a patient with exon 19 deletion stage IV lung adenocarcinoma after first line osimertinib in use with rapid progression and discovered de novo MET amplification.

Case Report: A 55-y/o female started self-paid erlotinib after CT-guide biopsy proved right upper lobe lung adenocarcinoma with lung to lung lymphangitis carcinomatosis. Right upper lobe tumor decreased gradually after initial erlotinib for 7 days and shifted to osimertinib for exon 19 deletion without brain metastasis confirmed by brain MRI. New onset left side malignant pleural effusion and pericardial effusion were noticed after osimertinib for 13 days and she received self-paid anti-angiogenesis agent bevacizumab. New onset SVC syndrome and brain metastasis were noticed before second combination therapy with osimertinib and bevacizumab. She received pemetrexed, self-paid carboplatin and bevacizumab for rapid disease progression. Liquid biopsy revealed exon 19 deletion, TP 53 and MET amplification. Her condition improves after the treatment was shifted to self-paid crizotinib for de novo MET amplification, aftatinib for exon 19 deletion and combined with self-paid bevacizumab. Capmatinib was also applied at NTUHCH for MET amplification. The side effect was well tolerable with constipation (grade2/5) and hypertension (grade 3/5).

Conclusions: The treatment response of osimertinib is expected very well for patients with exon 19 deletion stage IV lung adenocarcinoma without brain metastasis. Rapid disease progression after initial TKI use should raise the consideration of de novo resistant mechanism such as T790M or MET amplification. Timely adjustment of medication for cancer therapy is mandatory not only for disease control but also for the delayed result of liquid biopsy. Toxic profiles of combination therapy should be closely monitored and well managed to keep future therapy.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA44

在第四期 ROS1 融合之肺腺癌病人使用一線截剋瘤惡化之後改以二線瘤立剋治療失敗之 MET L1195V 基因突變及 MET 擴增之病例報告

莊子儀 [1,2*], 何松融 [2], 葉步盛 [2]

中醫大新竹附醫胸腔重症科 [1], 敏盛綜合醫院胸腔內科 [2]

Failed second line therapy with lorlatinib in ROS1 fusion-positive stage IV lung adenocarcinoma with MET L1195V mutation and MET amplification post-first line crizotinib progression: a case report

Tzu-Yi Chuang[1, 2 *], Sung-Jung Ho[2], Pu-Sheng Yeh[2],

Division of Pulmonary and Critical Care Medicine, China Medical University Hsing-Chu Hospital[1], Division of Pulmonary Medicine, Min-Sheng General Hospital[2]

Introduction: Lorlatinib is one of the standard first/second line therapy for patients with stage IV lung adenocarcinoma harboring ROS1 fusion-positive mutation. The duration of the response is limited in time due to the development of resistance mechanisms such as ROS1 mutation or MET amplification. This report describes the failed treatment with the combination of lorlatinib and bevacizumab in a patient with initial ROS1 fusion positive stage IV lung adenocarcinoma after first line crizotinib in use and discovered MET L1195V mutation and MET amplification.

Case Report: A 71-y/o male started crizotinb after CT-guide biopsy proved left upper lobe lung stage IV adenocarcinoma with ROS1 fusion-positive mutation by FISH and proton therapy for brain metastasis confirmed by brain MRI. The initial treatment response is nearly complete remission of both lung and brain tumor after 3 months. But new lesions in bone confirmed by bone scan, metastasis to stomach confirmed by biopsy and malignant pleural effusion was diagnosed after 4 more months' treatment of crizotinib. Lorlatinib was started as standard second line therapy. Malignant pleural effusion decreased only after combination with bevacizumab after initial treatment of lorlatinib but patient did not survive the rapid disease progression even under salvage therapy with bevacizumab, pembrolizumab, pemetrexed and carboplatin for high PD-L1 expression (75%). Pleural effusion next generation sequence (NGS) with SOFIVA Cancer Monitory v1.0 revealed MET L1195VTP53 C135Y, TP53 R282Q and MET amplification after patient's mortality.

Conclusions: The treatment response of lorlatinib is expected very well for patients with ROS1 fusion-positive stage IV lung adenocarcinoma after disease progression with first line crizotinib. Shortened duration of response after first line crizotinib in use could be due to high PD-L1 expression. Rapid disease progression after initial lorlatinib use should raise the consideration of other resistant mechanism such as our case. Timely re-biopsy for NGS and adjustment of medication for cancer therapy is mandatory not only for disease control but also for the mechanism of resistance.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA45

ROS1, ALK 與 EGFR 三種不同驅動因子突變之非小細胞肺癌之血栓風險分析

王馨儀[1,4],吳尚俊[2], 林彥廷[2], 陳崇裕[1], 施金元[3,4*]

[1] 台大醫院雲林分院; [2] 臺大醫院癌醫中心分院; [3] 臺大醫院; 4 台大臨床醫學研究所

Risk of thromboembolism in NSCLC with different oncogenic drivers, including ROS1, ALK and EGFR mutation

Hsin-Yi Wang[1,4], Shang-Gin Wu[2], Yen-Ting Lin[2,4], Chung-Yu Chen[1], Jin-Yuan Shih[2,4]

[1]Department of Internal Medicine, National Taiwan University Hospital Yunlin Branch, Yunlin, Taiwan; [2] National Taiwan University Cancer, Taipei, Taiwan;[3] Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan; [4]Graduate Institute of Clinical Medicine, College of Medicine, National Taiwan University, Taipei, Taiwan

Background: ALK and ROS1 positive lung cancer was reported to associate with an elevated risk of thromboembolic events. The study aimed to assess the long-term risk of developing thromboembolism in ROS1 positive lung cancer and compared to lung cancer with other oncogene drivers in the Asia population.

Methods: We retrospectively enrolled a cohort of ROS1 positive lung adenocarcinoma in a medical center in Taiwan and collected comparison cohorts of ALK+ and EGFR+ lung cancer. Events of venous and arterial thromboembolism throughout the cancer course were identified and the incidence rate was calculated. Characteristic and risk factors of thromboembolic events were also evaluated.

Results: Forty-four ROS1+, 98 ALK+ and 168 EGFR+ NSCLC patients were enrolled in the analysis. A total of 11 (25%), 36 (36.7%) and 38 (22.6%) patients in the ROS1, ALK and EGFR cohort respectively had a subsequent diagnosis of thromboembolic events throughout the follow-up course of the disease (p=0.042). The incidence rate was 99.0, 91.9 and 82.5 events per 1000 person-years for the 3 groups respectively. The majority of thrombosis events in the ROS1 (91.6%) and ALK (85.4%) cohort were venous. On the contrary, nearly half (43.2%) of thromboembolic events were arterial in the EGFR cohort. Most of the patients had thromboembolic events at the status of disease progression. A higher proportion of thromboembolic events were noted while cancer diagnosis in the ROS1 group (36.3%) than in ALK (16.7%) and EGFR (10.5%) group. Stage was the only clinical variable associated with thromboembolic risk both in univariate and multivariable analysis. More advanced stages resulted in a significantly higher risk of thromboembolic events. (OR: 1.62; 95% CI: 1.18–2.22; p=0.003) There was statistical significance in survival difference between patients with and without thromboembolism only in the EGFR group, but not in ALK or ROS1 group.

Conclusion: ROS1 and ALK-positive NSCLC had similar risks and incidence in venous thrombosis across the cancer course. EGFR mutated NSCLC had fewer venous thrombosis events but more arterial events probably related to the elder population.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA46

一位肺鱗狀上皮細胞癌的 36 歲年輕女性因快速成長之左心室腫塊引起暈厥。

李岱晃[1,2]、張旭良[1,2]、魏伯儒[1,2]、黃虹綾[1,2]、蔡毓真[1,2]，楊茹閔[1]、楊志仁[2]、許超群[2]、鍾飲文[2]、洪仁宇[1,2]

高雄市大同醫院內科[1]高雄醫學大學附設醫院內科部胸腔內科[1,2]

Syncope Caused by Rapid Growth Left Ventricular Mass in 36 Years Old Female Patient with Lung Squamous Cell Carcinoma.

Tai-Huang Lee[1,2], Hsu-Liang Chang[1,2], Po-Ju Wei [1,2], Hung-Ling Huang[1,2], Yu-Chen Tsai[1,2], Ju-min Yang [1], Chih-Jen Yang[2] ,Chau-Chyun Sheu[2], Inn-Wen Chong[2] ,Jen-Yu Hung[1,2]

[1]Department of Internal Medicine, Kaohsiung Municipal Ta-Tung Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan, [2]Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan.

Introduction: The cardiac tumors are rare, and the primary cardiac tumors are almost benign lesions and metastatic cardiac tumors are may come from melanoma, lung cancer, breast cancer and hematologic malignancy. Although most patients with cardiac metastasis have no symptoms, the cardiac metastasis may cause arrhythmia, myocardial infarction, congestive heart failure, cardiac tamponade and presented with dyspnea, cough, chest pain, palpitation, syncope and circulation collapse.

Case presentation: The 36 years old young female patient with thalassemia history came to our emergency room due to chest pain and dyspnea in progress. The chest radiograph and Chest computed tomography (CT) showed left upper lung cavitation lesion around 3.6cm, bilateral pleural effusion with passive atelectasis and mild pericardial effusion. The cardiac echo showed preserved LV systolic function and mild amount pericardial effusion but no definite cardiac tumor. The thoracentesis showed exudative pleural effusion and negative for malignancy. The bronchoscopic biopsy showed atypical squamous cells. The video-assisted thoracoscopic surgical left upper lung segmentectomy was performed and showed squamous cell carcinoma. The positron emission tomography showed a high grade FDG-avid lesion over myocardium of left ventricle and adjacent pericardium one month later. The surgical biopsy was suggested. The syncope episode was noted first. The 24hours- Holter showed few atrial premature complexes and she still refused to undergo a surgical biopsy and asked discharge. Unfortunately, the patient lost her consciousness one week later again, and ventricular fibrillation developed. After resuscitation and intubation, the supportive care with ventilator was given due to poor condition. The follow-up chest CT and cardiac echography showed a rapid growth tumor over her left heart with seeding thrombi inside left ventricle.

Conclusion:

We demonstrated a rapid growth cardiac tumor which was suspected from previous lung squamous cell carcinoma in a very young female. Cardiac tumorsare very rare and difficult to diagnose. However, surgical intervention should be carried out as soon as possible to get enough tissue for definite diagnosis because of rapid deterioration is possible.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA47

肝臟性肺腺癌合併 MET 擴增: 個案報告

陳俊榮[1],吳俊廷[1], 周柏安[1], 魏裕峰[1],黃明賢[1]

義大癌治療醫院呼吸胸腔內科[1]

Hepatoid adenocarcinoma harboring MET amplification: A case report

Jiun-Rung Chen[1], Jiun-Ting Wu[1], Po-An Chou[1], Yu-Feng Wei[1], Ming-Shyan Huang[1]

Division of Pulmonary and Critical Care Medicine, EDA Cancer Hospital[1]

Introduction: Hepatoid adenocarcinoma is a rare extrahepatic tumor with morphologic features similar to hepatocellular carcinoma. The most common site of origin for hepatoid adenocarcinoma is stomach (63%). Other sites of origin include ovary(10%), lung (5%), gallbladder (4%), pancreas (4%) and uterus (4%). *Ishikura et al.* studied five cases of primary pulmonary adenocarcinoma with a-fetoprotein (AFP) expression. They coined the term hepatoid adenocarcinoma of lung and adopted two criteria for diagnosis: (1) typical acinar or papillary adenocarcinoma and (2) a component of carcinoma that resembles hepatocellular carcinoma and produces AFP.

Case: The patient, a 52-year-old white male non-smoker, has a history of traumatic intracranial hemorrhage. He sought medical consultation due to dry cough for one month and right neck firm nodule lesion. Outpatient chest X-ray suggested the presence of a lung mass in right apex. Computed tomography showed a 2.9 x 1.9 cm mass in the apex with a single lung metastasis, lymph nodes in right neck, right hilum and right mediastinum. There were no hepatic mass lesions. Clinical stage was IVB (T3, N3 and M1b). Excisional biopsy of neck lymph node and transbronchoscopic lung biopsy revealed hepatoid adenocarcinoma. Immunohistochemically, the tumor cells are positive for CK7 and HepPar-1, negative for TTF-1, CK20 and p40. PD-L1 SP263 expression was 50%. Next Generation Sequencing revealed MET amplification with copy number 8.41. CEA was 13.49 ng/mL (normal ≤ 5 ng/mL). AFP was 6.64 ng/mL (normal ≤ 8.78 ng/mL). Panendoscopy and colonofiberscopy revealed no significant malignancy. Partial response was achieved after three cycles of Taxotere and Cisplatin treatment. Post-treatment CEA level was 7.80 ng/mL (normal ≤ 5 ng/mL). However, right neck lymph node increased in size. Rebiopsy showed hepatoid adenocarcinoma. Then chemotherapy regimen was changed to Gemzar and Cisplatin. Stable disease was noted after two cycles of Gemzar and Cisplatin treatment. Capmatinib will be applied if disease progression.

Conclusions: We reported an extremely rare case of hepatoid adenocarcinoma harboring MET amplification. Partial response was noted after Taxotere and Cisplatin treatment. We will apply for Capmatinib after disease progression.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA48

第四期非小細胞肺癌病人的腫瘤轉移總量與預後分析

陳彥霖[1]，陳冠宇[1]

國立臺灣大學醫學院附設醫院內科部[1]

The Association of Metastatic Burden and Clinical Outcome in Stage IV Non-small Cell lung Cancer Patients

Yen-Lin Chen[1], Kuan-yu Chen[1]

Department of Internal Medicine, National Taiwan University Hospital[1]

Purpose: More than 45% of non-small cell lung cancer (NSCLC) patients are diagnosed of stage IV disease upon initial workup. Metastases per se is regarded as an ominous outcome predictor. However, stage IV diseases are not the same. The 8th edition of the IASLC Lung Cancer Staging system further divides the extra-thoracic metastases into the single and the non-single since their five-year survival rates are different (10% vs. 0%). To elucidate the dissimilarity of stage IV NSCLC patients, we invented a novel clinical scoring system of the metastatic burden to predict the survival outcome of these cases.

Materials and methods: This retrospective cohort study was conducted at a tertiary teaching hospital in northern Taiwan. The patients diagnosed of NSCLC were screened from the Cancer Registry of the hospital. The cases were excluded if their histologic specimens not procured at the hospital or the therapy not completed at the hospital. The images of the enrollees were reviewed and metastatic burden was scored according to organ systems, of which we separated the organs into eleven part. Each organ system was scored with 0 to 3 points based the total metastatic tumors. The clinical features, survival condition, anti-cancer therapy, and treatment response were reviewed. Genetic alteration profiles were recorded if available. All categorical variables were analyzed with Pearson's $\chi 2$ tests, except where a small size (less than 5) required the use of Fisher's exact test. The overall survival was plotted by the Kaplan–Meier method and compared by the log-rank test.

Results: From Jan. 2012 to Nov. 2012, a total number of 119 patients diagnosed as stage IV NSCLC were included for analysis. The mean ± S.D. age of the enrollees at diagnosis was 68 ± 12.8 years, with male predominance (n=70, 58.8%). The histologic subtyping of the cases included adenocarcinoma (n=112, 94.1%), squamous cell carcinoma (n=5, 4.2%), pleomorphic carcinoma (n=1), and sarcomatoid carcinoma (n=1). Among the 76 cases receiving genetic testing, exon 21 mutation L858R (n=21, 28%) ranked top, followed by exon 19 deletion (n=15), ALK (n=3), G719A (n=2), L861Q (n=1), and exon 20 insertion (n=1). Based on the AJCC 8th ed. staging criteria, the 3-year survival rates of M1a, M1b, and M1c in our cohort were 4/27 (15%), 11/55 (20%), and 7/37 (19%). Based on our new scoring system, the 3-year survival rates of tier 1 (1~5), tier 2 (6~10), and tier 3 (≧11) were 15/67 (22%), 5/34 (15%), 2/18 (11%).

Conclusions: This study showed a down-slope trend in 3-year survival by adopting the new scoring system. The findings warrant aggressive therapeutic strategy with curative intent to improve survival outcome in stage IV NSCLC patients if the metastases burden is low.

Airway Disease

Interstitial Lung Disease

Other

Sleep Medicine

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB01

步速變異率–一項由 6 分鐘步行測試衍生出的新穎特徵–應用於肺阻塞病患的預後價值

黃俊達, 阮聖元, 簡榮彥, 余忠仁

國立臺灣大學醫學院附設醫院內科部

Prognostic value of pace variability, a novel 6-minute walk test-derived feature, in patients with chronic obstructive pulmonary disease

Chun-Ta Huang, Sheng-Yuan Ruan, Jung-Yien Chien, Chong-Jen Yu

Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan

Purpose: Chronic obstructive pulmonary disease (COPD) is the leading respiratory disorder associated with substantial morbidity and mortality. The 6-minute walk test (6MWT) is a commonly used tool to evaluate functional capacity of COPD patients. The 6-minute walk distance (6MWD) and a number of 6MWT-derived variables are associated with mortality and hospitalizations in patients with COPD. Pace variability, a well studied index in sports medicine, exerts a significant impact on athlete performance. Thus, we in this study sought to investigate the prognostic value of this index in COPD patients while they performed the 6MWT.

Materials and Methods: This study was conducted at the National Taiwan University Hospital. From January 2019 to May 2020, all spirometry-confirmed COPD patients who were enrolled in the Taiwan nationwide COPD pay-for-performance program and underwent their first-ever 6MWT within 90 days of program enrollment were included. Patient demographics, level of dyspnea, exacerbation history, lung function, and exercise data from the 6MWT were analyzed for their association with the prognosis. The primary outcome was a composite adverse outcome of respiratory mortality and hospitalizations for COPD exacerbations during 1-year follow-up. In the current study, the 6MWT was broken into three 2-minute periods for analysis and pace variability was defined as follows: (the maximum minus minimum average speed in any 2 minutes) divided by (the average speed over 6 minutes).

Results: A total of 163 COPD patients were included. At 1-year follow-up, 15 (9%) of the study population developed the composite adverse outcome. Multivariable logistic regressions identified two independent predictors for the composite outcome: % predicted 6MWD <72 (adjusted odds ratio, 9.159; 95% confidence interval, 1.214-69.086) and pace variability ≥0.40 (adjusted odds ratio, 6.106; 95% confidence interval, 1.484-25.115). Patients with either % predicted 6MWD <72 or pace variability ≥0.40 showed significantly worse composite outcome-free survival (log-rank P <0.001). Of note, COPD subjects with both % predicted 6MWD <72 and pace variability ≥0.40 experienced a particularly worse outcome at 1 year (log-rank P <0.001).

Conclusions: Greater pace variability during the 6MWT was significantly associated with a worse prognosis in terms of respiratory mortality and COPD hospitalizations in patients with COPD.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB02

血中鎘濃度和六分鐘行走測試時氧氣飽和度下降之相關性於慢性阻塞性肺病患者之探討

邱立忠[1,3],徐稟智[1], 顏宗海[2], 林恕民[1], 楊政達[1], 李忠恕[1*]

林口長庚醫院呼吸胸腔內科, 臨床毒物中心; 長庚大學臨床醫學研究所

The association between blood cadmium levels and oxygen desaturation during the 6-minute walk test in patients with chronic obstructive pulmonary disease

Li-Chung Chiu[1,3],Ping-Chih Hsu[1], Tzung-Hai Yen[2], Shu-Min Lin[1], Cheng-Ta Yang[1], Chung-Shu Lee[1*]

Department of Thoracic Medicine1, Clinical Poison Center, Kidney Research Center, Center for Tissue Engineering2, Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Taoyuan, Taiwan; Graduate Institute of Clinical Medical Sciences3, Chang Gung University College of Medicine, Taoyuan, Taiwan.

Purpose: Chronic obstructive pulmonary disease (COPD) is characterized by persistent airflow limitation and a history of exposure to noxious stimuli. Cigarette smoking is the most important causal factor for developing COPD. Cadmium, a minor metallic element, is one of the main inorganic components in tobacco smoke. Inhaled cadmium was associated with a decline in lung function, gas exchange impairment, and the development of obstructive lung disease.Patients with COPD who had oxygen desaturation during the 6-min walk test (6MWT) had a significantly worse prognosis than non-desaturation in COPD patients. Nonetheless, few studies have addressed the influence of blood cadmium levels on exercise-induced oxygen desaturation in COPD patients. Our objective was to assess the potential impact of blood cadmium levels on oxygen desaturation during the 6MWT among COPD patients.

Materials and Methods: We performed a retrospective analysis of patients with COPD who were examined for blood cadmium levels in a tertiary care referral center in Taiwan, between March 2020 and May 2021. The 6-min walk test was performed. Normal control subjects who had no evidence of COPD were also enrolled.

Results: A total of 73 COPD patients were analyzed and stratified into the high-blood cadmium group (13 patients) and low-blood cadmium group (60 patients). A total of 50 normal control subjects without a diagnosis of COPD were enrolled. The high-blood cadmium group had a significantly higher extent of desaturation than the low-blood cadmium group. The frequency of desaturation during 6MWT revealed a stepwise-increasing trend with an increase in blood cadmium levels. A multivariable logistic regression model revealed that blood cadmium levels were independently associated with desaturation during the 6MWT (odds ratio 12.849 [95% CI 1.168–141.329]; $p = 0.037$).

Conclusions: Our findings indicate that blood cadmium levels, within the normal range, were significantly associated with desaturation during 6MWT in patients with COPD.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB03

在無肺功能的情況下，調整過的多面向評估指數有助於預測肺阻塞病人嚴重急性惡化的發生

陳詩宇[1],彭惠絹[2], 吳佳陵[3], 余忠仁[4], 簡榮彥[4]

台大附設醫院新竹台大分院胸腔內科; 台大附設醫院護理部; 台大附設醫院綜合診療部呼吸治療科; 台大附設醫院內科部胸腔科

Modified Multidimension Index Can Predict Clinical Outcome in Chronic Obstructive Pulmonary Disease When Pulmonary Function Test Is Not Available

Shih-Yu Chen[1], Hui-Chuan Peng[2], Jia-Ling Wu[3], Chun-Kai Huang[4] , Chong-Jen Yu[4], Jung-Yien Chien[4]

Department of Internal Medicine, National Taiwan University Hospital Hsin-Chu Branch, Hsin-Chu, Taiwan1, Department of Nursing, National Taiwan University Hospital, Taipei, Taiwan2, Department of Integrated Diagnostic & Therapeutics, National Taiwan University Hospital, Taipei, Taiwan3, Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan4

Purpose: The model of body-mass index, the degree of airflow obstruction, modified Medical Research Council Score, and capacity of six-minute–walk test (BODE index) is important in the outcome prediction of patients with chronic obstructive pulmonary disease (COPD). However, in COVID-19 pandemic where lung function may not be available, modified indexes may be needed to aid clinical evaluation. Abnormal heart rate response had been noted to be associated with reduced forced expiratory volume in one second (FEV1) in previous literature. Hence, we hypothesized that by incorporating the result of post-6-minute walking test heart rate responses, the modified model could be a risk predictor for patients with COPD.

Material and Methods: The parameters of 6-minute walking test, post-6-minute walking test heart rate response, defined by the difference of peak heart rate and post-test one-minute heart rate, were recorded among patients with COPD. We compared the predictability of one year incidence of severe exacerbation of the modified multi-dimension index with BODE index.

Results: A total of 261 COPD patients were enrolled in National Taiwan University Hospital. Subjects were stratified by the presence of severe acute exacerbation into two groups. Those experiencing at least one episode of severe acute exacerbation had poor 6-minute walk performance (382.0±110.2 vs 311.4±105.99, $p<0.05$) and less heart rate response (14±9 vs 10.3±7, $p<0.05$). Heart rate response correlated positively with FEV1 ($R^2=0.08$, $p<0.05$). By substituting heart rate response (H) to lung function (O), the predictabilities were similar with BODE according to the area under ROC curves (AUROC 0.76 vs 0.75, p=0.48). Patients scoring 3-9 had significant increased risk of acute severe exacerbation than those scoring 0-2 (Hazard ratio = 1.49, 95% confidence interval, 1.27-1.74).

Conclusions: Modified multidimensional indexes comprised of body mass index, heart rate response, dyspnea score, 6-minute walk testing could be an alternative for clinical outcome prediction in patients with COPD where pulmonary function are not available.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB04

長效支氣管擴張劑在慢性阻塞性肺病與心臟衰竭共病病人的比較

林炯宏[1],葉日凱[2],林恕民[13*]

[1]林口長庚胸腔內科,[2]林口長庚心臟內科,[3]林口長庚呼吸治療科

Inhaled Long-acting Bronchodilators in Patients with Chronic Obstructive Pulmonary Disease and Heart failure

Chiung-Hung Lin[1], Jih-Kai, Yeh[2], Shu-Min Lin[13*]

[1] Division of Thoracic medicine, Department of Internal Medicine, Chang Gung Memorial Hospital, Chang Gung University, School of Medicine, Taipei, Taiwan.

[2] Division of Cardiology, Department of Internal Medicine, Chang Gung Memorial Hospital, Chang Gung University, School of Medicine, Taipei, Taiwan.

[3]Department of Respiratory Therapy, Chang Gung Memorial Hospital, Chang Gung University, School of Medicine, Taipei, Taiwan.

Background: The cardiovascular (CV) effects of inhaled long-acting beta2-agonists (LABAs) and long-acting antimuscarinic antagonists (LAMAs) in chronic obstructive pulmonary disease (COPD) are debated. Prior randomized clinical studies excluded patients with severe CV disorders, such as heart failure (HF). But CV safety concern of two inhaled bronchodilators still exists. Thus, we compare risks of adverse CV events between LABAs or LAMAs in patients with co-existing COPD and HF.

Method: This study included patients with prior diagnoses of COPD and HF under either LABA or LAMA maintenance therapy. The primary study end point composed of death and HF hospitalization. The secondary composite end point included non-fatal myocardial infarction (MI), non-fatal ischemic stroke, HF hospitalization, new onset atrial arrhythmia, and respiratory failure. These events were identified in the year following initiation of either LABA or LAMA treatment. The data was retrieved from the Chang Gung Research Database (CGRD) in 2007/01 to 2016/12. Analyses were conducted with Cox proportional regression models and inverse probability of treatment weighting (IPTW).

Results: A total of 5,107 and 1,110 patients with LABA or LAMA treatment was recruited to the study, respectively. The primary end point occurred in LABA user at a rate of 33.2 per 100 person-years, significantly higher than that in LAMA user at a rate of 30.2 per 100 person-years, with a IPTW hazard ratio, 1.18: 95% CI 1.02-1.36, $p<0.05$). For the secondary composite end point, the diffidence between patients with either LABA or LAMA treatment did not reach statistically significant (IPTW hazard ratio, 1.17: 95% CI 0.99-1.37). In subgroup analyses, the effect of increased CV event risks in LABA user was intensified among patients not concomitant inhaled corticosteroid (ICS), compared those with ICS (p value for interaction <0.05).

Conclusions: In patients with concomitant COPD and HF, treatment with LABA compared with LAMA increased risks of death and HF hospitalization. The risk of major CV events was intensified among patients without concomitant ICS. For patients with a prior diagnosis of HF, LAMA treatment may consider superior to LABA in term of increased incidence of CV events.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB05

維他命 D3 在肺上皮細胞透過粒線體裂變及自噬降低腫瘤壞死因子-α 所致之細胞間黏合分子-1 之表現

莊子儀 [1,2*], 陳又臻 [3], 陳玉怜 [3*]

中醫大新竹附醫 [1], 台大醫院內科部 [2], 台大醫學院解剖暨細胞生物研究所 [3]

Vitamin D3 decreases TNF-α-induced expression of intercellular adhesion molecule-1 (ICAM-1) in lung epithelial cells through a reduction of mitochondrial fission and mitophagy

Tzu-Yi Chuang[1, 2 *], Yu-Chen Chen [3], Yuh-Lien Chen[3]

Division of Pulmonary and Critical Care Medicine, China Medical University Hsing-Chu Hospital[1], Department of Internal Medicine, National Taiwan University Hospital[2], Department of Anatomy and Cell Biology, College of Medicine, National Taiwan Univeristy[3]

Purpose: The anti-inflammatory effects of vitamin D3 and the underlying mechanisms in lung inflammation was unclear. The purpose of this study was to examine the effects and mechanisms of action of vitamin D3 (Vit. D) on the expression of intercellular adhesion molecule-1 (ICAM-1) in vitro and in vivo with or without tumor necrosis factor α (TNF-α) treatment.

Materials and Methods: We used A549 cells as cell culture model and male C57BL6/J wild-type mice as animal model. Cells were pretreated with Vit. D for 24-h and then treated with 10 ng/mL TNF-α. Animals were orally fed Vit. D (10,000 IU/kg/day) for 14 days and TNF-α (10 μg/kg) was slowly infused into the trachea. Various experiments including western blot, immunofluorescent staining, mitochondrial ROS, membrane potential, isolation assay were performed in cells and animals.

Results: Pretreatment with Vit. D reduced the expression of ICAM-1 and leukocyte adhesion in TNF-α-treated A549 cells. TNF-α increased the accumulation of mitochondrial reactive oxygen species (mtROS), while Vit. D reduced this effect. Pretreatment with Vit. D attenuated TNF-α-induced mitochondrial fission by the increased expression of mitochondrial fission factor (Mff), phosphorylated dynamin-related protein 1 (p-DRP1), and mitophagy-related proteins (BCL2/adenovirus E1B 19 kDa protein-interacting protein 3, Bnip3) in A549 cells. Inhibition of DRP1 or Mff significantly decreased ICAM-1 expression. We found that Vit. D decreased TNF-α-induced ICAM-1 expression, mitochondrial fission, and mitophagy via the AKT and NF-κB pathways in A549 cells. ICAM-1 expression, mitochondrial fission, and mitophagy were increased in the lung tissues of TNF-α-treated mice, while Vit. D supplementation reduced these effects.

Conclusions: In this study, we elucidated the mechanisms by which Vit. D reduces the expression of adhesion molecules in models of airway inflammation. Vit. D might be served as a novel therapeutic agent for the targeting of epithelial activation in lung inflammation.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB06

修格蘭氏症候群患者發生漸進性纖維化間質性肺病的危險因素分析 - 病例對照研究

陳育萱[1],謝欣融[1], 簡榮彥[1], 謝松洲[2], 張允中[3], 王鶴健[1]

臺大醫院內科部胸腔科[1], 臺大醫院內科部風濕免疫科[2],臺大醫院影像醫學部[3]

Incidence and risk factors for the development of progressive fibrosing interstitial lung disease in patients with Sjögren's syndrome - A case-control study

Yu-Hsuan Chen[1], Hsin-Jung Hsieh[1], Jung-Yien Chien[1], Song-Chou Hsieh[2], Yeun-Chung Chang[3], Hao-Chien Wang[1]

Division of Chest Medicine, Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan[1]; Division of Immunology, Rheumatology and Allergy, Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan[2]; Department of Medical Imaging, National Taiwan University Hospital, Taipei, Taiwan[3]

Purpose: We aim to identify the risk factors for the development of progressive fibrosing interstitial lung disease (PF ILD) in patients with Sjögren's syndrome (SjS).

Materials and Methods: Patients with SjS with HRCT scan 2015-2021 were retrospectively identified. Of these patients, SjS with ILD was diagnosed by high resolution chest tomography (HRCT). PF ILD was defined as relative decline in forced vital capacity (FVC) ≧ 10% of the normal predicted values or relative decline in FVC ≧ 5-10% of the normal predicted values with worsening HRCT scan within 24 months. Patients who had no baseline pulmonary function test or HRCT, 24-months pulmonary function test or HRCT, follow-up period less than 24 months were excluded. The enrolled patients were grouped in non-PF ILD and PF ILD. Demographic data, pulmonary function test, autoimmune features, and patterns on HRCT were recorded. Descriptive and statistical analyses were used to compare groups with the aforementioned parameters**.**

Results: A total of 153 patients with SjS with HRCT scan were retrospectively reviewed. Of these, 51 patients were excluded according to the exclusion criteria. Eventually, 102 patients were enrolled and classified into non-PF ILD group (n= 53) and PF ILD group (n= 49). Higher baseline erythrocyte sedimentation rate (ESR) and less response to disease modifying anti-rheumatic drugs (DMARDs) in FVC within one year were risk factors with statistical significance. Compared with non-PF ILD group, the pattern of ground glass opacities with traction bronchiectasis at baseline on HRCT were less in PF ILD group (69.8% vs. 49.0%, p=0.043).

Conclusions: Higher baseline ESR and less response to DMARDs in FVC within one year were risk factors of the development of PF ILD in SjS patients with ILD.Comparing to non-PF ILD group, the pattern of ground glass opacities with traction bronchiectasis at baseline on HRCT were less in PF ILD group.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB07

比較使用益肺纖，比樂舒活,和移植人類臍帶間質幹細胞逆轉動物肺纖維化程度差異

朱國安[1],林文仁[1], 許健威[1], 傅毓秀[2]

高雄榮民總醫院內科部胸腔內科, 國立陽明交通大學解剖暨細胞分子研究所

Comparison of Reversal of pulmonary fibrosis by nintedanib, pirfenidone, and human umbilical mesenchymal stem cells in animal model

Kuo-An Chu[1], Wen-Ren Lin[1], Chien-Wei Hsu[1], Yu-Show Fu[2]

Division of Chest Medicine, Department of Internal Medicine, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan[1], Institute of Anatomy and Cell biology, National Yang Ming Chiao Tung University, Taiwan[2]

Purpose: The study compared effects of antifibrotic medications, pirfenidone, and nintedanib, with transplantation of human umbilical mesenchymal stem cells (HUMSCs) in restoring rat pulmonary fibrosis (PF).

Materials and Methods: Intratracheal injection 5 mg bleomycin (BLM) following by transplantation of 2.5× 10^7HUMSCs or daily oral nintedanib/ pirfenidone was performed on day 21 following BLM damage. Repiratory rates, blood oxygen saturation, quantification of alveolar space, cell infiltration and collagen deposition of BLM rats were measured.

Results: After BLM injection, significant decrease in blood oxygen saturation and an increase in respiratory rates was found, while no significant improvements in nintedanib or pirfenidone groups. Those who transplanted with HUMSCs showed a significant improvement in blood oxygen saturation and respiratory rates. Quantification results revealed that a significant reduction in alveolar space and increases in cell infiltration and collagen deposition of BLM rats. Those BLM rats transplanted with HUMSCs had a significant recovery in alveolar space and decreases in cell infiltration and collagen deposition. The inflammatory cell numbers in the bronchoalveolar lavage was increased in the BLM group, while the rats treated with nintedanib or pirfenidone and HUMSCs, all presented lower inflammatory cell number than the BLM group.

Conclusions: Transplantation of HUMSCs could effectively treat PF as opposed to the administration of anti-fibrotic drugs with nintedanib or pirfenidone with a significant better result in lung volume, pathological changes, lung function, and blood oxygen saturation.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB08

阻塞性睡眠呼吸中止症患者長鏈非編碼 RNA FKSG29 的過度表現會透過 miR-23a-3p 訊息軸線調節間歇性缺氧所誘導的氧化壓力和細胞凋亡

陳永哲[1,2],林孟志[1,2*],蘇茂昌[1,2],許博淵[1],蕭長春[5],秦建弘[1,2],劉嘉為[3],王亭雅[1],林詠詠[1],李松洲[4]
高雄長庚呼吸胸腔內科, 睡眠中心, 神經內科, 醫研部; 長庚大學臨床醫學研究所

Long non-coding RNA FKSG29 over-expression in patients with obstructive sleep apnea modulates intermittent hypoxia-induced oxidative stress and cell apoptosis via miR-23a-3p

Yung-Che Chen[1,2], Meng-Chih Lin[1,2*], Mao-Chang Su[1,2], Po-Yuan Hsu[1], Chang-Chun Hsiao[5], Chien-Hung Chin[1,2], Chia-Wei Liou[3], Ting-Ya Wang[1], Yong-Yong Lin[1], Sung-Chou Li[4]
Division of Pulmonary and Critical Care Medicine1, Sleep Center[2], Department of Neurology[3], Department of medical research[4], Kaohsiung Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Taiwan; Graduate Institute of Clinical Medical Sciences[5], Chang Gung University, Taiwan

Purpose: We hypothesized that long non-coding RNAs may contribute to pathogenesis of adverse consequences of obstructive sleep apnea (OSA).

Materials and Methods: Affymetrix Human Transcriptome Array was used to identify differentially expressed non-coding RNAsin a discovery cohort of 12 OSA patients and 6 healthy subjects. Candidate non-coding RNAs were validated by quantitative RT-PCR in an independent cohort of 12 subjects with primary snoring (PS) and 48 patients with treatment-naive OSA.

Results:

A total of 66 differentially expressed long non-coding (lnc) RNAs (56 up-regulated and 10 down-regulated) associated with OSA were identified. In the validation cohort, TC10002567.hg.1 lnc RNA gene expression was decreased in OSA patients versus PS subjects, while both TC02004658.hg.1 and TC13001253.hg.1 (FKSG29) lnc RNA gene expressions were increased. Gene expression levels of the NOX2, NOX5, VEGF-A, and miR-23a-3p genes were increased in OSA patients versus PS subjects, while SOD2 and VEGF-B gene expression was decreased.

In vitro intermittent hypoxia with re-oxygenation (IHR) resulted in increased gene expression of the FKSG29, NOX2, NOX5, and VEGF-A genes, and decreased gene expressions of the SOD2 and VEGF-B genes in THP-1 and HUVEC cell lines. KHSG29 knock-down by small interfering RNA transfection reversed IHR-induced over-production of reactive oxygen species, early apoptosis, and aberrant gene expressions of the pro-oxidants and vasoactive genes through miR-23a-3p-HIF-2A-IL6R-TNFSF13b signaling.

Conclusions: The findings provide biological insight into mechanisms by which IHR-activated lncRNA FKSG29 in OSA may augment oxidative stress, cell apoptosis, and angiogenesis via miR-23a-HIF2A-IL6R-TNFSF13b signaling, and indicate that knock-down of the FKSG29 lncRNA may be a new therapy for OSA.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB01

以支架支撐之冷凍保存主動脈重建結核性氣管狹窄：案例報告

洪琬婷[1],廖先啟[1,2], 蕭柏妮[3], 徐紹勛[1], 陳晉興[4]

台大醫院[1]外科部，[2]創傷醫學部，[3]麻醉部

[4]台大癌症醫院

Tracheal reconstruction using stented cryopreserved aorta for stenotic tuberculosis tracheitis: a case report.

Wan-Ting Hung, MD[1], Hsien-Chi Liao, MD, MPH[1,2], Po-Ni Hsiao, MD[3], Hsao-Hsun Hsu, MD, PhD[1], Jin-Shing Chen, MD, PhD[4]

[1] Department of Surgery, National Taiwan University Hospital, Taipei, Taiwan

[2] Department of Traumatology, National Taiwan University Hospital, Taipei, Taiwan

[3] Department of Anesthesiology, National Taiwan University Hospital, Taipei, Taiwan

[4] National Taiwan University Cancer Center, Taipei, Taiwan

Purpose: Long segment tracheal reconstruction is challenging with only a few experimental clinical trials reportedly being feasible.

Materials and Methods: Since 2020, patients with end-stage tracheal lesions and failed conventional treatment were recruited. A stented cryopreserved aortic allograft was used for reconstruction of tracheal defect after resection of lesions.

Results: A 44-year-old man with tuberculous tracheal stenosis was recruited. The patient experienced failure of conventional airway stent; therefore, he underwent tracheal resection and reconstruction using a cryopreserved aortic allograft using posterolateral thoracotomy. Two months postoperatively, two interventional bronchoscopies were performed for granuloma removal. No other adverse events directly related to the surgical procedure were experienced. At follow-up of 5 months, the patient experienced smooth breathing and speaking.

Conclusions: Tracheal reconstruction using cryopreserved aortic allograft is feasible for patients with tuberculous tracheitis. Mid-term and long-term follow-ups are warranted to clarify the durability and transformability of the graft.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB02

探討使用心血管藥物與氣喘肺阻塞重疊病患的急性發作風險之關聯

蘇一峰[1, 2]

高雄長庚呼吸胸腔內科，睡眠中心，轉譯醫學中心，風濕內科，神經內科；長庚大學臨床醫學研究所

Cardiovascular Medications Use and Risk of Acute Exacerbation in Patients with Asthma-COPD Overlap

Vincent Yi-Fong Su[1, 2]

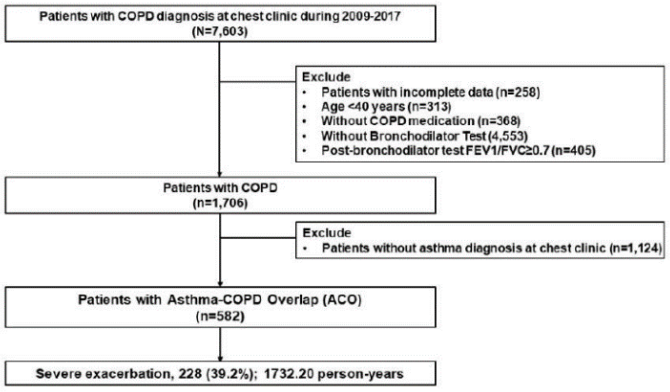
[1]Department of Internal Medicine, Taipei City Hospital, Taipei, Taiwan; [2]Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan

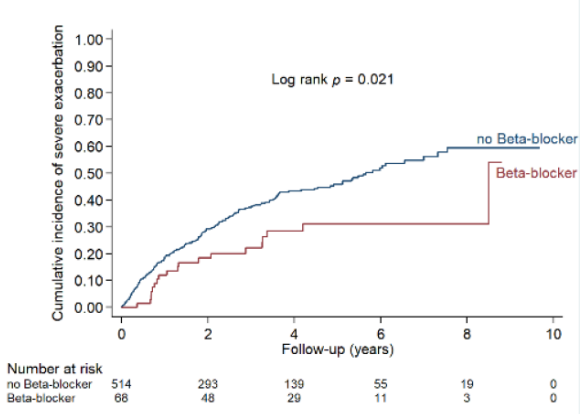
Purpose: Based on current guidelines, the effect of cardiovascular medications on exacerbation in patients with asthma-COPD overlap (ACO) remains unclear.

Materials and Methods: We conducted a retrospective cohort study using data from the claims database of Taipei Veterans General Hospital, Taipei, Taiwan. Patients coexistent with fixed airflow limitation and clinical features of asthma between 2009 and 2017 were enrolled as ACO cohort. Cardiovascular medications including angiotensin converting enzyme inhibitors (ACEIs), angiotensin II receptor blockers (ARBs), non-selective beta-blockers, cardioselective beta-blockers, non-dihydropyridine calcium channel blockers (CCBs) and dihydropyridine CCBs prescriptions in each 3-month period served as time-dependent covariates. Patients receiving each cardiovascular medication ≥ 28 cumulative daily doses were defined as each cardiovascular medication user. Patients were followed until December 31, 2018. The primary endpoint was hospitalization due to severe acute exacerbation (sAE).

Results: 7603 patients with COPD diagnosis were screened during 2009-2017. 1706 patients with COPD diagnosis were confirmed by spirometry. Finally, the study cohort consisted of 582 ACO subjects, with a mean follow-up period of 2.98 years. During the study period, 228 (39.2%) ACO subjects had admission due to sAE. After adjustments, ARBs (hazard ratio [HR] = 0.64, p = 0.019), cardioselective β-blockers (HR = 0.29, p = 0.008) and dihydropyridine CCBs (HR = 0.29, p = 0.008) use was associated with lower risk of hospitalization due to sAE. In contrast, ACEI, non-selective β-blockers and non-dihydropyridine CCBs use did not change the risk of hospitalization due to sAE.

Conclusions: ARBs, cardioselective β-blockers and dihydropyridine CCBs use may lower risk of severe exacerbation in patients with ACO.





A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB03

Exertional Desaturation Has Higher Mortality Than Non-Desaturation in COPD

在 COPD 中運動缺氧比沒有運動缺氧具有更高的死亡率

Shih-Feng Liu[1, 2, 3], Chien-Hung Chin[1], Ching-Wang Tseng[2], Yung-Che Chen[1, 3], Ho-Chang Kuo [2, 3,5], Meng-Chih Lin[1, 2, 3]

[1] Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung 833, Taiwan

[2] Department of Respiratory Therapy, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung 833, Taiwan

[3] Medical Department, College of Medicine, Chang Gung University, Taoyuan 333, Taiwan

[4] School of Medicine, Chung Shan Medical University, Taichung 40201, Taiwan

[5] Department of Pediatrics, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung 833, Taiwan

Purpose: Exertional desaturation (ED) is often overlooked in chronic obstructive pulmonary disease (COPD). We aim to investigate the impact of ED on mortality and the predictors of ED in COPD.

Materials and methods: A cohort of COPD patients with clinically stable, widely ranging severities, were enrolled. ED is defined as oxyhemoglobin saturation by pulse oximetry (SpO2) < 90% or a drop of $\Delta SpO2 \geq 4\%$ during a six-minute walk test (6MWT). Cox regression analysis is used to estimate the hazard ratio (HR) for three-year mortality.

Results: A total of 113 patients were studied, including ED (N = 34) and non-ED (N = 79) groups. FVC (% of predicted value), FEV1/FVC (%), FEV1 (% of predicted value), DLCO (%), maximal inspiratory pressure, SpO2 during the 6MWT, GOLD stage, and COPD severity were significantly different between the ED and non-ED groups in univariate analysis. Low minimal SpO2 ($p < 0.001$) and high maximal heart rate ($p = 0.04$) during the 6MWT were significantly related to ED in multivariate analysis. After adjusting for age, gender, body mass index, 6MWD, FEV1, mMRC, GOLD staging, exacerbation, hs-CRP, and fibrinogen, the mortality rate of the ED group was higher than that of the non-ED group ($p = 0.012$; HR = 4.12; 95% CI 1.37–12.39). For deaths, the average survival time of ED was shorter than that of the non-ED group (856.4 days vs. 933.8 days, $p = 0.033$).

Conclusions: ED has higher mortality than non-ED in COPD. COPD should be assessed for ED, especially in patients with low minimal SpO2 and high maximal HR during the 6MWT.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB04

The Effectiveness of Influenza Vaccination on Chronic Obstructive Pulmonary Disease with Different Severities of Airflow Obstruction

流感疫苗接種對不同嚴重程度氣流阻塞的慢性阻塞性肺病的療效

Shih-Feng Liu MD[1, 2, 3], Hui-Chuan Chang RRT[1], Ying-Chun Li PhD[4], Ho-Chang Kuo MD [1, 3, 5], Yun-Chyn, Tsai RRT[1], Min-Hui Chen RRT[1]

[1]Department of Respiratory Therapy, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung 833, Taiwan;

[2] Department of Internal Medicine, Division of Pulmonary and Critical Care Medicine,Kaohsiung Chang Gung Memorial Hospital, Kaohsiung 833, Taiwan

[3]Medical Department, College of Medicine, Chang Gung University, Taoyuan 333, Taiwan

[4] Institute of Health Care Management, National Sun Yat-sen University, Kaohsiung 833, Taiwan;

[5] Department of Pediatrics, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung 833, Taiwan

Purpose: Influenza vaccination can reduce the serious illness and death in chronic obstructive pulmonary disease (COPD). However, there is little data about whether influenza vaccination has different effectiveness on COPD patients with different severities of airflow obstruction.

Material and methods: This retrospective study included COPD patients who attended our medical center between January and October 2018, and analyzed the outcomes of their influenza vaccination, including medical visits, hospitalization, medical expenses, and the incidence of respiratory failure. Airflow limitation was stratified according to GOLD guidelines.

Results: Overall, 543 COPD patients were enrolled, including 197, 113, 126, and 107 mild, moderate, severe, and very severe patients, respectively. Of all the participants, 238 received an influenza vaccination (43.8%), which significantly reduced hospital utilization for moderate (odds ratio [OR] 0.22, 95% CI 0.09–0.51), severe (OR 0.19, 95% CI 0.08–0.44), and very severe patients (OR 0.15, 95% CI 0.05–0.5) compared to mild patients (OR 0.51, 95% CI0.2–1.26); reduced emergency department utilization for moderate (OR 0.33, 95% CI 0.14–0.77), severe (OR 0.22, 95% CI 0.10–0.52), and very severe patients (OR 0.30, 95%CI 0.10–0.88) compared to mild patients (OR 0.64, 95% CI 0.30–1.37); and reduced the occurrence of respiratory failure for moderate (OR 0.20, 95% CI 0.06–0.68), severe (OR 0.40, 95% CI 0.16–0.98), and very severe patients (OR 0.36,95% CI 0.15–0.82) compared to mild patients (OR 0.66, 95% CI 0.14-3.20).

Conclusion: Influenza vaccination is more effective in COPD patients with moderate, severe, and very severe airflow obstruction than in those with mild obstruction with respect to hospital utilization, emergency department utilization, and respiratory failure.

(Biomedicines IF6.08, in press)

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB05

以機器學習方法預測肺阻塞病人的急性呼吸衰竭、呼吸器依賴和死亡率

廖光明 [1,],劉忠峰 [2], 沈郁婷 [2], 陳佳蓉 [3]

[1] 奇美醫療財團法人佳里奇美醫院胸腔內科, [2] 奇美醫療財團法人奇美醫院醫療大數據庫暨人工智慧運算中心, [3] 奇美醫療財團法人奇美醫院資訊室

Machine learning approaches for predicting acute respiratory failure, ventilator dependence, and mortality in chronic obstructive pulmonary disease

Kuang-Ming Liao [1], Chung-Feng Liu [2], Yu-Ting Shen [2], Chia-Jung Chen [3]

[1]Division of Pulmonary Medicine, Department of Internal Medicine, Chi Mei Medical Center, Chiali.

[2]Department of Medical Research, Chi Mei Medical Center, Tainan

[3]Department of Information Systems, Chi Mei Medical Center, Tainan.

Purpose: Chronic obstructive pulmonary disease (COPD) is one of the leading causes of mortality and contributes to high morbidity worldwide. Patients with COPD have a higher risk for acute respiratory failure, ventilator dependence, and mortality after hospitalization compared with the general population. Accurate and early risk detection will provide more information for early management and better decision-making. This study aimed to conduct prediction models using patients' characteristics, laboratory data, and comorbidities for the early detection of acute respiratory failure, ventilator dependence, and mortality in patients with COPD after hospitalization.

Materials and Methods: This retrospective study collected the data of patients with COPD (pulmonary obstruction) with either emergency, outpa-tient, or inpatient orders from the three hospitals of Chi Mei Medical Group in Taiwan (1 medical center, 1 regional hospital, and 1 regional hospital) from 1 January 2010 to 31 December 2019. We chose 3 outcome variables to establish the prediction models: (1) mortality (in-hospital), (2) acute respiratory failure (in-hospital), and (3) ventilator dependence (continuous use of a respirator for 21 days during hospitalization). The data were randomly divided into a training dataset for model building (70%) and a testing dataset for model validation (30%).

Results: We retrospectively collected the electronic medical records of 5,061 patients with COPD in three hospitals of Chi Mei Medical Group. Based on the AUC value, the best model for mortality was built by the XGBoost algorithm (AUC=0.817), the best model for acute respiratory failure was built by random forest algorithm (AUC=0.804), while the best model for ventilator dependence was built by lightGBM algorithm (AUC=0.809). Our machine learning models exhibits excellent predictive quality and can therefore provide clinicians with a useful decision-making reference for the adverse prognosis of COPD patients.

Conclusions: To build a generic machine model to help physicians and support their diagnosis of disease progression and risk of death for patients with COPD, this study developed a machine learning classifier using patients' features such as basic health indicators, comorbidity indicators, and inflammatory indicators.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB06

輔助性呼吸治療對於接受化學及放射治療頭頸部癌病人之咳痰效益探討

卓秀英[1],周蘭娣[1], 林倩伃[2], 蕭秀鳳[1], 林鴻銓[1,3*]

林口長庚呼吸治療科[1], 林口長庚放射治療科[2], 林口長庚胸腔內科[3]

The effects of adjuvant respiratory therapy on expectoration of patients with head and neck cancer receiving concurrent chemo-radiotherapy

Hsiu-Ying Cho[1], Lan-Ti Chou[1], Chien-Yu Lin[2], Hsiu-Feng Hsiao[1], Horng-Chyuan Lin[1,3*]

Department of Respiratory Therapy, Chang Gung Memorial Hospital at Linkou, Taoyuan, Taiwan [1], Department of Radiation Oncology, Chang Gung Memorial Hospital at Linkou, Taoyuan, Taiwan[2], Department of Thoracic Medicine, Chang Gung Memorial Hospital at Linkou, Taoyuan, Taiwan[3]

Purpose: The common complaints of head and neck cancer patients receiving concurrent chemo-radiotherapy are dry mouth, dysphagia, trismus, hoarseness, sore throat, and oral mucosal damage, thus resulting in retained secretions and difficult expectoration. We aim to investigate the effect of adjuvant respiratory therapy on the expectoration of patients with head and neck cancer receiving concurrent chemo-radiotherapy.

Materials and Methods: From November 2016 to May 2018, 56 head and neck cancer patients were recruited and assigned to the control group (CG, n=27) or the research group (RG, n=29). In the CG, the patients were treated with routine breathing exercise and expel techniques teaching, and the patients in the RG were treated with inhalation of beta-agonist bronchodilator agent, in addition to the treatment administered in the control group. The course of adjuvant respiratory therapy was 5 times every week during the concurrent chemo-radiotherapy period.

Results: The total complete rate of treatment was significantly higher in RG (21 patients) than it was in the CG (12 patients) (72.4% vs 44.4%, $p<0.01$). After the therapy, the effective rates of clinical symptoms were significantly higher in the RG than they were in the CG, including smooth expectoration (76.2% vs 75.0%), decreased secretions (61.9% vs 58.3%), reduced viscosity of secretions (66.7% vs 58.3%), lower cough frequency (71.4% vs 50.0%) and improved sore throat (52.4% vs 41.7%) and swallowing function (52.4% vs 50.0%). The acceptance in the smooth progress of chemo-radiotherapy was higher in the RG than it was in the CG (66.7% vs 50.0%). There was no significant difference in the adverse effects between the two groups ($p>0.05$).

Conclusions: The adjuvant respiratory therapy not only improves the secretion expectoration, but also reduces the side effects, thus promoting the completion of the schedule of concurrent chemo-radiotherapy in patients with head and neck cancer.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB07

氣喘病人使用急救吸入劑依賴測驗認知調查

張嘉玲[1,], 劉世豐[123*],林孟志[123], 蔡玉琴[1] 郭和昌[124]

高雄長庚呼吸治療科,高雄長庚呼吸胸腔內科, 高雄長庚兒童內科

A Cognitive Investigation of Asthmatic Patients' Use of Emergency Inhaler Dependence Test

Chia-Ling Chang[1], Shih-Feng Liu[123*], Meng-Chih Lin[123] , Yu-Chin Tsai[1], Ho-Chang Kuo[124]

Department of Respiratory Therapy, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung 833, Taiwan[1], Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung 833, Taiwan[2],Medical Department, College of Medicine, Chang Gung University, Taoyuan 333, Taiwan[3],Department of Pediatrics, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung 833, Taiwan[4]

Purpose: Asthma is a chronic inflammatory airway disease. Regardless of disease severity or medication adherence, patients with asthma may experience sudden acute asthma attacks. Although short-acting beta agonists (SABA) can quickly relieve symptoms, their frequent use can increase the risk of allergic reactions and respiratory tract inflammation. Since 2019, SABA alone have not been prescribed because of safety considerations. In the present study, an emergency inhaler dependence assessment test was used to investigate SABA use and awareness among patients with asthma. The study findings can serve as reference for clinical management and medical education.

Materials and Methods: From November 1, 2020 to April 30, 2021,120 patients who were diagnosed as asthma by physicians were admitted to the adult thoracic clinic who were confirmed to use ICS/LABA inhalation and combined SABA use for patients ≥20 years old ; obtained by respiratory therapist Perform PERF after the consent form and assist patients to fill out ACT and RRT (Reliever Reliance Test) questionnaires.

Results: Among the 120 cases received,53 were males and 67were females, with an average age of 52.1 years old and 32.5% of them had high school education .Overall SABA dependence assessment: 63.4% of asthma patients are moderately or highly dependent on SABA ,among which 25% use SABA≥3 times a week ;the risk level of the RRT questionnaire is related to the number of times of SABA use per week ($p<0.001$), RRT questionnaire scores It is correlated with the PEFR ratio($p=0.032$).However, there was no correlation between PEFR and RRT questionnaire risk level($p<0.124$);education level was also not correlated with RRT questionnaire sub-items(all $p<0.05$).

Conclusions: The RRT questionnaire can be used as an assessment tool to identify whether asthma is overly dependent on SABA drugs. Whether the patient is highly dependent on SABA can be predicted from the RRT risk level and the measured value of PEFR. Over-dependence may be caused by the potential fear of breathing difficulties. Need to relieve symptoms quickly , which has nothing to do with the level of education, so the patient's medicine and health education must be consistent.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB08

COPD 患者峰值吸氣流速與正確使用他們吸入器的關聯

劉奇偉[1], 林麗萍[1], 隋若蓮[1], 劉秀容[1], 吳世欣[2], 李世偉[1]

[1]衛生福利部桃園醫院內科部; [2]中國醫藥大學生物醫學研究所

The association between peak inspiratory flow rate and appropriate usage of their inhaler in patients with COPD

Chi-Wei Liu[1], Li-Ping Lin[1], Jo-Lien Sui[1], Hsiu-Jung Liu[1],Shih-Hsin Wu[2],Shih-Wei Lee[1]

[1]Department of Internal Medicine, Taoyuan General Hospital, Department of Health and Welfare, Taoyuan, Taiwan; [2]Graduate Institute of Biomedical Sciences, China Medical University, Taichung, Taiwan

Objective：Chronic obstructive pulmonary disease (COPD),characterized by airway obstruction due to inflammation of the small airways, is a common lung disease. Inhaled therapy play a major role in the management of COPD. Optimal peak inspiratory flow rate (PIFR) is crucial for optimizing pressurized metered dose inhaler (pMDI) and dry powder inhaler (DPI) effectiveness for COPD. Despite the substantial proportion of improper PIFRs (not only insufficient but also excessive) among patients who use inhalers for COPD, many patients do not receive appropriate inhaler training or get their inhaler technique checked.

Subjects and Methods：228 subjects with COPD were enrolled from Taoyuan General Hospital in Taiwan. PIFRs were measured against four-degrees of internal resistances (pMDI, low, medium-low, and medium) using the In-Check Dial G16. Pearson correlation analysis and odds ratio analysis were used respectively to evaluate the relationship between the characteristics of subjects and the measured PIFR and the association between the characteristics of subjects and the prevalence of improper PIFRs.

Results：Pearson correlation analysis showed that the measured PIFR negatively correlated with age and positively correlated with forced vital capacity (FVC) in both pMDI- and DPI-using subjects. However, the measured PIFR positively correlated with body height, body weight, BMI, and Forced expiratory volume in 1 second (FEV_1) in PDI-using subjects, but not pMDI-using subjects. Odds ratio analysis indicated that age <75 years and BMI $\geqq$24 kg/m^2 were risk factors for the prevalence of improper PIFRs in subjects with COPD. After inhaler training, both pMDI- and DPI-using subjects have the significant decrease in proportion of improper PIFRs and increase in proportion of optimal PIFRs.

Conclusions：DPI-using subjects had stronger positive correlations between the measured PIFR and FEV_1 or FVC than pMDI-using those. In our study, there was a higher proportion of excessive PIFR in pMDI-using subjects than DPI-using those. After inhaler training, the significant decrease in proportion of improper PIFRs was found in both pMDI- and DPI-using subjects. Our results suggest the importance of PIFR measurement in patients with COPD who have regular inhalation therapy.

Keywords：Chronic obstructive pulmonary disease, peak inspiratory flow rate, inhaler training

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB09

以氣喘症狀為臨床表現，但後續診斷為喉癌－病例報告

王保山

奇美醫學中心內科部胸腔內科

Laryngeal cancer with vocal cord involvement mimicking asthma－A case report

Pao-Shan Wang

Division of Chest Medicine, Department of Internal Medicine, Chi Mei Medical Center, Tainan, Taiwan

Introduction:

Asthma is a disease with many phenotypes, usually characterized by chronic airway inflammation. It causes variable expiratory airflow limitation and respiratory symptoms such as wheezing, shortness of breath, chest tightness and cough that vary in intensity and over time. However, wheezing is not always indicative of asthma. Various clinical conditions can mimic asthma. Suspicion for alternative diagnoses must be maintained particularly if the patient presents with atypical symptoms or fails to respond to therapy.

Case Presentation:

A 58-year-old man presented with shortness of breath and wheezing for 1 month and visited our chest medicine outpatient clinic. He had 40-pack-year history of smoking and had chronic cough with sputum production. Physical examination revealed bilateral wheezing breath sound. Chest X-ray revealed no active lung lesion. Asthma was suspected according to symptom of wheezing and pulmonary function test revealed small airway obstruction with significant bronchodilator reversibility. After one month treatment ofinhaled corticosteroid and long-acting β 2 agonist, the symptoms of shortness of breath and wheezing didn't improve. Therefore, he was admitted for further evaluation. Bronchoscopy was performed for survey upper airway condition which revealed polyp-like lesions at anterior commissure of vocal cord. Otolaryngologist was consulted and excision of vocal cord polyp-like lesions was done by laryngeal microsurgery. The report of histopathology showed poorly differentiated squamous cell carcinoma. Computed tomography of the neck revealed laryngeal carcinoma with thyroid cartilage invasion, T4aN0. Subsequently, the patient underwent tracheostomy to secure the airway. After discharged, he underwent concurrent chemoradiotherapy at oncology outpatient clinic.

Discussion:

Various clinical conditions can mimic asthma, such as vocal cord dysfunction, extrathoracic upper airway obstruction, intrathoracic upper airway obstruction, congestive heart failure, chronic obstructive pulmonary disease. In this described case, laryngeal cancer with vocal cord involvement produced extrathoracic upper airway obstruction that led to symptoms of shortness of breath and wheezing mimicking asthma. Alternative diagnoses should be considered when the presentation is atypical for asthma or the response to treatment has been suboptimal.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB10

一位守宮木導致閉塞性細支氣管炎患者肺移植手術後呼吸治療照護經驗：病例報告

周騰慶[1]、張惠娟[2]、劉世豐[3]、王逸熙[4]、蔡孟霖[5]、羅乾鳴[6]、劉婷婷[7]

高雄長庚紀念醫院呼吸治療科、胸腔內科、胸腔外科、解剖病理科

Respiratory therapy experience of a *Sauropusandrogynus* -induced bronchiolitis obliterans patient after lung transplantation: a case report

Teng-Ching Chou, RRT[1], Hui-Chuan Chang, RRT[1], Shih-Feng Liu, MD[2], Yi-Hsi, Wang, MD[2], Meng-Lin, Tsai, MD[2], Chien-Ming Lo, MD[3], Ting-Ting Liu, MD[4]

Department of Respiratory Therapy[1], Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine[2], Department of Thoracic Surgery[3], Department of Anatomic Pathology[4], Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan

Introduction:*Sauropusandrogynus*-induced bronchiolitis obliterans syndrome caused severe obstructive lung disease due to acute and chronic bronchial inflammation with abscess formation. Patients with the disease eventually died even under the treatment of corticosteroids, cytotoxic agents, bronchodilators and immunosuppressant. Lung transplantation is the best therapy to date. We describe a 68-year-old female with *Sauropusandrogynus* caused respiratory failure and long-term noninvasive ventilator use. She underwent bilateral lung transplantation successfully on February 2021. Respiratory therapists play an important role in lung-transplantation team.

Case presentation: We arranged preoperative pulmonary rehabilitation to enhance preoperative mobility. The surgical method is Clamshell thoracotomy. Bronchoscopy arranged to check bronchial anastomosis sites and clean secretion. We use low tidal volume ventilation strategy after admission to intensive care unit and monitor chest x-ray , arterial blood gas and pulmonary arterial pressure to avoid primary graft dysfunction. Prophylactic nebulized amphotericin B was given and started to try weaning ventilator the next day. Tube compensation mode was set to do spontaneous breathing trial (SBT). The accessory muscle use and unsynchronized breathing pattern found during SBT despite stable vital signs. We educated deep breath with upperextremities unburdened training and situation improved. The patient used high-flow nasal cannulaand started to do lung expansion and airway toilet therapy after extubation. Poor cooperation with therapy then atelectasis was noted due to respiratory and upper extremities muscle weakness. We proceeded previous pulmonary rehabilitation and added inspiratory muscle training (IMT) to increase respiratory muscle power. Atelectasis improved after 2 weeks training. Besides, worse distance of six-minute walking test (6MWT) (9% prediction) compared to preoperative data (31% prediction) due to weak lower extremities muscle power despite improvement of pulmonary function test (FEV_1/FVC: 36.12% vs 87.89%). We kept previous training and cooperated with physical therapists. We made the patient walking by walker and stand on tiptoe or bend standing to train lower extremities muscle power until discharge. The significant improvement of 6MWT distance (66% prediction) after several weeks training.

Conclusion: Appropriate respiratory therapy plan and teamwork makes good prognosis after lung transplantation.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB11

脈衝震盪之 R5-R20 與肺功能檢查的相關性：一個臨床檢查個案系列研究

陳光裕

羅東博愛醫院胸腔內科

Connection in R5-R20 of impulse oscillometry and spirometry: a case-series study report

Kuang-Yu Chen

Division of Pulmonary and Critical Care Medicine, LotungPoh-Ai hospital, Yilan county, Taiwan

Purpose: Both of airway resistance and reactance are detected to reveal the possibility of the small airway disease in the early stage of chronic airway disorders by impulse oscillometry (IOS). To detect the proper range of each item in IOS and to associate them with traditional items in spirometry were performed recently for guide of general practice and for research.

Materials and Methods: A case review cohort study was done in a regional teaching hospital. Total 230 cases received IOS since 2021/Mar/15 to 2021/Oct/21 were reviewed and 76 cases with spirometry together at the same date were enrolled. Each spirometry was examined to make sure low-quality flow-volume curve pattern to be excluded. Three cases with missing data in spirometry were excluded. High resistance (HR) is defined by R5>140% and R20>0.40, and high reactance (HX) by Fres>14.14 and AX>0.44. The R5-R20 differences of those HR, HX and normal IOS cases were calculated.

Results: N=73, Male:Female=36:37, mean age=63.2+/-16.2, BMI=26.5+/-6.0, and 16 positive for bronchodilator responsiveness in spirometry, it accounts for 21.9%. Cases with FEV1/FVC ratio less than 0.7 accounts for 24.7% (18/73). Normal IOS accounts for 12.3% (9/73). HR (33) accounts for 45.2%, and HX (62) accounts for 84.9%. Mean R5-R20 equaled to 0.16+/-0.16. There are significant differences on FVC, FEV1 (p<0.01) and FVC% (p<0.05) in normal IOS cases than others. HR cases had significant differences on FVC (2.25+/-0.87 liter) (p<0.01), FVC% (81.3%+/-17.2%) (p<0.01) and pre-BD MMEF (56.1%+/-31.2%) (p<0.01). HX cases had significant differences on FVC (2.41+/-0.77 liter) (p<0.01), FVC% (86.7%+/-22.8%) (p<0.05), FEV1 (1.79+/-0.73 liter) (p<0.01) and pre-BD MMEF (64.2%+/-33.8%) (p<0.05). HR and HX cases revealed significantly higher value of R5-R20 than the normal ones, (HR:0.27 vs 0.07, p<0.001) (HX:0.18 vs 0.03, p<0.01). Those cases with value of R5-R20 more than 0.07 but less than 0.16 accounts for 35.6% (26/73) and they were associated to X5, AX, FVC, FEV1 (2.23+/-0.71 liter) and pre-BD MMEF (81.1%+/-33.9%) differences (p<0.05). Besides, cases with pre-BD MMEF less than 60% accounted for 45.2% and there are associated with generally high resistance and high reactance, except for R20, FEV1% and item of BMI. Cases with R5-R20 more than 0.16 are correlated to pre-BD MMEF less than 0.6 significantly (p<0.01).

Conclusions: Either high resistance or high reactance in IOS study is related to lower value of different items in spirometry. Value of R5-R20 between 0.07 to 0.16 is generally associated with high resistance but higher FEV1 and pre-BD MMEF. Traditional pre-BD MMEF less than 60% are related to high value of IOS items generally.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB12

血液中 E 型免疫球蛋白與慢性阻塞性肺病急性惡化之風險分析

張家豪[1],柯政昌[1],溫岳峯[1],張建仁[1],耿立達[1],鄒秉誠[1],張立禹[1],于鎧綸[1]

臺大醫院新竹分院內科部胸腔內科

The impact of serum IgE level on risk of COPD acute exacerbation

Chia-Hao Chang[1], Jen-Chung Ko [1], Yueh-Feng Wen [1] , Chein-Jen Chang [1], Li-Ta Keng [1], Ping-Hsien Tsou [1], Lih-Yu Chang [1], Kai-Lun Yu [1]

Department of Internal Medicine, Division of Pulmonary Medicine, National Taiwan University Hospital, Hsin-Chu Branch, Taiwan[1]

Purpose: According to previous studies, COPD exacerbations were associated with lung function decline. The risk factors of exacerbations were, age, increase sputum production, disease course, antibiotics usage, admissions times, elevation of blood eosinophil count, comorbitdities (DM or hypertension), and usage of theophylline. In previous studies, blood eosinophil counts associated with exacerbations. The role of serum IgE level in asthma exacerbation is well document. However, the role of serum IgE level in COPD acute exacerbation was inconclusive. We conducted this retrospective study to evaluate this issue.

Materials and Methods: This is a retrospective cohort study and will be conducted in National Taiwan University Hospital in Hsin-Chu branch from Nov 1, 2014 to Jun 30, 2019. This study enrolled all COPD patients aged over 40 year-old. Chart review was performed for demographic data and outcome evaluation. Both patients in the ward and in the clinics were included. Admission or ER visit due to COPD AE were analysis for outcome evaluation.

Results: From 2014 to 2019, 442 COPD patients were enrolled. Among them, 172 patients diagnosed COPD with baseline serum IgE level were enrolled. A total 172 patients were selected. Among them, 37 (21.5%) had higher serum IgE level (IgE ≥300), and 135 (78.5%) had lower serum IgE level (IgE<300). More patients with hypertension, CVA history or allergic rhinitis were in higher IgE groups. In Kaplan-Meier analysis, comparing higher and lower IgE in admission because of exacerbation and exacerbations with ER visit showed no significant difference. In admission due to exacerbations, mean CAT score≥10, mMRC>1, Mean SpO2 <95%, and patient with heart disease were significant predicting factors. In exacerbation requiring ER visit, only mMRC>1, and mean SpO2 <95% were significant.

Conclusions: In conclusion, this study correlate with previous prognostic factors in COPD exacerbations include MMRC and CAT score. However, serum IgE level didn't correct with admission or ER visit due to acute exacerbations. Due to small sample size, subgroup analysis according to different controlled medications cannot be done. Further large-scale study may require clarifying this issue.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB13

臨床醫師與藥師之照護模式在慢性阻塞性肺病病人的吸入型藥物使用技巧與遵從性上之改善，一個單一中心的研究

麥倍嘉 [1], 魏裕峰 [2,3], 李和昇 [1], 黃佳真 [4], 陳鍾岳 [1,5]

Clinician and Pharmacist's Care Service Model Can Improve COPD Patient's Inhaler Technique and Adherence, A Single Center Study

Pei-Chia Mai [1], Yu-Feng Wei[2,3], Ho-Shen Lee[1], Chia-Chen Huang[4], Jung-Yueh Chen[1,5]

Department of Internal Medicine, E-Da Hospital, Kaohsiung, Taiwan [1]

Department of Internal Medicine, E-Da Cancer Hospital, Kaohsiung, Taiwan [2]

School of Medicine for International Students, College of Medicine, and Institute of Biotechnology and Chemical Engineering, I-Shou University, Kaohsiung, Taiwan [3]

Department of pharmacy, E-Da Hospital, Kaohsiung, Taiwan [4]

College of Medicine, I-Shou University, Kaohsiung, Taiwan [5]

Introduction: Inhaler therapy is a cornerstone treatment for patients with chronic obstructive pulmonary disease (COPD). Symptomatic patients always need long term inhalers. However, poor therapeutic adherence and inhaler techniques are challenges for treatment efficacy. A clinician and pharmacists' participation in COPD management has been discussed in recent years. Some studies had provided the evidences that such models could bring positive effects such as medication adherence and inhaler technique.

Methods: This was a single-center study conducted in southern Taiwan. The COPD care service was provided by a multidisciplinary team, including clinician, pharmacist and case manager as core member. Patients with COPD (group B, C and D) were enrolled into the intervention group (clinician and pharmacist's care service model) or control group (standard of care). We evaluated inhaler technique and medications adherence by percentage of device performed correctly and the Morisky Medication Adherence Scale (MMAS-8) at the baseline and 12th months after study enrollment.

Results: A total of 698 patients with stable COPD were recruited for our study. There were 118 patients (17%) enrolled into the intervention group and 574 patients (83%) enrolled into the conventional care group. The intervention group showed a significantly greater improvement in inhaler technique total score compared with the control group (92.7±10.4 vs 88.5±13.4, $P<0.01$). However, the improvement of inhaler technique score between baseline and 12th months, was not significant when comparing to both groups (1.9±14.15 vs 0.7425±16.40, $P=0.742$). The coefficient of variation was lower at intervention group rather than control group both in baseline (12.5%±11.4 vs 14.4%±12.8) and 12th months (12.4% ±11.5 vs 14.2%±12.7). Medication adherence was improved at intervention group (high adherence percentage of patients from 22 (78.6%) to 26 (92.9%)).

Conclusion: The clinician and pharmacist's care service model may result in improvement of inhaler technique and adherence in patients with COPD.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB14

脈衝振盪肺功能在難治型氣喘中的臨床應用：來自區域醫院的社區研究經驗

沈易綸[1],謝逸安[1], 黃佑民[2], 彭逸豪[2], 陳鈴宜[1], 戴芳銓[1], 林育生[1], 黃建文[1,3]
亞洲大學附設醫院胸腔內科[1], 亞洲大學附設醫院呼吸治療科[2], 亞洲大學醫學暨健康學院醫學檢驗暨生物技術學系[3]

The clinical utility of impulse oscillometry in patients with difficult-to-treat asthma: a real-world experience of community-based research from a regional hospital.

Yi-Luen Shen[1], Yi-An Hsieh[1 *], Yu-Ming Huang[2], Yi-Hao Peng[2], Ling-I Chen[1], Fang-Chuan Dai[1], Yu-Sheng Lin[1], Chien-Wen Huang[1,3].
Division of Chest Medicine, Department of Internal Medicine, Asia University Hospital, Taichung, Taiwan. [1]
Department of Respiratory Therapy, Asia University Hospital, Taichung, Taiwan. [2]
Department of Medical Laboratory Science and Biotechnology, College of Medical and Health Science, Asia University, Taichung, Taiwan. [3]

Purpose: We aim to find potential parameters of impulse oscillometry that determine the difference between in patients with well- or poorly-controlled asthma.

Materials and Methods: Patients with difficult-to-treat asthma under GINA step 4 to 5 treatment were enrolled from an observational cohort study in Asia University Hospital, and had serial spirometry and impulse oscillometry reports with acceptable quality for retrospective analysis. The patient's characteristics, medical treatment, T2 inflammatory markers including blood eosinophils count, IgE, specific allergen tests, annual acute exacerbation rate, comorbidities were also collected. The primary endpoint was the relationship between parameters of impulse oscillometry and asthma symptoms based on the asthma control test (ACT) score.

Results: Among 69 patients enrolled in the study, the median follow-up time was 1279 days. 49.3% of patients were women, 65.2% were never-smokers, 24 out of 43 patients had positive tests in allergen test. All patients were received long-acting muscarinic antagonists, and 14 patients received biological agents. About 26.1% of patients experienced at least one severe exacerbation or two moderate exacerbation. Comparisons of ACT score of patients with GINA step 4 to 5 asthma treatment, those patients with poor asthma symptoms control (ACT<20) presented higher prevalence in comorbidity with COPD, higher difference of resistance between 5Hz and 20Hz (dR5-R20) and frequency of resonance (F_{res}) than those with better symptoms control (ACT $\geq$ 20). In multivariable analysis, comorbidities with COPD or allergic rhinitis, dR5-R20 were independent factors in increasing odd ratio in poor asthma symptoms control. (all P values <0.05) ROC curve analysis for predicting poor asthma control with dR5-R20 demonstrated passable accuracy, with area under the ROC curve 66.7% with 95% confidence interval of 52.8% to 80.5%, the optimal cutoff of dR5-R20 was 0.10 with a sensitivity of 83.3% and a specificity of 47.1%.

Conclusions: Impulse oscillometry is more sensitive than spirometry in those patients with difficult-to-treat asthma under GINA step 4 to 5 treatment. dR5-R20 might be a potential clinical parameter to predict poor asthma control in this patient population.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB15

氣喘患者負面情緒、自主神經活性與短期呼吸訓練的效果

郭子右[1,2,3]，張儷馨[4]，林宜美[4*]，袁蕙蘭[1]，蔡東霖[1]，李玫萱[3]，吳大緯[1,3]，陳煌麒[1,3]，蔡忠榮[3,5]

高雄市立小港醫院，高雄醫學大學醫學研究所，高雄醫學大學附設中和紀念醫院胸腔內科，高雄醫學大學心理系，高雄市立旗津醫院

The associations between negative emotions and autonomic activation, and effects of paced breathing in among patients with asthma

Tzu-Yu Kuo[1,2,3], Li-Hsin Chang[4], I-Mei Lin[4*], Hui-Lan Yuan[1], Dong-Lin Tsai[1], Mei-Hsuan, Lee[1], Da-Wei Wu[1,3], Huang-Chi Chen[1,3] and Jong-Rung Tsai[3,5]

Kaohsiung Municipal Siaogang Hospital[1], Graduate Institute of Medicine, College of Medicine[2], Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine[3], Department of Psychology[4], Kaohsiung Municipal Cijin Hospital[5], Kaohsiung Medical University, Kaohsiung City, Taiwan

Purpose: The environmental stimulus may cause allergens or the immune system hyperactivities and results from autonomic nervous system (ANS) dysregulation, bronchospasm, airway edema, chronic inflammatory in the airway, and excessive mucus secretion, and then caused clinical asthma symptoms. Studies have found that slow-paced breathing training can increase cardiac and bronchial ANS coregulations, and improve respiratory symptoms and life quality in patients with asthma. The purposes of this study were to examine the effect of negative emotions and ANS on the quality of life, and short-term breathing training in the HRV index for patients with asthma.

Materials and Methods: This study examined 98 asthma patients (mean age 56.00 years ± 12.54; 64.3% of female) for the Chinese Hostility Scale_Short Form, Beck Depression Inventory-II, Beck Anxiety Inventory, and Asthma Quality of Life Questionnaire, and forced expiratory volume in one second (FEV1). All participants measured the lead II electrocardiography (ECG) at baseline, paced breathing (six breaths/min), and recovery periods, and then transformed the ECG into heart rate variability (HRV) as the ANS index.

Results: There were positive correlations between sympathetic activation (LF/ HF ratio of HRV) and hostility ($r = .216$, $p < .05$) and anxiety ($r = .222$, $p < .05$), negative correlation between sympathetic activation and quality of life ($r = -.273$, $p < .01$). After controlling of age and sex, the hierarchy regression analysis showed that anxiety and sympathetic activation ($\beta = -1.136$, $p < .01$ and $\beta = -1.732$, $p < .05$) were significantly predicted poor quality of life. The short-term of five minutes paced breathing increased total HRV indices, especially found that younger asthma (< 58 years old) had a greater increase from baseline to paced breathing in low frequency and total power of HRV compared to older asthma (≧58 years old).

Conclusions: The higher hostility and anxiety, and lower quality of life were related to higher sympathetic activation in patients with asthma. After controlling demographic data, anxiety and sympathetic activation were significantly predicted poor quality of life in patients with asthma. A short-term of five-minute paced breathing can increase the HRV indices among patients with asthma, especially for younger asthma. The long-term paced breathing training can be added to improve the overall HRV and ANS balance in asthma patients in the future study and examine the effects of paced breathing in reducing sympathetic activation and clinical symptoms, and improving quality of life.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB16

慢性阻塞性肺病患者一年內出現重要臨床惡化相關之相關因素：觀察性世代研究

林振傑，黃俊凱，彭惠絹，廖惠雅，簡榮彥

臺大醫院內科部胸腔科

The factors related to one-year clinically important deterioration (CID) in patients with chronic obstructive pulmonary disease (COPD): an observational cohort study

Chen-Chieh Lin, Chun-Kai Huang, Hui-Chuan Peng, Hui-Ya Liao, Jung-Yien Chien

Division of Thoracic Medicine, Department of Internal Medicine, National Taiwan University Hospital

Background: The Clinically important deterioration (CID) endpoint is comprised of deterioration of lung function test, subjective health-related quality of life, and occurrence of acute exacerbations (AE). The CID is proposed by several studies for assessment of short-term worsening of disease status, since it can reflect the complexity and heterogeneity of COPD. The purposes of this study were to search for the clinical parameters related to the occurrence of CID.

Materials and Methods: We retrospectively enrolled the adult patients with COPD who received regular follow-up at a medical center during the period of May 2017 to December 2020. We excluded the patients who were just recruited to the case manager system within the past one year before the time of analysis, and admitted 404 patients finally. Based on published literatures, the definitions of CID in 1-year interval comprised ≥ 100 mL decrease in forced expiratory volume in 1s (FEV1), ≥ 2-unit increase in COPD assessment test (CAT), or presence of moderate or severe exacerbation. We defined unfavorable clinical outcomes as the occurrence of CID or premature death. We assessed the difference between groups with statistics methods, used ROC curve to establish optimal threshold to predict CID, and Logistic regression to determine a predictive model.

Results: Of the 404 patients admitted, 32 lost follow-up due to other reasons. Of the 372 patients followed for more than one year, 204 (54.8%) met CAT criteria of CID, 178 (47.8%) met exacerbation criteria, 107 (28.8%) met FEV1 criteria, 292 (78.5%) met either of the CID criteria (CID (+)), and 80 (21.5%) did not met any (CID (-)). Compared with CID (-), the patients with CID (+) had significantly higher mortality rate in the first year (4.8% vs. 0, $p = 0.0462$), older age (73.9 vs. 69.8, $p = 0.0466$), lower FEV1 (1.33 vs. 1.47, p = 0.0274), lower FEV1 % predicted (62.85 vs. 69.80, p = 0.0284), higher WBC count at the lab results (7420 vs. 6540, p = 0.0117), higher proportion of ever-smoker (87.0% vs. 76.2%, p = 0.0183), occurrence of exacerbation in previous 1 year (42.1% vs. 27.5%, p = 0.0177), and with mMRC scale≧2 (66.8% vs. 47.5%, p = 0.0016). ROC curve and multiple logistic regression analysis were applied, which revealed older than 71.6-year-old, BMI lower than 20.68 Kg/m2, FEV1 lower than 1.08L, WBC more than 6500/μL, history of cigarette smoking, mMRC scale≧2, and exacerbation in the previous year as predictors of the CID or death within following 1 year, with adjusted OR 1.92, 1.90, 1.69, 2.02, 1.91, 1.67, and 1.73 respectively. Aforementioned parameters would be used to establish a risk score model for prediction of the unfavorable clinical outcomes.

Conclusions: Old age, low BMI, low FEV1, high WBC count, high mMRC scale, AE in the past year, and smoking history are the predictors of CID or death in COPD patients.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB17

吸入性類固醇降階治療對慢性阻塞性肺疾病在臨床治療的影響

陳崇裕[1],張晟瑜[2], 張時杰[3], 魏裕峰[4]

臺大醫院雲林分院胸腔內科[1], 亞東醫院胸腔內科[2],陽明交通大學宜蘭附設醫院胸腔內科[3],義大癌治療醫院內科部[4]

The Clinical Effect of Inhaled Corticosteroid Withdrawal in Chronic Obstructive Pulmonary Disease (COPD) Patients

Chung-Yu Chen[1], Cheng-Yu Chang [2], Shih-Chieh Chang[3], Yu-Feng Wei[4]

Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, National Taiwan University Hospital Yunlin Branch, Yunlin County, Taiwan[1], Division of Chest Medicine, Department of Internal Medicine, Far Eastern Memorial Hospital, New Taipei City, Taiwan[2], Division of Chest Medicine, Department of Internal Medicine, National Yang-Ming Chiao Tung University Hospital, Yi-Lan, Taiwan[3], Department of Internal Medicine, E-Da Cancer Hospital, Kaohsiung, Taiwan[4]

Purpose: Previous studies demonstrated conflict results of inhaled corticosteroids (ICS) withdrawing on the acute exacerbation and lung function declining in patients with chronic obstructive pulmonary disease (COPD). This study investigated the impacts of ICS withdrawal on the stable COPD patient with triple therapy in the real world setting.

Materials and Methods: This is a multi-center, prospective, observational study conducted in 4 hospitals in Taiwan. COPD patients received triple therapy (dual long-acting inhaled bronchodilator and ICS) for more than six months were evaluated to withdrawal of ICS. Eligible patients were age ≥ 40 years old COPD patients with triple therapy, without acute exacerbation within 6 months, eosinophil count in blood <300 cells/ul, and COPD Assessment Test (CAT) score <20. The primary outcome measures were lung function decline, and frequency of acute exacerbation after 6 months of withdrawal. The secondary outcome measures were change of clinical symptoms assessment including CAT score and Modified Medical Research Council (mMRC) dyspnea scale. This trial was registered at ClinicalTrials.gov, NCT04456205, and is ongoing for follow-up.

Results: A total of 30 COPD patients were enrolled and down-escalation of triple therapy to dual bronchodilators. 66.7% (n = 20) were male, and the median of age was 68.5 years old. After 6-month of follow-up, there was no significant difference in the change of lung function test (FVC, FEV1 and FEV1/FVC ratio) at the third and sixth month compared to baseline. Three patients (10%) experienced one episode of mild acute exacerbations, otherwise, no moderate or severe acute exacerbation was observed. Moreover, CAT score significantly improved during the dual bronchodilator therapy in the 6 months treatment period (CAT score: baseline v.s. at 6 months, 14.10 ± 4.66 v.s. 12.87 ± 4.69, $p = 0.028$).

Conclusions: In selected COPD patients with triple therapy, withdrawal of ICS to dual bronchodilator did not increase the risk of lung function decline and moderate-severe acute exacerbation. Clinical symptoms improved substantially on dual bronchodilator in those patients.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB18

慢性阻塞性肺病門診患者之心理調適

楊于婷[1], 彭惠絹[2], 鄭逸如[1], 簡榮彥[3]

台大醫院臨床心理中心[1], 護理部[2], 內科部[3]

Psychological Adjustment in Outpatients with Chronic Obstructive Pulmonary Disease

Yu-Ting Yang[1], Hui-Chuan Peng[2], Yih-Ru Cheng[1], Jung-Yien Chien[3]

Clinical Psychology Center[1], Department of Nursing[2], Department of Internal Medicine[3], National Taiwan University Hospital, Taiwan

Purpose: Patients suffering from chronic obstructive pulmonary disease (COPD) may experience physical decline or handicap. Supporting patients' emotional adjustment, such as anxiety or depression, may promote their physical activity or quality of life. This study thus explored the relationship between the emotional adjustment and the condition of patients with COPD in Taiwan to determine the direction of early psychological intervention.

Materials and Methods: A total of 290 COPD outpatients (27 women, 263 men; average age of 71.6 years) who completed the Negative Emotions due to Chronic Illness Screening Test (NECIS), including items of five negative emotions and three daily disease control requirements, were enrolled. The prevalence of emotional adjustment and the relationship between the background variables (such as sex, age, body mass index), pulmonary function test, COPD GOLD stage, GOLD group, and NECIS score were analyzed.

Results: Among 290 outpatients with COPD, 13 (4.5%) had higher NECIS score than the cut-point, indicating a likelihood of overly negative emotions. Further analysis found anger (20.0%) to be the mostly-reported negative emotion, without correlation with age, gender, GOLD stage, and GOLD group. The other negative emotions reported were, in decreasing order, nervousness or anxiety (16.9%), worry or fear (13.4%), sadness or depression (7.9%), and sorrow accompanied by crying (5.2%). Regression analysis showed the CAT score ($\beta = .166$, $p=.005$) was correlated with the total NECIS score. We also found the GOLD group was significantly correlated with the total NECIS score ($F=4.00$, $p=.008$); however, there was no significant correlation between the GOLD stage and the total NECIS score.

Conclusions: In this study, we found that, in addition to experiencing anxiety or worry, a substantial portion of COPD patients had emotional stress of anger. Furthermore, the GOLD group may be more effective than the GOLD stage to grasp the psychological adjustment problem in patients with COPD. This result may be associated with the effects of resources loss and could be taken as the direction of screening or psychological intervention.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB19

非囊狀纖維化的支氣管擴張病患血液中 IgE 數值的臨床含義

朱家壎[1,2], 謝孟亨[1,2], 林恕民[1,2], 林鴻銓[1,2,3]

林口長庚呼吸胸腔科[1],長庚大學[2],林口長庚呼吸治療科[3]

Clinical Implication of Serum IgE Level in Non-Cystic Fibrosis Bronchiectasis Patients

Jia-Shiuan Ju[1,2], Meng-heng Hsieh[1,2], Shu-Min Lin[1,2], Horng-Chyuan Lin[1,2,3]

[1]Department of Thoracic Medicine, Chang Gung Memorial Hospital at Linkou, Taoyuan, Taiwan

[2]College of Medicine Chang Gung University, Taoyuan, Taiwan

[3]Department of Respiratory Therapy, Chang Gung Memorial Hospital at Linkou, Taoyuan, Taiwan

ABSTRACT

Background

The bronchiectasis severity index (BSI), FACED score and distance-saturation product (DSP) are currently used in predicting outcomes of non-cystic fibrosis bronchiectasis (NCFB). In several studies, serum IgE level was important in predicting the outcomes of chronic obstructive pulmonary disease patients. This study aims to detect the clinical implication of serum IgE level and the correlation with BSI, FACED score and DSP in NCFB patients.

Methods and Patients

Our retrospective study included NCFB patients from January 2004 to December 2017. We recorded the basic data, pulmonary function, radiologic studies, sputum culture results, acute exacerbations (AE), emergency department (ED) visits, hospitalization and serum IgE level.

Results

A total 62 NCFB patients were analysed. The mean BSI score, FACED score, and DSP were 10.0±4.9, 3.3±1.9, and 408.1±101.5 m%, respectively. The mean of IgE level were 141.6±182.0 IU/mL. More severe FACED score and poorer DSP performance was positively associated with higher IgE level (>100 IU/mL)($p<0.001$; $p<0.001$ respectively). The IgE level showed high predictive power of acute exacerbation ($p=0.041$), especially hospitalization. ($p=0.023$).

Conclusion

IgE level of NCFB patients has correlation to FACED score and DSP. NCFB patients with higher IgE level (>100 IU/mL) have more acute exacerbation events especially leading to hospitalization.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB20

吸入性類固醇對脈衝震盪肺功能分類之咳嗽變異性氣喘的影響

黃國揚[1], 呂俊佑[1], 林聖皓[1]

[1]彰化基督教醫院胸腔內科

The effects of inhaled corticosteroids on cough variant asthma classified by the impulse oscillometry

Kuo-Yang Huang[1], Chun-Yu Lu[1], Sheng-Hao Lin[1]

[1]Division of Chest Medicine, Department of Internal Medicine, Changhua Christian Hospital, Changhua, Taiwan

Background: Cough-variant asthma (CVA) accounts for the majority of chronic coughs, and early treatment with inhaled corticosteroids (ICS) minimizes inflammation and remodeling. The impulse oscillometry (IOS) is a novel tool to assess respiratory function. We therefore investigated the relationship between CVA and IOS, as well as the effects of ICSs among subtype classifications by IOS.

Methods: The following ICSs are prescribed for daily medical care: fluticasone propionate (FP), bubesonide (BUD), and beclomethasone dipropionate (BD). The Asthma Control Test (ACT) was used to assess treatment effects, which were compared between two subtypes based on IOS measurements: central and peripheral.

Results: In the central type, the ACT of the BD group was significantly lower than FP and BUD. In the peripheral type, the ACT of the FP group was significantly lower than BD and BUD. Furthermore, the IOS factors improved after 4 weeks of interventions with ICS. Therefore, there was a strong relationship between subtypes and particle size in terms of effectiveness.

Conclusion: In terms of treatment efficiency in CVA, there is a high correlation between IOS subtype classification and ICS particle size. Prior to therapy, it appears that determining the ICS particle size, based on the IOS subtype classification, is critical.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB21

整合性照護遵從性對肺阻塞患者急性惡化之影響

林慶雄[1,2], 李宜蓉[1,2], 許秋婷[3], 林聖皓[1], 王秉彥[2,4]

彰化基督教醫院胸腔內科[1], 彰化基督教醫院人工智慧發展中心[2], 彰化基督教醫院大數據中心[3], 彰化基督教醫院胸腔外科[2,4]

Effect of adherence tointegrated care program on exacerbation among patients with COPD

Ching-Hsiung Lin[1,2], Yi-Rong Li[1,2], Chew-Teng Kor[2], Sheng-Hao Lin[1], Bing-Yen Wang[2,4]

Department of Internal Medicine, Division of Chest Medicine, Changhua Christian Hospital[1], Artificial Intelligence Development Center, Changhua Christian Hospital[2], Big Data Center, Changhua Christian Hospital[3], Department of Surgery, Division of Thoracic Surgery, Changhua Christian Hospital[4]

Purpose: This study is aimed to evaluate the effect of adherence to integrated care program, the Taiwan COPD pay-for-performance program, on exacerbation among patients with chronic obstructive pulmonary disease (COPD).

Materials and Methods: We conducted a retrospective study using nationwide COPD P4P enrollment program file in Taiwan between Apr 2017 to Dec 2018. Patients with COPD who completed 5 follow up visits were defined as full participants, whereas patients were classified into partial participants. Full participants were matched at a ratio of 1:1 with partial participants using propensity score matching. We further used Cox hazard regression to calculate the hazard ratio (HR) and the corresponding 95% confidence interval (95% CI) for COPD-related emergency department (ED) visit and hospitalization in patients with COPD. Logistic regression analysis was performed to examine factors, including medication adherence and patients receiving pulmonary rehabilitation that were significantly associated with adherence of integrated care program.

Results: Before matching, the mean age was 70.79±10.94 years in partial participants, and 71.29±9.84 years in full participants ($p<0.0001$). Male subjects were dominant in our study population. Full participants had lower BMI, and higher CCI index compared with partial participants. After matching process, 7,727 subjects were classified into each group.The differences between the two groups were non-significant in terms of all subject characteristics (standardized difference <0.1 for each covariate). Relative to partial participants, full participants were associated with reduced risk of COPD-related ED visit (Hazard ratio (HR): 0.725, 95% CI: 0.68 - 0.774) and hospitalization (HR: 0.690, 95% CI: 0.617-0.772). In addition, full participants were associated with increased odds of optimal medication adherence (MPR≥80%; (Odd ratio (OR): 6.43, 95% CI: 5.98-6.91)) and receiving pulmonary rehabilitation (OR: 1.24, 95% CI: 1.17-1.33).

Conclusions: Our finding demonstrate that patients who completed integrated care program have lower risk of COPD-relative ED visit and hospitalization. Full participants were found significantly increase odd of optimal medication adherence and receiving pulmonary rehabilitation, which is theleading contributor of integrated care program to reduce adverse event, including COPD-relative ED visit and hospitalization.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB22

可解釋性機器學習於預測首次肺阻塞急性惡化之應用

林慶雄[1,2], 許秋婷[3], 李宜蓉[1,2], 林佩如[3], 林聖皓[1], 王秉彥[2,4]
彰化基督教醫院胸腔內科[1], 彰化基督教醫院人工智慧發展中心[2], 彰化基督教醫院大數據中心[3], 彰化基督教醫院胸腔外科[4]

Explainable Machine Learning Model for Predicting First Acute Exacerbation in Patients with COPD

Ching-Hsiung Lin[1,2], Chew-Teng Kor[2], Yi-Rong Li[1,2], Pei Ru Lin[3], Sheng-Hao Lin[1], Bing-Yen Wang[2,4]
Department of Internal Medicine, Division of Chest Medicine, Changhua Christian Hospital[1], Artificial Intelligence Development Center, Changhua Christian Hospital[2], Big Data Center, Changhua Christian Hospital[3], Department of Surgery, Division of Thoracic Surgery, Changhua Christian Hospital[4]

Purpose: The study is aimed to develop explainable and accurate machine learning (ML)- based models for predicting the first acute exacerbation of COPD (AECOPD) at an individual level.

Materials and Methods: We conducted a retrospective case-control study and a total of 606 patients with COPD were screened for eligibility using registry data from the COPD Pay-for-Performance Program (COPD P4P program) database at the CCH between January 2017 and December 2019. Recursive feature elimination (RFE) technology was used to select the best subset of features for predicting the occurrence of AECOPD. We build four ML-based models to predict first acute exacerbation of COPD and the best performing model was applied to predict. Finally, an explainable approach based on ML and the SHapley Additive exPlanations (SHAP) and Local explanation method was used to evaluate the risk of AECOPD and to generate individual explanations of the model's decisions.

Results: Gradient Boosting Machine (GBMs) had better discrimination ability (AUC= 0.83). And the decision curve analysis demonstrated that the GBM had a higher net benefit in distinguishing patients at high risk for AECOPD occurrence. CAT and symptom of wheeze are the most two important features with the highest SHAP values. Higher CAT, monocyte, WBC, BMI, neutrophil-to-lymphocyte ratio, eosinophil and lymphocyte leads to the occurrence of AECOPD.

Conclusions: The ML-based model was able to accurately assess the risk of acute exacerbation of COPD. ML-based model combined with SHAP and Local explanation method could provide interpretable and visual explanation of individualized risk prediction which assist clinical physicians intuitively understand the influence of key features in the model and subsequently help them to better understand the decision-making process.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB23

以脈衝震盪肺功能評估新診斷氣喘病人的支氣管可逆性

林佑容[1]，蕭逸函[2,3,4]

[1]台北榮民總醫院胸腔部，[2]台北榮民總醫院胸腔部一般胸腔科，[3]國立陽明交通大學醫學院生理學科，[4]國立陽明交通大學醫學院醫學系

Using impulse oscillometry to evaluate bronchial reversibility in patients with newly diagnosed asthma.

Yu-Jung Lin[1], Yi-Han Hsiao[2,3,4]

[1]Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan;

[2]Division of General Chest Medicine, Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan;

[3]Department and Institute of Physiology, College of Medicine, National Yang Ming Chiao Tung University, Taipei, Taiwan;

[4]School of Medicine, College of Medicine, National Yang Ming Chiao Tung University, Taipei, Taiwan

Purpose: Bronchial reversibility (BR) assessed by spirometry can help a better diagnosis of asthma in addition to clinical symptoms. However, spirometry remains a challenge for those who cannot perform forced expiration adequately. We hypothesize that impulse oscillometry (IOS), an effort-independent method to evaluate lung mechanic during tidal breathing, could be a good surrogate tool in evaluating BR in patients with newly diagnosed asthma.

Materials and methods: We retrospectively reviewed medical records of patients with newly diagnosed asthma who initially received both spirometry and IOS before and after short-acting beta-2 agonist in Taipei Veterans General Hospital from March 2017, to December 2019. We investigated the associations of IOS parameters with the positive BR measured by spirometry. We then assessed the predictive performance of IOS parameters by receiver operating characteristic (ROC) curve analysis and determined the cutoff values of IOS parameters that may discriminate the BDR outcome.

Results: Total 323 patients was enrolled into our study, and 93(28.8%) of them had a positive BR defined by spirometry. We found that the percentage change of reactance area [ΔAx(%)], an IOS parameter, after short-acting bronchodilator (SABA) was the only factor associated with a positive BR assessed by spirometry. ROC curve analysis showed that Ax reduction more than 53.8% after SABA [ΔAx(%) ≤ -53.8%] could be an optimal cutoff value in predicting positive BR (Sensitivity:39.78%, Specificity:80.43%) in patients with newly diagnosed asthma.

Conclusion: IOS could provide additional information to evaluate BR in patients with newly diagnosed asthma.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB24

肺部復原運動執行三年追蹤分析--義大癌治療醫院肺復原中心

吳俊廷[1],黃如瑩[2],賴品儒[2],黃明賢[1]

義大癌治療醫院胸腔內科/肺復原中心

3-year follow-up of pulmonary rehabilitation program at E-DA Cancer Hospital

Jiun-Ting Wu[1], Ru-Ying Huang[2], Ping-Ju Lai[2], Ming-Shyan Huang[1]

Division of Pulmonary Medicine1/Pulmonary Rehabilitation Center2, E-DA Cancer Hospital, I-Shou University

Introduction: Pulmonary rehabilitation has proved to have clinical benefits in lots of respiratory diseases. However, these study results were heterogenous. Identifying which components of pulmonary rehabilitation are essential, its ideal length and location, the degree of intensity of training required and how long treatment effects are important issues. We conducted a retrospective study to evaluate the effectiveness of pulmonary rehabilitation during 3-year follow-up.

Materials and Methods: Patients who completed rehabilitation program (twice per week, at least 12 weeks) were enrolled in outpatient setting at pulmonary rehabilitation center of E-DA Cancer Hospital from May 2018 to May 2021. Participants' characteristics, underlying diseases, extent of rehabilitation program, outcome were analyzed.

Results: Total 144 patients were referred to pulmonary rehabilitation center of E-DA Cancer Hospital during the period of 3 years. 45 participants who completed rehabilitation program (twice per week, at least 12 weeks) were analyzed. Total of 2318 person-time were recorded in 3 years. 35 persons were men (77.8%), 10 women (22.2%), mean age was 68.6 year-old. Underlying diseases: COPD (n=31, 68.9%), COPD combined with bronchiectasis (n= 5, 11/1%), bronchiectasis (n=3, 6.7%), restrictive lung diseases (n=3, 6.7%), other diseases (n=3, 6.7%). Pulmonary rehabilitation (PR) programs included breath exercise (n=45), exercise training (including inspiratory muscle training) (n=37), chest physical therapy (posture drainage and percussion) (n=43) and lung expansion therapy (negative pressure) (n=16), (≥3 PR items: n=40 (88.9%)). 4 patients (8.9%) were expired. Hospitalization rate was 0.42 person-time/year in 3-year follow-up, better than 0.81 per-time/ year before rehabilitation intervention.

Conclusions: Over a 3-year period, an effective, individual 12-week PR program provides sustained improvement in hospitalization rate.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB25

脈衝振盪肺功能在 B 組肺阻塞的臨床應用：來自社區醫院的研究經驗

謝逸安 [1],沈易綸 [1], 黃佑民 [2], 彭逸豪 [2], 陳鈴宜 [1], 戴芳銓 [1], 林育生 [1], 黃建文 [1, 3]

[1] 亞洲大學附設醫院胸腔內科

[2] 亞洲大學附設醫院呼吸治療科

[3] 亞洲大學醫學暨健康學院醫學檢驗暨生物技術學系

The clinical utility of impulse oscillometry in patients with GOLD group B COPD: community-based study experienced from a regional hospital

Yi-An Hsieh [1], Yi-LuenSheg[1], You-Min Huang [2], Yi-Hao Peng [2],Ling-I Chen [1], Fang-Chuan Dai [1], Yu-Sheng Lin [1], Chien-Wen Huang [1, 3]

[1] Division of Pulmonary Medicine, Department of Internal Medicine, Asia University Hospital, Taiwan

[2] Division of Respiratory Therapy, Department of Internal Medicine, Asia University Hospital, Taiwan

[3] Department of Medical Laboratory Science and Biotechnology, College of Medical and Health Science, Asia University, Taiwan

Purpose:

Which patients should receive dual therapy as initial treatment for The Global Initiative for Chronic Obstructive Lung Disease (GOLD) group B chronic obstructive pulmonary disease (COPD) is not clearly defined. We aim to evaluated if the parameters of impulse oscillometry(IOS) identify a population more likely to benefit from dual therapy than monotherapy.

Materials and Methods:

Patients with GOLD group B COPD under mono- bronchodilators and dual bronchodilators were enrolled from an observational cohort study in Asia University Hospital, and had serial spirometry and impulse oscillometry reports with acceptable quality for retrospective analysis. Study patients were classified into two groups with and without small airway dysfunction (SAD) based on the parameters of IOS. Patient's baseline characteristic, medical treatment, blood eosinophils count, and comorbidities would be also collected. We evaluated the efficacy of dual versus monotherapy between these two groups in the following outcomes: changes in trough FEV1 and the COPD Assessment Test (CAT).

Results: A total of 62 group B patients were divided into with small airway dysfunction (n=49) and without small airway dysfunction (n=13). In the SAD group, dual therapy was significantly more effective in improving FEV1 and achieving a higher proportion of CAT responders compared with either monotherapy. In contrast, in the without SAD group, the benefits of dual therapy over monotherapy were less consistent.

Conclusions:

Dual therapy showed more consistent benefits over monotherapy in the group B COPD patients with SAD.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB26

下呼吸道黴菌對阻塞性呼吸道疾病之影響案例聯想

李瑞源 [1]

[1] 台中醫院

Fungus influence on obstructive lung disease: case hint

Ruei Yuan Li[1]

Introduction: Microorganism existence implicated as the major etiology of COPD AE, the role of fungal colonization or infection in COPD is mysterious. Those with COPD is likely to be fungal infected victims. Important clinical implication in COPD such as severity and exacerbations is currently unknown. We speculated that the presence of fungi in the airways of patients with COPD is associated with disease severity.

Material and method: case summary

The 78 y/o gentleman without specific past history but obstructive airway disease recent months .He had anti-fungal medication for mold from BAL since 3mothes ago. He was scheduled bronchoscopy arranged for reconfirmation if treated completely after these days. Subjects were seen stable-state and no any exacerbation visits; Total IgE levels: WNL. allergen-specific：Phadiatop test was negative.

Result: Apart from his 2nd BAL fungal culture turned to be negative, even FEV1, FVC and TLC were improved. Finally his Lt lingular lobe lesion resolved.

Discussion: Antifungal therapy may demonstrate some clinical benefit, although this effect is small in stable group. Whether antifungal therapy may be effective in reducing exacerbations and disease progression in COPD remains to be clarified .Colonization of the airways is common in patients with COPD. The presence of fungus was also related to higher doses of systemic and or inhaled corticosteroids. Immunosuppression from corticosteroid treatment has been associated with invasive risk of exacerbations .In immunocompetent individuals fungal detection from respiratory samples may looed as episode. Examining pathogen and airway inflammation about fungus colonization in the COPD implicated clinical outcomes. Despite similar atopy rate, whether fungus existence worsening lung function is related to disease or prolonged exposure needs to be further investigated in future. In conclusion, the significance of positive fungal culture in COPD from lower airway remains to be uncertain.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB27

穩定期肺阻塞病人停用吸入型類固醇之系統性文獻回顧與統合分析

魏裕峰[1], 陳永哲[2], 朱國安[3], 王鶴健[4], 林孟志[2], 許超群[5]

義大醫院胸腔內科[1], 高雄長庚醫院胸腔內科[2], 高雄榮民總醫院胸腔內科[3], 臺灣大學附設醫院胸腔內科[4], 高雄醫學院附設醫院胸腔內科[5]

Withdrawal of inhaled corticosteroids in patients with stable COPD- A systematic review and meta-analysis

Yu-Feng Wei[1], Yung-Che Chen[2], Kuo-An Chu[3], Hao-Chien Wang[4], Meng-Chih Lin[2], Chau-Chyun Sheu[5]

[1]Department of Internal Medicine, E-Da Hospital, I-Shou University, Kaohsiung, Taiwan. Division of [2]Pulmonary and Critical Care Medicine, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan. [3]Division of Chest Medicine, Department of Internal Medicine, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan. [4]Department of Internal Medicine, National Taiwan University Hospital, National Taiwan University, Taipei, Taiwan. [5]Division of Pulmonary and Critical Care Medicine, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan

Purpose: Withdrawal of inhaled corticosteroid (ICS) is recommended in COPD patients receiving triple therapy [long-acting β2-agonist (LABA) plus long-acting muscarinic antagonist (LAMA) plus ICS] with low risk of exacerbations and low blood eosinophil counts. However, patients might encounter decline of lung function after withdrawal of ICS. In addition, the effect and safety of ICS withdrawal in stable COPD patients with LABA/ICS therapy were seldom investigated. The aim of this study was to systematically review the literatures to clarify the effect and safety of ICS withdrawal in stable COPD, with consideration of blood eosinophil counts.

Methods: We searched several databases and manufacturers' websites to identify relevant randomized clinical trials of ICS withdrawal in stable COPD patients. Outcomes of interest were exacerbation rate and change of forced expiratory volume in the first second (FEV_1).

Results: We search the literatures up to 2020 Aug, and included 5 studies with a total of 2,542 patients for analysis in this study. Regardless of patients receiving LABA/ICS or triple therapy, ICS withdrawal at 12-month significantly increase risk of all exacerbations (risk ratio [RR] 1.13, 95% confidence interval [CI] 1.01–1.27) and was associated with reduced FEV_1 (mean difference [MD] 58.53 mL, 95% CI 59.82–57.24 mL, P < 0.001). In COPD patients receiving triple therapy, ICS withdrawal was associated with a higher risk of exacerbation (RR 1.30; 95% CI 1.02–1.67) and a reduced FEV_1(MD -51.30 mL, 95% CI -92.59–-10.00; *P*=0.0149) for those with blood eosinophil counts ≥ 300 cells/μL; but was not associated with a higher risk of exacerbation (RR 1.03; 95% CI 0.91–1.16) or reduced FEV_1(MD -29.5 mL, 95% CI -61.84–2.84) for those with blood eosinophil counts <300 cells/μL.

Conclusion: ICS withdrawal might increase risk of exacerbations and reduce FEV1 in stable COPD patients. For patients receiving triple therapy, ICS withdrawal should be considered only in those with blood eosinophil counts< 300 cells/μL.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB28

淋巴血管平滑肌增生症的運動能力與肺部功能之關聯性:回溯性研究

羅子涵[1,3], 劉世豐[2], 林孟志[2], 吳汶蘭[3]

高雄長庚醫院呼吸治療科[1], 高雄長庚醫院胸腔科[2], 高雄醫學大學運動醫學系[3]

Association between exercise capacity and lung function in lymphangioleiomyomatosis: a retrospective study

Tzu-Han Lo[1,3], Shih-Feng Liu[2], Meng-Chih Lin[2], Wen-Lan Wu[3]

Department of Respiratory Therapy, Kaohsiung Chang Gung Memorial Hospital, Taiwan[1]

Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, Kaohsiung Chang Gung Memorial Hospital, Taiwan[2]

Department of Sports Medicine, Kaohsiung Medical University, Taiwan[3]

Purpose: We aim to evaluate the pulmonary function and the six minute walk test (6WMT) of Lymphangioleiomyomatosis (LAM) patients and to discuss whether we can use lung function tests to predict 6MWT or not and assess patient's exercise capacities through this test.

Materials and Methods: 31 LAM patients were included from 2010/1/1 to 2020/10/9 in KCGMH and LCGMH. All patients received 6MWT and lung function test within one month. We allocated patients into different groups according to FVC, FEV1, FEV1/FVC. DLCO, PEF, MEP, MIP and test age. We also recorded SpO2 drop (the decline of saturation) and SpO2-6 (the saturation after 6MWT) in this study.

Results:A total of 31 females were included, with an average disease diagnosed age of 39.67±11.61 years, the average disease duration was 4.06±4.04 years, and test age was 43.67±10.88 years. We found that people with an older test age had a poorer 6MWT distance (meters) and less SpO2-drop, also had significantly worse MEP ($p<0.05$). According to the classification criteria of lung function (FVC, FEV1, FEV1/FVC, DLCO, PEF) classification criteria, those with better lung function, the SpO2-6 is high, and the SpO2-drop is low ($p<0.05$). For the groups with better MEP and MIP, there was a trend of longer walking distance, and the increase of SpO2-drop ($p<0.05$).We found that the test age and DLCO were the main influencing factors of exercise-induced hypoxemia, while test age and MEP were the key predictors of six minute walking distance.

Conclusions: When the patient meets one of the following conditions: FVC<80%predicted, FEV1<50% predicted, FEV1/FVC<70, DLCO<40% predicted, or PEF <80ml/L, the patient will have hypoxemia condition during exercise. DLCO is an independent predictor of exercise-induced hypoxia, while the test age, MIP, and MEP will affect the walking distance of the six minute walk test, and then affect the SpO2-drop. For the patient with LAM, this study may help clinicians to determine which patients may need oxygen therapy during exercise to relieve their discomfort and dyspnea.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB29

無關節表現的前期類風濕性關節炎相關間質性肺病-兩例個案報告

張嘉凌[1], 李克仁[2], 林敬凱[3], 郭炳宏[2]

國立臺灣大學醫學院附設醫院新竹台大分院內科部[1]

國立臺灣大學醫學院附設醫院內科部[2]

國立臺灣大學醫學院附設醫院癌醫中心分院內科部[3]

Interstitial lung disease in patients with preclinical rheumatoid arthritis without articular manifestations– Report of two cases

Chia-Ling Chang[1], Ko-Jen Li[2], Ching-Kai Lin[3], Ping-Hung Kuo[2]

Department of Internal Medicine, National Taiwan University Hospital Hsin-Chu Branch[1]

Department of Internal Medicine, National Taiwan University Hospital[2]

Department of Internal Medicine, National Taiwan University Cancer Cancer[3]

Abstract

Introduction: Rheumatoid arthritis (RA) is a systemic autoimmune inflammatory disease and presents with mostly articular but also extraarticularmanifestations. The mostcommon pulmonary manifestations of RA are interstitial lung disease(ILD) and bronchiectasis. A minority of RA patients, however, may present with ILD butwithout articular involvement.

Case Report:

Case 1: A 83-year-old man presented to our hospital in November 2019 with dyspnea on exertionfor 6 months. He was an ex-smoker with a smoking pack-year of 25. He denied any symptoms of arthritis. Physical examination revealed crackles over left basal lungs. The forced vital capacity (FVC) and diffusion capacity (DLCO) were 63.4% and 50.4% of predicted, respectively. The high-resolution computed tomography (HRCT) was compatible with a usual interstitial pneumonitis (UIP) pattern. The autoimmune profile revealed an elevated level of *anti*-cyclic citrullinated peptide antibody (anti-CCP) (31.32 U/mL) but the rheumatoid factor (RF) titer was normal (<9.69 IU/mL). He was treated with hydroxychloroquine, leflunomide, prednisolone and pirfenidone.

Case 2: A 64-year-old man developed progressive dyspnea for 2 weeks in January2019. There were no symptoms and signs of arthritis. He smoked a pack of cigarettes a day for 40 years. Physical examination revealed crackles over left basal lungs. The HRCT showed ground-glass opacity with reticulation at both lungs, lower lobe predominance. Elevated levels of RF (36.5 IU/mL) and anti-CCP (611.35 U/mL) were found.The pathology of a transbronchial lung cryobiopsy demonstrated interstitial pneumonia with organization. His symptoms significantly improved after treatment with hydroxychloroquine, prednisolone and pirfenidone. His FVC and DLCO also gradually improved and the follow-up HRCT showed partial resolution of previous lung lesions.

Conclusion: ILD can be the initial presentation in patients with preclinicalRA. The role of anti-CCP in the diagnosis of these patients requires further investigations.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB30

嗜伊紅性白血球肺炎?:案例分享

李瑞源 1

台中醫院

EOSINOPHILIC PNEUMONIA? CASE SHARING

Ruei Yuan Li 1

Ministry of Health and Welfare Taichung Hospital

Introduction: Respiratory tract infections are commonly diagnosed and exert a large health burden nationally. The etiological agents causing RTI are varied with age and co-morbidity. Etiological diagnosis is frequently empirical for the majority of outpatient and laboratory diagnosis.Method: Case presentation:We report the case of a 64-year-oldoman who presented to an outside hospital in high fever and productive cough. According to the patient, he had intermittent fever for the preceeding 3 days that was associated with non-productive cough. Review of systems was otherwise negative. He had a history of allergy to unknown origin.. The patient's laboratory investigations revealed a normal basic metabolic panel and a complete blood count significant for peripheral eosinophilia. After the transfer to our ward, her white cell count 9.9K/cm^3, ESR 23 CRP 4.1 with small patch over Rt hilum. Empirical and effective parenteral antibiotics was prescribed for 4 days. Spiking fever still noticed with WBC 6.3K/ul:62.9% segmented neutrophils and 9.9% eosinophils (absolute 805/mm^3). His absolute eosinophil count rose and Ig-E 260.2IU/ml. His liver function tests were unremarkable. ANAand allergen phadiatoptest were negative. All pneumonia serum and microbiological even COVID and influenza testing were also negative.Result: Chest X-ray revealed mild infiltration of the lung fields. Chest X-rays. on admission day 1:,Rt peri-hilum patch CXR on day 4: infiltration have improved then dramatically afebrile after corticosteroid interposed. Pulmonary eosinophilia share traits included peripheral blood eosinophilia, fever .lung infiltration all were present in our patient..Discussion: Eosinophilic pneumonia is idiopathic in most patients. Patients generally present with initial neutrophilic leukocytosis then become markedly elevated during thet course. The ESR and CRP are elevated, and the high Ig-E level .Patients may not typically have peripheral blood eosinophilia at the time of presentation. Laboratory are helpful to evaluate for diseases in diagnosis of EP. CXR may show only subtle lesion or opacities witheffusions. The diagnosis of eosinophilic pneumonia based upon clinical criteria that included BAL with exclusion causes of pulmonary eosinophilia. Eosinophilic pneumonia managed as supportive care with empiric antibiotics and systemic steroid therapy. In response to steroid therapy, symptom improvement is usually miraculously.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB31

一例具有自體免疫特徵之間質性肺炎的病患，反覆惡化並演變為多發性肌炎：病例報告

鄭至宏[1],黃千慈[2], 歐燦騰[3], 許瑞昇[4,5], 許超群[1,5]

高雄醫學大學附設中和紀念醫院, 胸腔內科[1], 血液腫瘤內科[2], 過敏免疫風濕內科[3], 影像醫學部[4];高雄醫學大學醫學系[5]

Recurrent exacerbations and evolving into polymyositis in a patient with interstitial pneumonia with autoimmune features: a case report

Chih-Hung Cheng[1], Chien-Tzu Huang[2], Tsan-Teng Ou[3], Jui-Sheng Hsu[4,5], Chau-Chyun Sheu[1,5]

Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, Kaohsiung Medical University Hospital (KMUH)[1]; Division of Hematology and Oncology, Department of Internal Medicine, KMUH[2]; Division of Rheumatology, Department of Internal Medicine, KMUH[3]; Department of Medical Imaging, KMUH[4]; College of Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan[5]

Introduction: In 2015, the "European Respiratory Society (ERS)/American Thoracic Society (ATS) Task Force on Undifferentiated Forms of Connective Tissue Disease (CTD)-associated Interstitial Lung Disease (ILD)" proposed a new term "interstitial pneumonia with autoimmune features (IPAF)", which describes the patients with both ILD and autoimmune features but do not meet current criteria for any defined CTDs. Many questions remain uncertain about IPAF, including definition, clinical manifestations, treatment, and prognosis. We present a challenging case of severe IPAF who eventually fulfilled the criteria of polymyositis after following up for one year.

Case Presentation: A 67-year-old non-smoking woman initially presented with deteriorating exertional dyspnea at our hospital. Two months ago, she had a hospitalization for fever, dyspnea, and productive cough. The chest computed tomography revealed non-specific interstitial pneumonia (NSIP) pattern. The serology test showed a positive finding of anti-CTD antibodies. Her condition improved after antibiotics and methylprednisolone therapy. Then, she received prednisolone and azathioprine. This time, for acute respiratory failure, she received high-flow nasal cannula initially and then mechanical ventilation. The serologic test showed a positive result of anti-Jo-1 without any inflammatory myopathy manifestations. After a multidisciplinary discussion for IPAF with acute exacerbation, she received methylprednisolone (500 mg/day for three days) therapy, followed by once cyclophosphamide (500 mg), with broad-spectrum antibiotic covering. She received extubation on the 16th hospital day and discharge on the 26th hospital day. Twelve months later, she was diagnosed with polymyositis with proximal muscle weakness of bilateral lower limbs and elevated serum creatine kinase (1166 IU/L). Moreover, fifteen months later, she had left neck malignant lymphadenopathy and a new lung nodule.

Discussion: To date, there are clinical features of IPAF, including female predominance, an age of mid-50s to mid-60s, mostly non-smokers, and NSIP pattern, which were consistent with the characteristics of our case. Given the high risk of evolution into a defined CTD, regular evaluation of clinical features and biomarkers of CTD is essential for all patients with IPAF. Besides, the management for IPAF is not well established. Recent reviews suggest mycophenolate mofetil and azathioprine as the first-line steroid-sparing agents.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB32

比樂舒活(pirfenidone)治療特發性肺纖維化之療效，劑量與安全性的觀察性研究

張晟瑜[1],張時杰[2*], 賴怡君[2], 魏裕峰[3], 陳崇裕[3]

亞東醫院胸腔內科[1],陽明交通大學附設醫院胸腔內科[2], 義大癌治療醫院內科部[3],台大醫院雲林分院內科[4]

The efficacy and safety of pirfenidone in patients of idiopathic pulmonary fibrosis – an observational study

Cheng-Yu Chang[1], Shih-Chieh Chang[2], Yi-Chun Lai[2], Yu-Feng Wei[3], Chung-Yu Chen[4]

Division of Chest Medicine, Department of Internal Medicine, Far Eastern Memorial Hospital, New Taipei City, Taiwan[1]; Division of Chest Medicine, Department of Internal Medicine, National Yang-Ming Chiao Tung University Hospital, Yi-Lan, Taiwan[2]; Department of Internal Medicine, E-Da Cancer Hospital, Kaohsiung, Taiwan[3]; Department of Internal Medicine, National Taiwan University Hospital Yunlin Branch, Yunlin County, Taiwan[4]

Purpose: In randomized controlled trials, the antifibrotic therapies of pirfenidone have demonstrated improvement in lung function decline and reduced risk of acute exacerbation for patients with idiopathic pulmonary fibrosis (IPF). The objective of our study is to investigate the real-world efficacy and safety profile of pirfenidone treatment for patients with IPF in Taiwan.

Materials and Methods: After inform consent, patients with IPF were enrolled in a multicenter, observational trial that was conducted in one medical center and three teaching hospitals in Taiwan. The institutional review board at each center approved the protocol, and ongoing efficacy and safety results were reviewed at 12-month intervals.

Results: A total 58 patients were enrolled in this study from Nov. 2019 to Oct. 2020. The mean age was 74.4 years, 72.4% were male and baseline forced vital capacity (FVC) was 65.4±11.3% of predicted value. The primary efficacy endpoints were change in percentage of predicted FVC that revealed 10.5%, 7.2%, 2.2% and 1.6% at months 3, 6, 9, and 12. The patients had poor quality of life in baseline measured by St. George's Respiratory Questionnaire (SGRQ) score of 43.77±20.63 and COPD assessment test (CAT) of 16.72±6.28. Following a 12-months pirfenidone treatment, significant improvement of quality of life and respiratory symptoms were identified with reduced SGRQ (-16.42±18.55) and CAT (-7.32± 9.33) scores. Of them, 11 patients (19.1%) had acute exacerbation episode and the most frequently reported adverse effects were nausea (19%), photosensitivity reactions (15.5%) and skin itching (13.8%).

Conclusions: It is a first real-world experience of efficacy and safety data in multicenter study of Taiwan. Our research of improvement in FVC is comparable with previous phase III clinical trials in IPF. Pirfenidone treatment is well tolerated and no raised of new safety concern in our study.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB33

以非特異性間質性肺炎作初始表現的 MDA5 抗體陽性之皮肌炎

陳乃慈[1], 賴俊良[1,2]
佛教慈濟醫療財團法人大林慈濟醫院內科部[1]，佛教慈濟醫療財團法人大林慈濟醫院胸腔內科[2]

Non-specific Interstitial Pneumonitis as an Early Manifestation of Anti-MDA5 Associated Dermatomyositis

Nai-Tzu Chen[1], Chun-Liang Lai[1,2],
Department of InternalMedicine[1], Division of Pulmonary and Critical Care Medicine[2], Buddhist Tzu Chi Medical Foundation Dalin Tzu Chi Hospital

Purpose: Anti-melanoma differentiation-associated gene 5 (MDA5) antibody is detected in some variant of dermatomyositis that may show poor prognosis with higher mortality attributed to rapid-progressive interstitial lung disease (RP-ILD). Other anti-MDA5 related ILD and the outcome was rarely discussed. We report a case of anti-MDA5 positive dermatomyositis ($MDA5^+$DM) presented with nonspecific interstitial pneumonitis (NSIP) as the first manifestation of autoimmune disease and its response to steroid.

Materials and Methods: A 50-year-old previously healthy woman presented to the chest outpatient clinic with 2-month of cough and progressively exertional dyspnea. Chest radiograph revealed interstitial fibrosis over bilateral basal lungs and CT scans showed interlobular septal thickening in both lower lobes. Lung function evaluation exhibited a restrictive lung pattern with marked decrease of diffusing lung capacity for carbon monoxide (42%). The pathology of open lung biopsy disclosed a pattern of nonspecific interstitial pneumonitis (NSIP). Initial serology titers for common autoimmune diseases were all negative. Two months after diagnosis of NSIP, her skin manifestations including Gottron's sign, Shawl sign, and Heliotrope sign became evident and hence dermatomyositis was diagnosed with a serology confirmed anti MDA5 variant.

Results: The patient received induction methylprednisolone and combined with cyclophosphamide as treatment. After 3 months of treatment, the interstitial pneumonitis resolved dramatically accompanied with improvement of DLCO and all respiratory symptoms.

Conclusions: As most literature reports, $MDA5^+$DM was strongly associated with rapid progressive interstitial lung disease, typically a diffuse alveolar damage pattern. Herein, we described a case with $MDA5^+$DM that had initial presentation of NSIP and responded to systemic steroid and other immunosuppression agents very well. To our knowledge, this is the first case report to show a benign clinical course and treatment response of $MDA5^+$DM with ILD. We emphasize the importance of histology pattern to identify a subgroup of $MDA5^+$DM with good medication response and outcome.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB34

急性矽肺病造成間質性肺炎

吳自強[1],李仁智[2], 林智斌[2],

[1] 花蓮慈濟醫院一般內科; [2] 花蓮慈濟醫院胸腔內科

Interstitial Pneumonitis Caused by Acute Silicosis- Case Report

Tzu-Chiang Wu[1]; Jen-Jyh Lee [2]; Chih-Bin, Lin[2]

[1]Department of Internal Medicine, Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Hualien, Taiwan

[2]Division of Chest Medicine, Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Hualien, Taiwan

Introduction

Acute silicosis is a rare disease caused by inhalation of crystalline silica, resulting in symptoms in a few weeks to a few years. Clinical presentations are rapid onset dyspnea, cough, fatigue, weight loss, fever, or pleuritic pain. We present here a case of acute interstitial lung disease caused by acute silicosis.

Case presentation

A 36-year-old man Filipino, non-smoker, without systematic disease, living in Taiwan for 5 years, works in stone crush factory. His annual regular health check-up chest X rays were all normal except the one 3 months before admission. Poor appetite, body weight loss (6-7 kg in 3 months), and easy fatigue when working were found for recent 3 months. He went to local hospital for help, and chest X ray revealed multiple interstitial lung lesions. Chest CT revealed multiple reticulolinear infiltrations over bilateral upper lungs. Sputum acid-fast stain and diagnostic bronchoscopy lavage TB-PCR were done but all showed negative results. Due to his interstitial lung disease, etiology unknown, he was transferred to our hospital.

In our hospital, Uni-port video-assisted thoracic surgery (VATS) was performed for RUL wedge resection and pleural biopsy, and the pathology revealed acute silicosis with alveolar exudate, silicotic nodule and interstitial fibrosis. After discharge, he visited Chest Medicine clinic and Occupational Medicine clinic for further management.

Conclusion

Acute silicosis is a rare lung disease nowadays, and the clinical presentation and radiological findings could mimic with military or interstitial pneumonitis, including tuberculosis. We need to consider this differential diagnosis if patients had silicon exposure.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB35

特發性肺纖維化急性惡化併發肺栓塞-案例報告

胡耕寧[1], 郭炳宏[1]
國立臺灣大學醫學院附設醫院內科部胸腔內科[1]

Acute pulmonary embolism complicating acute exacerbations of idiopathic pulmonary fibrosis - A case report

Geng-Ning Hu[1], Ping-Hung Kuo[1]
Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan[1]

Abstract

Introduction: Patients with idiopathic pulmonary fibrosis (IPF) may develop episodes of acute respiratory worsening termed acute exacerbations of IPF (AE-IPF). An association between AE-IPF and a pro-thrombotic state has been suggested. However, acute pulmonary embolism (PE) complicating AE-IPF is rarely reported.

Case Report: A 74-year-old non-smoking man presented to our hospital in Jun 2017 withworsening of exertional dyspnea and mild cough. The high-resolution computed tomography (HRCT) of the chest revealed a usual interstitial pneumonia (UIP) pattern. The past medical history was notable for a mitral valvuloplasty in 2011 and he was on aspirin therapy thereafter. IPF was diagnosed and he was initially treated with nintedanib which was discontinued due to a severe diarrhea. After switching to pirfenidone therapy his symptoms improved, and lung function remained stationary. Unfortunately, he developed worsening of dyspnea and cough with intermittent hemoptysis in Jan 2021. On 26 Feb 2021, he was sent to the emergency room of a local hospital where his hemodynamics were still within normal limits, but the PaO_2/FiO_2 ratio was only 200. Elevated levels of D-dimer (59.04 μg/mL), C-reactive protein (18.45 mg/dL), troponin I (0.08 ng/mL), and N-terminal pro-brain natriuretic peptide (NT-proBNP) (1138 pg/mL) were also found. A contrast-enhanced chest CT showed ground glass opacities over both lungs in addition to previous UIP pattern, as well as filling defects in the right interlobar pulmonary arteries. In the intensive care unit, parenteral anticoagulant was administered which was switched to oral edoxaban seven days later. His oxygenation and NT-proBNP improved and was transferred to our hospital on 15 Mar 2021. The echocardiographic and lung function parameters significantly declined, and he became dependent on oxygen therapy. His function class gradually improved after addition of low-dose prednisolone therapy and cardiopulmonary rehabilitation.

Table 1. Serial changes in PaO_2/FiO_2 (P:F) ratios.

	2021/02/26	2021/02/27	2021/03/04	2021/03/06	2021/03/17
P:F ratio	201	251	242	259	309

Table 2. Serial changes in NT-ProBNP.

	2021/02/26	2021/03/15	2021/03/17	2021/04/01
NT-ProBNP (pg/mL)	1138	436	316	576

Table 3. Serial lung function testing results.

	2017/12/26	2018/04/17	2019/06/11	2019/10/01	2020/11/26	2021/03/24
FVC (%)	83.4	82.8	83.3	67.2	75.4	44.2
DLCO (%)	51.5	57.3	48.1	43.0	44.2	20.5

Table 4. Serial echocardiographic parameters.

	2015/01/28	2017/08/08	2021/03/23	2021/07/02	2021/09/29
LVEF (%)	68.3	67.5	40.4	53.6	53.8
TRPG (mm Hg)	36.7	38.6	26.1	49.9	13.4

Conclusion: Cardiovascular comorbidities are common in IPF patients. Acute pulmonary embolism should be listed among the etiologies of AE-IPF, and the importance of early recognition and management cannot be overemphasized in these patients.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB36

特發性胸膜實質彈性纖維變性患者接受肺葉切除術後疾病進程的快速惡化

温岳峯[1],宋湘琳[2], 張佑謙[3], 李怡範[3], 張立禹[1], 林敬凱[4]
[1]台大醫院新竹台大分院新竹醫院內科部,[2]台大醫院新竹台大分院新竹醫院病理部,[3]台大醫院影像醫學部,[4]台大醫院癌醫中心分院綜合內科部

Rapid disease progression in a patient with idiopathic pleuroparenchymal fibroelastosis after undergoing lobectomy

Yueh-Feng Wen[1], Hsiang-Lin Song[2], Yu-Chien Chang[3], Yee-Fan Lee[3], Lih-Yu Chang[1], Ching-Kai Lin[4]
[1]Department of medicine, National Taiwan University Hospital Hsinchu Branch, Hsinchu, Taiwan
[2]Department of pathology, National Taiwan University Hospital Hsinchu Branch, Hsinchu, Taiwan
[3]Department of radiology, National Taiwan University Hospital, Taipei, Taiwan
[4]Department of medicine, National Taiwan University Cancer Center, Taipei, Taiwan

Abstract

We reported a 61-year-old female with idiopathic pleuroparenchymal fibroelastosis (PPFE), whose disease course had accelerated in one year after undergoing lobectomy of the left lower lobe for a tumor-like lesion. She had had worsening resting and exertional dyspnea, more prominent suprasternal depression and flattening of the chest, and speedy bodyweight loss, all of which occurred after surgery. In addition, her high-resolution computed tomography (HRCT) of the chest in one year revealed more pleural thickening and subpleural reticulation around both upper lobes and extending into the minor fissure and more tortuous and dilated bronchi of both upper lobes. Due to an uncertain diagnosis and progressive symptoms, she came to National Taiwan University Hospital, Hsinchu Branch. After reviewing the pathological slides, we found focal pleural fibrosis and subpleural, peribronchial, and perivascular alveolar fibroelastosis (FEA) compatible with PPFE. Her ANA, anti-ENA, anti-dsDNA, rheumatoid factor, and myositis panel were negative or non-significant. These findings concluded the diagnosis of idiopathic PPFE. This case highlighted the negative impact of pulmonary surgery on patients with PPFE and the unmet need for a more safe diagnostic modality of PPFE, especially when the pre-biopsy diagnostic likelihood ratio was low to moderate.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB37

高效濾網空氣清淨機改善室內 PM2.5 濃度之成效

陳秋帆[1],許淳翔[1], 張玉蓉[2], 李琳[1]

高雄榮民總醫院胸腔內科[1], 衛福部中央健康保險署高屏業務組[2]

Efficacy of High-Efficiency Particulate Air Filter Air Cleaner on Improving Indoor Particulate Matter 2.5 Concentration

Chiu-Fan Chen[1], Chun-Hsiang Hsu[1], Yu-Jung Chang[2], David Lin Lee[1].

Division of Chest Medicine, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan[1]; Kaohsiung and Pingtung Branch, National Health Insurance Administration, Ministry of Health and Welfare, Kaohsiung, Taiwan[2].

Purpose: Particulate matter 2.5 (PM2.5) air pollution is especially severe during the autumn and winter seasons in the middle and southern Taiwan. PM2.5 can slowly damage multiple organ functions, by transfer deeply into pulmonary alveolar during respiration, and get into blood stream and affect the whole body. Theoretically, HEPA filter air cleaner can remove≧99.97% of 0.3μm fine particles, and is a potential tool to improve indoor air quality. This study aimed to analyze the efficacy of HEPA filter air cleaner in household environment.

Materials and Methods: This study was conducted during autumn of 2020 to spring of 2021, in a single indoor space and under standardized window open condition. We used a laser light dispersion PM2.5 sensor to continuously monitor the indoor and outdoor PM2.5 level before and after HEPA filter air cleaner use. We analyze the effects of air cleaner machine number and airflow speed on efficacy of PM2.5 removal.

Results: Overall, HEPA filter air cleaner can significantly reduce indoor PM2.5 level (33.5 ±10.3 vs. 17.2 ±10.7 μg/m3, mean difference (MD) = -16.3 μg/m3, $p < 0.001$) and indoor/outdoor PM2.5% (76.3 ±16.8 vs. 38.6 ±19.8%, MD = -37.7%, $p < 0.001$). The efficacy to reduce PM2.5 was weakest in 1 machine low flow group (indoor PM2.5 MD: -3.7μg/m3, indoor/outdoor PM2.5% MD: -10.4%). The efficacy was strongest in 3 machine medium flow group (indoor PM2.5MD: -26.5 μg/m3, indoor/outdoor PM2.5% MD: -56.4%). There were similar efficacy in 1 machine medium flow group, 2 machine low flow group, and 3 machine low flow group. Linear regression showed that outdoor PM2.5, machine number, airflow speed, and window ventilation were significant factors associated with indoor PM2.5 level (R^2=0.753).

Conclusions: This study showed that HEPA filter air cleaner can effectively improve indoor PM2.5 air pollution. Not only adequate air clean machine number, but also adequate airflow and window ventilation limitation, are important to achieve the best efficacy of the HEPA filter air cleaner.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB38

單側肺動脈缺失與冠狀動脈-肺動脈瘻管於一氣喘患者併發肺高壓之案例報告

林振傑，吳卓鍇，郭炳宏

Pulmonary hypertension complicating unilateral absence of pulmonary artery and coronary-pulmonary artery fistula in a patient with asthma

Chen-Chieh Lin, Cho-Kai Wu, Ping-Hung Kuo

Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan

Abstract

Introduction: Unilateral absence of pulmonary artery (UAPA) is a rare congenital anomaly and above 30% of the patientsdeveloppulmonary hypertension (PH), due to an increased blood flow through the pulmonary artery contralateral to the affected side. Coronary artery fistula (CAF) is also an uncommon anomaly where PH may be observed in23%, possibly due to an increased left-to-right shunting. Coronary-pulmonary fistula (CPAF) represents the collateral vessel terminating in pulmonary artery, and accounts for 30% of all CAF.

Case Report:A 53-year-old woman presented to our hospital in 2011 with intermittent cough, chest tightness, dyspnea and wheezing for five years. The chest X-ray showeda prominent left hilum and a smaller right lung. The computed tomography(CT) of the chest confirmed the absence of the right pulmonary artery (PA). The forced vital capacity (FVC) was 70.5% predicted, the forced expiratory volume in one second (FEV1) was 63.6% predicted, and the FEV_1/FVC was 75.6%.The right cardiac catheterization showed a mean PA pressure of 34 mmHg. In the next nine years her asthma was well-controlled by inhalers, and her functional class (FC) remained stable under treatment with spironolactone and sildenafil (40-60 mg/day).In 2020, she developed mild intermittent chest tightness and thecoronary angiographyshowed a fistula between proximal left circumflex coronary artery and right pulmonary circulation. She declined further catheter intervention for her CPAF due to the concern for potential risks. Her condition remained stationary at the time of this report.To our knowledge, only 15 similar cases with combined UAPA and CPAF in adults have been reported in the literature andPH was documented in 8 of them (53%).

Table 1. Serial hemodynamic parameters

	2011/11	2017/02
Right atrium pressure (mmHg)	7	9
Main pulmonary artery (PA) pressure (mmHg)	56/30 (mean 34)	60/23 (mean 35)
PA wedge pressure (mmHg)	10	10
Cardiac output (L/min)	N/A	4.2
Pulmonary vascular resistance (Wood Unit)	N/A	4.28

Table 2. Serial WHO functional class (FC), tricuspid regurgitation pressure gradient (TRPG) by echocardiography, N-terminal pro-brain natriuretic peptide (NT pro-BNP), and oxygenation

Date	2011/12	2016/06	2017/01	2017/06	2018/01	2018/07	2019/09	2020/01	2020/10	2021/03
WHO FC	I~II	I~II	I~II	I~II	I~II	I~II	I~II	I~II	I~II	I~II
NT-proBNP (pg/mL)	N/A	50.77	84.27	98.56	113.5	N/A	N/A	61.87	N/A	72.88
TRPG (mmHg)	49.4	N/A	47.9	56.4	65.2	73.2	N/A	86.9	90.9	75.8
SpO2 (%)	95	93	95	94	95	95	95	97	97	97

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB39

心胸外科術後使用音樂介入對於肺擴張運動之效應

陳冠毅[1]、蔡玉琴[1]、曾靜菀[1]、郭藍遠[2]、林孟志[3]、劉世豐[3]

高雄長庚呼吸治療科[1]，高雄醫學大學運動醫學系[2]，高雄長庚呼吸胸腔內科[3]

The effect of music intervention on lung expansion after cardiothoracic surgery

Guan-Yi Chen[1], YuhChyn Tsai[1], Ching-Wan Tseng[1], Lan-Yuan Guo[2], Meng-Chih Lin[3], Shi-Feng Liu[3]

Department of Respiratory Therapy, Kaohsiung Chang Gung Memorial Hospital [1]

Department of Sports Medicine, College of Medicine, Kaohsiung Medical University [2]

Division of Pulmonary and Critical Care Medicine, Kaohsiung Chang Gung Memorial Hospital [3]

Background: Although there's a good health education in lung expansion exercise and it can be performed correctly by patients before undergoing cardiothoracic surgery. But patient often fail to cooperate due to pain, anxiety, or tension. Postoperative intervention with music can reduce the patients' pain and anxiety and are willing to accept lung expansion exercises or other treatments.

Purpose: This study intends to explore the short-term benefits of peak expiratory flow rate (PEFR), vital capacity (VC), and maximum inspiratory/expiratory pressure (MIP/MEP) after performing cardiothoracic surgery with music intervention for lung expansion. Meanwhile, assess the visual analogue scale (VAS), trait and state anxiety level by using State-Trait Anxiety Inventory (STAI). Observing the vital signs to ensure patient safety.

Methods: Subjects were randomly assigned to music and control groups. Both groups wore noise-cancelling headphones and performed intermittent positive pressure breathing (IPPB) as lung expansion exercises. The music group plays the natural environment music, and the control group plays no music, continuously intervening for seven days. The anxiety level was evaluated before surgery and on the seventh day after treatment.

Results: A total of 18 subjects (age 60.78 ± 10.90 years old, BMI 26.58 ± 3.67 Kg/m^2, preoperative VC 25.79 ± 8.31 mL/Kg, MIP 64.83 ± 22.79 cmH2O, MEP 80.17 ± 30.63 cmH2O, and the PEFR 374.44 ± 123.82 L/min). Under the overall interaction, the PEFR, VC, and MIP were statistically significant ($p < .05$), and the control group was better than the music group. The degree of pain was better in the music group than in the control group ($p = .046$), but there was no significant difference in the overall interaction with time. There were no other side effects in the whole experiment, and there was no significant difference in anxiety level between the two groups ($p > .05$).

Conclusion: For patients after cardiothoracic surgery, listening to natural music as an intervention for lung expansion will reduce the improvement of lung function, but can reduce pain and postoperative anxiety.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB40

第 7 型鉀離子通道在鈣離子調控機轉上所扮演的角色：肺動脈高壓之新穎治療路徑

蔡遠明[1*], 德瑞克·斯蒂爾[2], 克里斯·皮爾斯[3], 尼基塔·甘伯[2]

三軍總醫院外科部胸腔外科[1]; 英國里茲大學生物醫學學院[2], 醫學暨健康學院[3]

Role of Kv7 channels in the control over Ca^{2+}signalling: a novel pathway for the treatment of pulmonary arterial hypertension

Yuan-Ming Tsai[1*], Derek Steele[2], Chris Peers[3†], Nikita Gamper[2]

[1] Division of Thoracic Surgery, Department of Surgery, Tri-Service General Hospital, National Defence Medical Centre, Taipei 11490, Taiwan

[2] School of Biomedical Sciences, Faculty of Biological Sciences, University of Leeds, Leeds, LS2 9JT, United Kingdom

[3] Leeds Institute of Cardiovascular and Metabolic Medicine, Faculty of Medicine and Health, University of Leeds, Leeds, LS2 9JT, United Kingdom

Purpose: Voltage-gated Kv7 (or KCNQ) channels control resting membrane potential and excitability in different cell types, including vascular smooth muscle cells (VSMCs). Generally, activation of Kv7 channels leads to hyperpolarisation of the plasma membrane while their suppression results in depolarisation; the latter mechanism is believed to be responsible for vasoconstriction of VSMCs. This study aims to investigate potential role of the Kv7 channels in control of intracellular Ca^{2+} signalling in VSMCs in norm and hypoxia.

Materials and Methods: We utilised microfluorimetry to investigate the impact of Kv7 channel activity on intracellular Ca^{2+} levels in fura-2 loaded A7r5 VSMCs and examined how hypoxia (1.0% O_2; 24 hours) or 'chemical hypoxia' due to exposure to HIF-hydroxylase inhibitor, DMOG (dimethyloxalylglycine,1 mM for 24 hours) influences $[Ca^{2+}]_i$ and mRNA expression of isoforms of Kv7 and voltage-gated Ca^{2+} channels (VGCCs). The latter was evaluated using reverse transcriptase polymerase chain reaction (RT-PCR).

Results: Specific Kv7 channel inhibitor, XE-991 (10 μM) induced robust Ca^{2+} oscillations, which were significantly reduced in the presence of a Kv7 channel opener, retigabine (10 μM) and Ca^{2+} channel blockers, nifedipine (L-type channel blocker; 2 μM) and NNC 55-0396 (T-type channel blocker; 3 μM). Using the inhibitors of IP_3Rs (2-APB, 100 μM), RyRs (tetracaine, 100 μM) and phospholipase C (edelfosine; 10 μM), we found that edelfosine did not reduce XE-991-induced Ca^{2+} oscillations but blunted Ca^{2+} release mediated by IP_3Rs. RT-PCR revealed the expression of K_V 7.1, K_V 7.4, K_V 7.5, Ca_v1.2 (L-type), Ca_v3.1 and 3.2 (T-type) VGCCs in A7r5 cells. Hypoxic treatment significantly reduced expression of KCNQ5 and significantly enhanced XE991-induced Ca^{2+} transients with prolonged and high-frequency Ca^{2+} oscillations.

Conclusions: According to our data, Kv7 channels play an essential role in the regulation of Ca^{2+}signalling in A7r5 cells which, in turn, is likely to affect cell contractility. By decreasing the expression of crucial Kv7 subunit (Kv7.5) and increasing Ca^{2+}signalling, hypoxia may potentiate Ca^{2+} overload, which most likely involving the vasospasm in the vascular smooth muscle.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB41

49 歲男性併人工骨水泥肺栓塞

鍾均芙, 涂聖葳, 李穗豪, 陳友木, 黃國棟, 王逸熙, 賴建豪

49-year-old male with pulmonary cement embolism

Division of Pulmonary & Critical Care Medicine, Department of Internal Medicine; Kaohsiung Chang Gung Memorial Hospital

A 49-year-old worker, with underlying chronic hepatitis B, developed excruciating low back pain after a sliding injury took place in February, 2020. Acute L4-L5 compression fracture was revealed on lumbar spine MRI and percutaneous vertebroplasty was performed subsequently. Constant chest pain last 2 months after the completion of vertebroplasty. The pain was located at bilateral anterior thorax, pleuritic in character, with radiation to the back, and insidiously deteriorated over the past 2 months. His chest radiograph (Fig. 1) revealed multiple opaque lesions with linear, branching presentation and distributed along the segmental pulmonary arties. EKG revealed normal sinus rhythm. Chest CT scan (Fig. 2) revealed bilateral upper lung and peripheral wedge shaped opacities with surrounding ground glass opacities and radiodense lesion proximally. Peripheral pulmonary cement embolism with pulmonary infarction was diagnosed based on his history, clinical presentation and image findings. 6MWT (Fig. 3) revealed 93% of predictive mean distance walked (MDW) with no desaturation. Bronchoscopy demonstrated patent bilateral bronchial trees. Anticoagulants was applied based on current consensus for symptomatic pulmonary cement embolism, however it was deferred due to his underlying peptic ulcer disease (Gastric ulcer Forrest Ib). Eventually, conservative treatment with pain relief was proceeded and he was closely observed during outpatient department follow-ups. There was no remarkable effect on his daily activities and his symptoms gradually ameliorated.

Fig.1

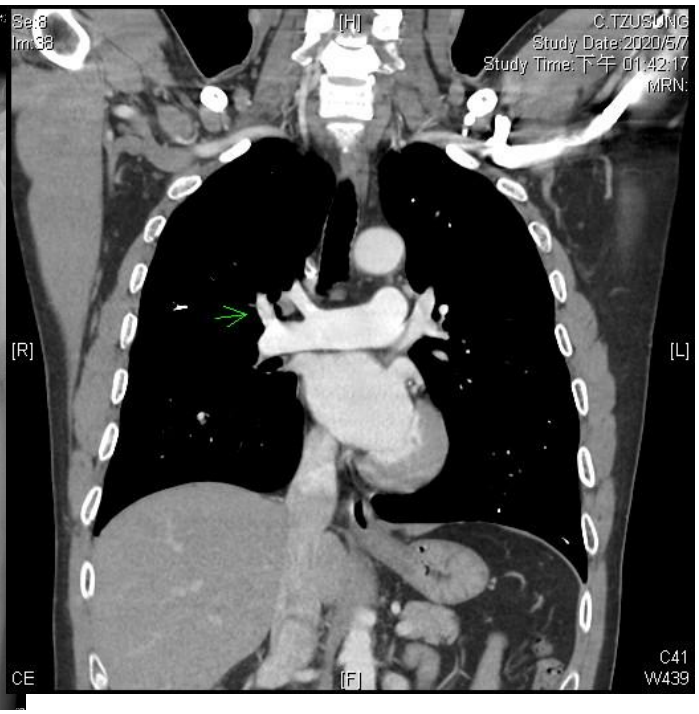


Fig.2

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB42

睡眠效率與腦中風相關

鐘威昇[1] 陳永福[2]

衛生福利部臺中醫院內科[1] 中臺科技大學資訊管理系[2]

Sleep efficiency related to cerebrovascular accident

Wei-Sheng Chung, M.D., Ph.D.[1] Yung-Fu Chen, Ph.D.[2]

[1]Department of Internal Medicine, Taichung Hospital, Ministry of Health and Welfare, Taichung, Taiwan

[2]College of Humanities and Management, Central Taiwan University of Science and Technology, Taichung, Taiwan

Purpose Sleep efficiency (SE) is calculated as the ratio of total sleep time divided by time in bed, which plays a vital role in insomnia research. Poor sleep quality may cause systemic inflammation and an increase in markers of pro-inflammatory cytokines. The current study aimed to evaluate the relationship between SE and cerebrovascular accident (CVA).

Materials and Methods: We investigated participants aged ≥18 years, who received a full-night polysomnography at a sleep center between 2007 and 2015. We measured SE during the sleep center. In addition, previous history of diabetes mellitus (DM), hypertension, and hyperlipidemia were also included We excluded the patients with CPAP titration and incomplete data of age and sex. We used logistic regression to analyze the risk of CVA by including the variables of sex, age, DM, hypertension, hyperlipidemia, and SE.

Results: The 6254 participants (4779 male and 1475 female) attended a full-night polysomnography. Their mean age was 46.5 ± 14.2 years. Among them, 161 (2.6%) of the participants had CVA. The participants with CVA had a higher prevalence of DM, hypertension, hyperlipidemia, increased age and SE < 70% than did those who without CVA. After controlling variables of DM, hypertension, hyperlipidemia, and age, the patients with SE <70%, with a 1.55-fold higher risk of CVA (95% CI = 1.09-2.21) than that of the patients with SE ≥70%.

Conclusion: The participants with SE < 70% carried an increased risk of CVA.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB43

睡眠呼吸中止症和高脂血症關係

鐘威昇[1] 陳永福[2]

衛生福利部臺中醫院內科[1] 中臺科技大學資訊管理系[2]

Sleep apnea hypopnea syndrome and hyperlipidemia

Wei-Sheng Chung, M.D., Ph.D.[1] Yung-Fu Chen, Ph.D.[2]

[1]Department of Internal Medicine, Taichung Hospital, Ministry of Health and Welfare, Taichung, Taiwan; [2]College of Humanities and Management, Central Taiwan University of Science and Technology, Taichung, Taiwan

Abstract

Purpose Evidence has indicated that sleep apnea hypopnea syndrome (SAHS) is related to cardiovascular diseases. There is elucidating interest on the role of SAHS in the development of hyperlipidemia, a surrogate marker of atherosclerosis. Therefore, we investigated relationship between SAHS and hyperlipidemia.

Methods The current study investigated participants aged ≥18 years, who received full-night polysomnography at a sleep center between 2007 and 2015. We identified anthropometric measurement, medical history, and apnea hypopnea index (AHI) at the dataset of the sleep center. AHI ≥ 5 events/h was defined as SAHS. We excluded the patients with CPAP titration and incomplete data of age and sex. Logistic regression analysis measured the risk of hyperlipidemia by including the variables of sex, age, body mass index (BMI), SE, and SAHS.

Results The 6302 participants (4430 SAHS and 1872 non-SAHS) attended full-night polysomnographic examination. The SAHS participants exhibited higher proportion of male (81.8% vs 63.5%, $P < 0.001$), obesity (52% vs 27.9%, $P < 0.001$), and hyperlipidemia (78.1% vs 67.3%, $P < 0.001$) than did the non-SAHS. The SAHS participants were older than that of the non-SAHS participants (47.8 ± 14.0 y vs 43.5 ± 14.1 y, $P < 0.001$). Multivariable logistic regression suggested that sex, age, obesity, and SAHS were independent risk factors for Hyperlipidemia.

Conclusion The current study suggested that patients with SAHS were related to hyperlipidemia development.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB44

睡眠間斷的缺氧和高血壓的關係

鐘威昇[1] 陳永福[2]

衛生福利部臺中醫院內科[1] 中臺科技大學資訊管理系[2]

Nocturnal intermittent hypoxia does matter hypertension

Wei-Sheng Chung, M.D., Ph.D.[1] Yung-Fu Chen, Ph.D.[2]

[1]Department of Internal Medicine, Taichung Hospital, Ministry of Health and Welfare, Taichung, Taiwan; [2]College of Humanities and Management, Central Taiwan University of Science and Technology, Taichung, Taiwan

Purpose Evidence has indicated that hypoxia is related to increased sympathetic activity and endothelial dysfunction. We aimed to study the relationship between patients with nocturnal intermittent hypoxia and hypertension in a sleep center.

Methods The current study investigated participants aged ≥18 years, who received full-night polysomnography at a sleep center between 2007 and 2015. We identified anthropometric measurement, medical history, and the least nocturnal pulse oxygen saturation (sPO2) at the dataset of the sleep center. Nocturnal sPO2 < 90% was defined as nocturnal hypoxia. We excluded the patients with CPAP titration and incomplete data of age and sex. Logistic regression analysis measured the risk of hypertension by including the variables of sPO2 < 90%, sex, age, body mass index (BMI), diabetes mellitus (DM), and hyperlipidemia.

Results The 5796 participants (2138 participants with hypertension and 3658 participants without hypertension) attended full-night polysomnographic examination. Among them, 4690 participants (80.5%) showed sPO2 < 90%. The participants with hypertension exhibited higher proportion of male (77.6% vs 74.5%, P = 0.008), nocturnal sPO2 < 90% (88.3% vs 76.2%, P < 0.001), DM (20.1% vs 4.5%, P < 0.001), and hyperlipidemia (44.2% vs 17.4%, P < 0.001) than did the participants without hypertension. The participants with hypertension showed older (52.6 ± 13.4 y vs 42.6 ± 13.3 y, P < 0.001) and higher BMI (28.5 ± 4.9 kg/m^2 vs 26.1 ± 4.6 kg/m^2, P < 0.001) than that of the participants without hypertension. Multivariable logistic regression suggested that male (adjusted odds ratio [OR] = 1.30, 95% confidence interval [CI] = 1.11-1.51), age (adjusted OR = 1.06, 95% CI = 1.05-1.07), nocturnal sPO2 < 90% (adjusted OR = 1.26, 95% CI = 1.05-1.51), increased BMI (adjusted OR = 1.13, 95% CI = 1.11-1.15), DM (adjusted OR = 2.04, 95% CI = 1.66-2.51), and hyperlipidemia (adjusted OR = 2.45, 95% CI = 2.15-2.80) were independent risk factors for Hypertension.

Conclusion The current study suggested that patients with nocturnal intermittent hypoxia were related to hypertension.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB45

睡眠障礙增加乳癌病人的中風風險

廖光明[1,],陳南丞[2], 何宗翰[3]

[1]奇美醫療財團法人佳里奇美醫院胸腔內科, [2]神經內科, [3]奇美醫療財團法人奇美醫院醫學研究部

Risk of stroke in patients with breast cancer and sleep disorder

Kuang-Ming Liao[1], Cheng-Nan Chen[2] , Chung-Han Ho[3]

[1]Division of Pulmonary Medicine, Department of Internal Medicine, Chi Mei Medical Center, Chiali.

[2]Division of Neurology, Department of Internal Medicine, Chi Mei Medical Center, Chiali.

[3]Department of Medical Research, Chi Mei Medical Center.

Purpose: Breast cancer and stroke were leading cause of cancer-related mortality in the world. Stroke is the second leading cause of death. Previous studies showed that patients with breast cancer had a relatively higher risk of sleep disorders. Sleep disorders increased the risk of stroke. The aim of our study was to examine the risk of stroke after a breast cancer with sleep disorder among women in Taiwan.

Materials and Methods: The Taiwan Cancer Registry was used to identify patients with breast cancer. Patients with new-onset breast cancer from January 2007 to December 2015 were selected for this study and followed until December 31, 2017. Patients who were diagnosed with sleep disorders were set as the case group, and the controls were those without sleep disorders.

Results: We enrolled 5256 patients with sleep disorders and 10,512 patients without sleep disorders. There were 121 (2.30%) patients with ischemic stroke among the breast cancer patients with sleep disorders. The mean time from the diagnosis of breast cancer to the occurrence of ischemic stroke was 6.29±2.59 years for breast cancer patients with sleep disorders and 6.00±2.76 years for those without sleep disorders ($p < 0.0001$). After matching by age and index year, breast patients with sleep disorders had a 1.31-fold higher risk (95% confidence interval: 1.03-1.66; p-value=0.026) of ischemic stroke than those without sleep disorders, after adjustment for comorbidities, cancer clinical stage, and treatment types.

Conclusions: In conclusion, Breast cancer patients with sleep disorders have an increased risk of stroke.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB46

以非接觸性變數評估快速預測睡眠呼吸中止之可行性

張開明 [1, 2]，黃偉彰 [1,2]，吳明峰 [1,2]

台中榮總胸腔內科，睡眠中心

Predictive model by measuring body composition for rapidly screening of obstructive sleep apnea

Kai-Ming Chang, Wei-Chang Huang, Ming-Feng Wu,
Division of Chest Medicine1, Sleep Center2, Taichung Veteran General Hospital

Purpose: Obstructive sleep apnea-hypopnea syndrome (OSAHS) is characterized by repeated episodes of apnea or hypopnea caused by airway obstruction during sleep with desaturation as well as the changes in sleep structure. The prevalence of OSAHS was 2-9% in general population. This study aimed to establish a predictive model by measuring body composition for rapidly screening moderate to severe sleep apnea.

Methods: A total of 103 subjects with suspected OSAHS were enrolled from August 01 2015 to August 31, 2017 and were categorized model-building set (n=68) and validation set (n=35) by stratified sampling according to the severity of OSAHS. The correlation of apnea-hypopnea index (AHI) among unbound parameters including body composition and physical features were analysis in the model-building set. Path analysis was performed with parameters correlated significantly to AHI and regression model was build-up with the significant factors extracted. The accuracy of prediction for the validation set was conducted. *P*-value < 0.05 was set statistically significant.

Results: The body mass index (BMI), neck circumference (NC), waist circumference (WC), fatty of trunk (FOT), visceral fat area (VFA) and waist-hip ratio (WHR) were moderate correlated (r> 0.3) to AHI. Path analysis showed that NC, WC and VFA were with significant effect (p<0.05) for AHI and the multiple regression model was AHI = 0.106 × VFA + 0.569 × NC-0.098 × WC (R^2 = 0.323). Validation showed that the accuracy was of 82.9% for AHI ≧ 15 with OSAHS.

Conclusion: The present study provided a predictive model with an accuracy of 82.9% for screening moderate to severe sleep apnea (AH≧ 15) with an unbound measurement factors. Such method with acceptable accuracy is easier than other non-contact method such as video recording. It may be used for screening moderate to severe sleep apnea rapidly in clinical practice as to shorten the waiting list for treatment.

Critical Care Medicine

Respiratory Tract Infections

Tuberculosis

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC01

慢性重症患者院內感染風險相關之單一細胞免疫代謝障礙

鐘桂彬[1], 王奕夫[2], 葉育彰[3], 鄭瑞貞[4], 耿立達[5], 陳怡蓉[1], 呂雅婷[2], 阮驛琇[6], 中平毅一[7], 黃彥棕[8], 黃昱璁[1], 郭耀文[4], 黃俊達[6], 阮聖元[6], 簡榮彥[6], 鄭之勛[6], 張厚台[9,10], 陳世淯[2], 余忠仁[6,11]

台大醫院檢驗醫學部[1]、麻醉部[2]、綜合診療部[3]、內科部[4]; 台大新竹分院[5]; 中研院生醫所[6]、統計所[7]; 日本奈良縣立醫科大學藥理所[8]; 亞東醫院重症醫學部[9]; 元智大學工業工程與管理學系[10]; 台大新竹生醫園區分院[11]

Nosocomial infection-related single cell immuno-metabolic defects in the chronic critical illness

Kuei-Pin Chung[1], Yi-Fu Wang[2], Yu-Chang Yeh[3], Jui-Chen Cheng[4], Li-Ta Keng[5], Yi-Jung Chen[1], Ya-Ting Lu[2], Yi-Hsiu Juan[6], Kiichi Nakahira[7], Yen-Tsung Huang[8], Yu-Tsung Huang[1], Yao-Wen Kuo[4], Chun-Ta Huang[6], Sheng-Yuan Ruan[6], Jung-Yien Chien[6], Jih-Shuin Jerng[6], Hou-Tai Chang[9,10], Shih-Yu Chen[2], Chong-Jen Yu[6,11], and TAiwanCollaboraTive Intensive Care Study group (TACTICS)

[1]Department of Laboratory Medicine, [3]Department of Anesthesiology, [4]Department of Integrated Diagnostics & Therapeutics, and [6]Department of Internal Medicine, National Taiwan University Hospital; [2]Institute of Biomedical Sciences, and [8]Institute of Statistical Science, Academia Sinica; [5]Department of Internal Medicine, National Taiwan University Hospital Hsin-Chu Branch; [7]Department of Pharmacology, Nara Medical University, Kashihara, Nara, Japan; [9]Department of Critical Care Medicine, Far Eastern Memorial Hospital; [10]Department of Industrial Engineering and Management, Yuan Ze University; [11]Department of Internal Medicine, National Taiwan University Hospital Biomedical Park Hospital

Purpose: Immune dysfunction in chronic critical illness (CCI) increases the susceptibility of nosocomial infection. This study is aimed to explore the immuno-metabolic features associated with nosocomial infection susceptibility in CCI population.

Materials and Methods: We prospectively recruited a CCI cohort (n=37) constituted by critically-ill patients who received mechanical ventilator support for more than 10 days, and acute critical illness (ACI) cohorts (n=38). Plasma samples were collected for cytokine measurements, while peripheral blood mononuclear cells (PBMCs) were isolated for single cell immuno-metabolic regulome profiling through mass cytometric analysis.

Results: Our results demonstrated the heterogeneity of the immuno-metabolic phenotypes in the CCI population, and a subset of CCI patients had similar immuno-metabolic features as those noted in ACI. The risk of nosocomial infection in CCI was associated with decreased abundance of T lymphocytes in PBMCs, along with increased PD-1 expression in T lymphocytes, and elevated circulatory levels of interleukin-10 and interleukin-15. Of note, the infection susceptibility was found associated with remarkable immuno-metabolic defects, featured by decrease of OPA1, PGC1α, and enzymes of mitochondrial fatty acid oxidation, in both innate and adaptive immune cells. The occurrence of septic shock was found significantly associated with part of the immuno-metabolic phenotypes associated with infection susceptibility in CCI.

Conclusions: Immuno-metabolic maladaptation is associated with increased infection susceptibility in CCI, and restoring immuno-metabolism may recover CCI-associated immune dysfunction.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC02

蘿蔔硫素對大鼠急性肺損傷的保護效應與機制

彭忠衍[1]; 吳庚欽[2];黃坤崙[1]

[1] 三軍總醫院胸腔內科; [2] 國軍桃園總醫院內科部

The protective effects of sulforaphane on acute lung injury in a rat model

Chung-Kan Peng[1] ,Geng-Chin Wu[2], Kun-Lun Huang[1]

[1] Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, Tri-Service General Hospital, National Defense Medical Center, Taipei, Taiwan.

[2] Department of Internal Medicine, Taoyuan Armed Forces General Hospital, Taoyuan, Taiwan.

Purpose: Acute lung injury (ALI) remains a major cause of morbidity and mortality in critically ill patients . Lung ischemia-reperfusion (I/R) injury is a significant clinical problem in cardiac surgery and, particularly, lung transplantation. Sulforaphane, an antioxidant derived from cruciferous vegetables, exerts antioxidant capacity and protects organ against oxidative damage. However, the effects of sulforaphane on I/R lung injury have not been determined. The aim of the study was to evaluate the protective effect of sulforaphane on I/R lung injury.

Materials and Methods: Acute I/R lung injury was induced by producing 40 min of ischemia followed by 60 min of reperfusion in isolated perfused rat lungs.

Results: Treatment with sulforaphane significantly attenuated the increases in lung edema, lung injury scores, and TNF-α, IL-1β, CXCL-1, and IL-6 concentrations in bronchoalveolar lavage fluid in the I/R group. Malondialdehyde levels and MPO-positive cells in lung tissue were also significantly reduced by sulforaphane. Additionally, sulforaphane mitigated I/R-stimulated degradation of IκB-α and nuclear translocation of NF-κB in the injured lung tissue. Furthermore, sulforaphane increased Bcl-2 in the I/R rat lungs. The protective effect of sulforaphane was mitigated by the administration of SIRT1 inhibitor.

Conclusions: Our findings suggest that sulforaphane has a protective effect against I/R lung injury, and its protective mechanism is via SIRT1 signaling.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC03

提升成人重症加護病房呼吸器病人 PADIS BUNDLE 照護成效

留瓊如, 葉謹慈, 朱純儀, 王娸苗, 李妡玫, 陳柚綾, 李建儀, 王彩融, 吳杰亮

臺中榮重症醫學部

Delirium in Critical Illness: A Real-World Implementation of PADIS Bundle in Mechanical Ventilated Adults

Chiung- Ju Liu, Chin-Tsen Yeh, Chun Ti-Chu, Chi-Miao Wang ,Sin-Mei Lee ,Yu -Ling Chen, Jian-ri Li , Tsai-Jung Wang, Chieh-Liang Wu

Department of Critical Care Medicine, Taichung Veterans General Hospital, Taichung

Purpose: Managing pain and delirium are crucial in intensive care units (ICU). Delirium occurs 22.9-36.2% in ICU patients and associated with duration of mechanical ventilation and mortality. The Pain, Agitation/Sedation, Delirium, Immobility, and Sleep disruption (PADIS) guidelines was released in 2018. However, how to integrate them effectively into everyday practice has not been well described. The aim of this study was to examine the feasibility and effectiveness of the PADIS bundle.

Materials and Methods: This study was conducted all adult critically ill patients treated by mechanical ventilation from May 2020 to May 2021 were included. We implemented the PADIS bundle in eligible patients in 3 ICUs, including SICU, RICU, and ICU. The exclude criteria were patients with acute neurologic conditions, inevitable deep sedation, ECMO usage, and other conditions that excluded CAM-ICU evaluation. The control group consisted of patients admitted to medical ICU during January 2018 to April 2018 and delirium was recorded with positive CAM-ICU. We prohibited family visit during the surge of COVID-19 cases. Thus, virtual family meets were arranged by google meet. Finally, we establishedfive clinical audit indicators, including the incidence of delirium as the primary outcome.

Results:A total of 2,066 critically ill patients were eligible for the PADIS bundle throughout the study period. The indicators after applied the PADIS bundle were 1. Delirium incidence was 6.8% (N = 136); 2. Delirium incidence density: 0.035 per person days; 3. Analgesics not given before sedative drugs: 4.4%; 4. Choose of non-BZDs as the first sedative medication: 90.3%; 5. Set a RASS goal and re-assess daily: 65.4%. Delirium was noted in 112 among the 274 patients in the control group. The incidence of delirium was significantly lower after implementing the PADIS bundle than before (6.8% and 40.9%, $p<0.001$). The incidence of delirium in SICU, ICU, and RICU was 11.2%, 6.2%, and 3.1%, respectively.

Conclusions: This study showed the implementation of the PADIS bundle cross different ICUs could effectively reduce the incidence of delirium. By using clinical audit indicators, the PADIS bundle compliance was high. However, setting a RASS goal and re-assess it daily was of the lowest compliance rate among all indicators. Our study showed generally good compliance of the PADIS bundle across different ICUs by using clinical audits. Moreover, the PADIS bundle was associated with less delirium in adults patients receiving mechanical ventilation in ICU.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC04

血液免疫細胞的自噬相關基因表現在潛伏性結核感染進展至活動性肺結核疾病所扮演的角色

陳永哲[1],吳沼澎[1], 趙東瀛[1], 梁深怡[1], 王逸熙[1],張育平[1],曾嘉成[1], 張雅淳[1], 王亭雅[1], 李秋平[1], 蕭長春[2], 林孟志[1*]

高雄長庚醫院呼吸胸腔內科; 長庚大學臨床醫學研究所

The role of autophagy associated gene expressions in the progression from latent TB infection to active pulmonary TB disease

Yung-Che Chen[1], Chao-Chien Wu[1], Tung-Ying Chao[1], Sum-Yee Leung[1], Yi-Hsi Wang[1], Yu-Ping Chang[1], Chia-Cheng Tseng[1], Ya-Chun Chang[1], Ting-Ya Wang[1], Chiu-Ping Lee[1], Chang-Chun Hsiao[2], Meng-Chih Lin[1, #]

Division of Pulmonary and Critical Care Medicine[1], Department of Medical research[2], Kaohsiung Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Kaohsiung, Taiwan; Graduate Institute of Clinical Medical Sciences[3], Chang Gung University, Taiwan

Purpose: Autophagy serves as the first line defensive mechanism for the clearance of mycobacterium tuberculosis (TB) in the human innate and adaptive immune cells, but its clinical implication is poorly understood. This study aims to determine clinical implication of autophagy flux in active TB disease or latent TB infection (LTBI).

Method: Autophagy associated gene (ATG) protein expressions of blood immune cells were measured in 44 patients with sputum culture (+) active pulmonary TB disease, 23 subjects with LTBI (IGRA+), and 12 non-infected healthy subjects (NIHS; IGRA-) by flowcytometry method.

Results: LC3B expression of either $CD14^+CD209^-$ M1 or $CD14^+CD209^+$ M2a monocyte was significantly increased in active TB group as compared with either LTBI or NIHS group, while ATG5 expression of M2a was increased in active TB group versus NIHS group. Subgroup analysis showed that LC3B, ATG5, and P62 expressions of $CD3^+CD8^+$ cytotoxic T cells were all increased in active TB patients with high bacterial burden (defined as sputum acid fast bacilli 3+ or 4+ at diagnosis) as compared with that in those with low bacterial burden or subjects without active TB disease (NIHS+LTBI groups). P62 expression of M2a was increased in active TB patients with far advanced lesions on CXR versus those with minimal to moderate lesions. In 17 active TB patients whose blood samples were collected again after 6-month anti-TB treatment, ATG5 or P62 expression of $CD16^+$ neutrophil, and LC3B expression of either $CD3^+CD4^+$ helper T cell or cytotoxic T cell were significantly reduced.

Conclusions: Increased LC3B and ATG5 expressions of blood monocyte may serve as a marker of progression from latent TB infection to active TB disease, while high autophagy flux of blood cytotoxic T cell may indicate high bacterial burden.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC05

非典型結核桿菌菌種對非典型結核桿菌肺病的非癌症死因的影響

王秉槐[1], 王素梅[2], 樹金忠[3], 張晉豪[2]

[1] 亞東紀念醫院胸腔內科, [2] 台大醫院醫研部, [3] 臺大醫院內科部

The impact of nontuberculous mycobacteria (NTM) species on non-cancer mortality in patients with NTM lung disease

Ping-Huai Wang[1], Su-Mei Wang[2], Chin-Chung Shu[3], Chin-Hao Chang[2]

[1]Division of thoracic medicine, Far Eastern Memorial Hospital. [2]Department of Medical Research and [3]Department of internal medicine, National Taiwan University Hospital.

Purpose: The clinical course of nontuberculous mycobacteria lung disease (NTM-LD) is usually indolent and slowly progressed. However, the outcome of NTM-LD is poor and long-term mortality is high. The impact of NTM species on all-cause and non-cancer death of NTM-LD patients remain unclear.

Materials and Methods: This is a retrospective study from Jan 2006 to Nov 2018 in a tertiary hospital in Taiwan. The subjects were enrolled if they fulfilled the microbiologically diagnostic criteria of NTM-LD by American Thoracic Society recommendation. Demographic data at diagnosis and causes of death within eight years after diagnosis were recorded from medical records of the hospital and database of Ministry of Health and Welfare death statistics. The NTM species were divided into the five groups according to *Mycobacterium abscessus*complex (MABC), *Mycobacterium avium* complex(MAC), *Mycobacterium kansasii* (MK), other rapid growing mycobacteria (RGM) and other slow growing mycobacteria (SGM).

Results: A total of 1652 subjects with NTM-LD were included to analysis. There were 723 (43.8%) in the MAC group, 408 (24.7%) in the MABC group, and 120 (7.3%) in the MK group. The 8-year mortality was averagely around 35.8%, highest in the MK group (46.7%) and then the MABC (31.6%), and the MAC group (30.9%). In multivariable Cox proportional hazard regression, male gender, age≧65 years old, cavitation lesion, underlying co-morbidities and NTM species were independent factors for 8-year mortality. The adjusted hazard ratios (aHR) were 1.77 (95% CI: 1.19-2.63) in MABC, 1.56 (1.06-2.28) in MAC and 2.09 (1.33-3.28) in MK groups for NTM-LD mortality, compared to the SGM group. Kaplan Meier survival curves showed that different NTM species significantly correlated different all-cause mortality, non-cancer mortality, and death caused by chronic airway diseases (log rank p=0.0031, p<0.001, and p=0.0013, respectively) but not cancer related (p=0.8907) and pneumonia related mortality (p=0.7557).

Conclusions: The mortality of NTM-LD is as high as 35% for 8-year follow up. Different NTM species might be responsible for non-cancer death. Notably, death caused by chronic airway disease was significantly affected by MK and MAC and we may need to strengthen airway care bundle in patients with MAC-LD and MK-LD.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC06

合併胸部 X 光與臨床結構化數據，應用深度學習模擬醫師診療行為預測肺炎早期出院

吳杰亮[1]陳倫奇[2]許瑞愷[3]白愷誌[2]吳育丞[1]

[1]台中榮總重症醫學部，[2]東海大學工學院，[3]東海大學資訊工程系

Integrate the features f CXR and clinical data to establish an algorithm mimicking physician's decision making to predict the early discharge of pneumonia.

Chieh-Liang Wu[1], Lun-Chi Chen[2], Ruey-Kai Sheu[3], Kai-Chih Pai[2], Yu-Cheng Wu[1], MD

[1] Department of Critical Care Medicine, Taichung Veterans General Hospital, [2]College of Engineering, Tunghai University, [3]Department of Computer Science, Tunghai University

Background and objectives: Physicians evaluate the several vital signs and chest x-ray (CXR) reports regularly to determine the recovery of the pneumonia patients at general wards and set the discharge plan immediately after initiating the treatment. The study aims to design a Multimodal Data Analysis for Pneumonia Status Prediction using deep learning classification (MDA-PSP) to predict the early discharge of pneumonia patients with the first 3-day clinical data and CXRs during hospitalization.

Methods: We retrospectively collected the patients with DRG 089 and 090 admitted to Taichung Veterans General Hospital from 2014 to 2018. The patients of mortality, age under 18 years old, and discharge against physicians' orders were excluded. Early discharge was defined as the hospital days less than or equal to 7 days. Thus, we have developed a system that takes input of vital-signs and CXR images of the affected patient with pneumonia at the general ward from the admission within first 3 days. The deep learning then classifies the health status improvement or deterioration for predicting about the possible discharge state by the preprocessing of SHAP (SHapley Additive explanation), imputation, adaptive imputation and the methods of vital-signs, CXR image feature extraction using deep learning based Dense Net-Batch Normalization (BN) with class weights for the first 7 days' general ward patient in MDA-PSP.

Results: A total of 3972 patients (M/F 64/36%) were enrolled with early discharge (N= 1049, 26.41%) and late discharge (N=2923,73.59%). The mean of hospital days and age was 11.41 days ± 7.78 and 70.82 ± 16.82 respectively. As per the input features of clinical data only, the model provided the accuracy of 77% and the recall for early discharge of 26%. Whereas, the input features of CXRs have provided the model accuracy of 72% and the recall rate of 47%. Finally, we combined the features of clinical data and CXRs and the model yielded the accuracy of 75% and the recall rate of early discharge of 44%.

Conclusions: The hybrid methods of vital-sign data and CXR images for the deep learning based classification mimics the physicians thinking process as a better approach of deep learning to predict the early discharge of pneumonia patients.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC07

腸道微菌叢失調在非結核分枝桿菌肺病的角色: 可能的致病相關性與機轉

樹金忠[1], 林稚容[2], 賴信志[2]

[1]台大醫院內科部, [2]長庚大學醫學生物技術暨檢驗學系

The role of gut microbiota dysbiosis in nontuberculous mycobacterial lung disease: possible causal relationship and pathogenesis

Chin-Chung Shu[1], Tzu-Lung Lin[2], Hsin-Chih Lai[2]

[1]Department of Internal Medicine, National Taiwan University Hospital, Taipei; [2]Department of Medical Biotechnology and Laboratory Science, Chang Gung University, Taoyuan, Taiwan

Background: Gut microbiota dysbiosis is closely related to immune dysfunction and to develop many important chronic diseases. However, its role in host defense against nontuberculous mycobacteria lung disease (NTM-LD) was not completely understood.

Methods: We collected and analyzed feces samples from NTM-LD patients and healthy controls. Specific gut microbiome change in NTM-LD was identified and we used commensal strain to validate the causal relationship in the animal model. The patient's immune response from fecal and plasma as well as peripheral blood mononuclear cells (PBMC) were checked.

Results: We identified significant gut microbiota dysbiosis and deficiency of gut *Prevotella* in NTM-LD patients, who had decreased levels of soluble fecal and plasma toll-like receptor 2 (TLR2) ligand as well as low TLR-2 response of PBMC to NTM antigen. Further analysis indicated that *Prevotella* could activate TLR2 pathway and the reduced abundance of a commensal *Prevotella* was closely associated with disease severity of NTM-LD. To further characterize the relationship between gut microbiota dysbiosis, immune compromise and susceptibility to NTM lung infection, the four antibiotics-induced gut microbiota-dysbiosis mice were used as the study model. Gut microbiota dysbiosis with decreased *Prevotella* together with a reduction in TLR2 activity in feces, sera and the lung tissue were observed, which was closely associated with increased lung pathology by NTM pulmonary infection. When we supplemented enteral TLR2 agonist or *Prevotella*in the mice model, NTM bacilli burden in lung decreased accordingly.

Conclusions: The present study highlighted the important causal effect of gut microbiota dysbiosis-related TLR2 compromise and development of NTM-LD. Activation of TLR2 signaling by *Prevotella*might be developed as a therapeutic strategy for prevention or treatment of NTM-LD.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC08

溶態細胞程式死亡蛋白 1 和非結核分枝桿菌肺病患者之開洞病灶及疾病惡化的相關性

潘聖衛[1], 樹金忠[2], 馮嘉毅[1], 王振源[2], 王鶴健[2], 蘇維鈞[1], 余忠仁[2], 陳育民[1]
台北榮民總醫院胸腔部[1], 台大醫院內科部[2]

Soluble programmed death protein-1 is associated with cavitary nodular-bronchiectasis (NB) and disease progression in patients with nontuberculous mycobacterial lung disease of NB type

Sheng-Wei Pan,[1] Chin-Chung Shu,[2] Jia-Yih Feng,[1] Jann-Yuan Wang,[2] Hao-Chien Wang,[2] Wei-Juin Su,[1] Chong-Jen Yu,[2] Yuh-Min Chen[1]
Department of Chest Medicine, Taipei Veterans General Hospital[1]; Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan[2]

Background: In patients with nodular bronchiectatic (NB) nontuberculous mycobacterial-lung disease (NTM-LD), risk factors for disease progression have not been clearly investigated. The roles of cavitary NB and soluble programmed death protein-1 (sPD-1), an immune-related biomarker, in the disease course of NB NTM-LD remain unknown.

Materials and Methods: Patients with NB NTM-LD were enrolled from two medical centers in 2014–2020. We identified cavitary NB, measured sPD-1 levels, and analyzed factors associated with cavitary NB and predictors for disease progression of NB NTM-LD.

Results: Of 120 cases of NB NTM-LD, 87 (72.5%) were caused by Mycobacterium avium complex. sPD-1 levels were lower in 13 (10.8%) patients with cavitary NB than in non-cavitary patients (P = 0.020). Over 1.41 ± 1.43 years of follow-up, 12 (92.3%) patients in the cavitary and 66 (61.7%) in the non-cavitary group developed disease progression (P = 0.032). In multivariate analysis, body mass index (BMI) (Kg/m2, adjusted hazard ratio [aHR], 0.895 [95% CI, 0.811–0.988]), sputum smear grade (aHR, 1.247 [1.014–1.534), cavitary NB (aHR, 2.008 [1.052–3.834]) and sPD-1 (per 10-pg/mL increase, aHR, 0.889 [0.816–0.967]) were predictive for disease progression. Notably, sPD-1 showed a dose-dependent association with disease progression (sPD-1 ≤ 23.5 pg/ml; aHR, 3.306 [1.664–6.567], and sPD-1: 23.6–53.7 pg/ml; aHR, 2.496 [1.390–4.483]) compared with the reference (sPD-1 > 53.7 pg/ml).

Conclusions: Patients with NB NTM-LD and low sPD-1, low BMI, high smear grade and cavitary NB were at high risk for disease progression. sPD-1 was low in patients with cavitary NB phenotype and dose-responsively associated with disease progression.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC01

加護病房敗血症患者首日血糖峰值預測死亡率之評估

洪凱殷 [1,2*], 蔡怡萱 [1*],林炯佑 [1],張雅淳 [1],王逸熙 [1,3], 林孟志 [1,3], 方文豐 [1,3]

高雄長庚呼吸胸腔內科 [1], 營養部 [2], 呼吸治療科 [3]

Evaluation of Peak Glucose Range on Day 1 for Predicting Mortality of septic patients in Intensive Care Units

Kai-Yin Hung[1,2*], Yi-Hsuan Tsai[1*], Chiung-Yu Lin[1], Ya-Chun Chang[1], Yi-Hsi Wang[1,3], Meng-Chih Lin[1,3,], Wen-Feng Fang[1,3]

Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine[1], Department of Nutritional Therapy[2], Department of Respiratory Therapy[3], Kaohsiung Chang Gung Memorial Hospital

*Contributed equally on the manuscript as the first co-authors.

Aims: We evaluated whether peak glucose range or diabetes mellitus (DM) status was associated with 90-day mortality in patients with sepsis admitted to the medical intensive care unit.

Methods: This retrospective study enrolled consecutive patients with sepsis, including a subpopulation of 148 patients with immune profiles. In addition to the construction cohort, another validation cohort was analysed.

Results: The 722 septic patients were stratified according to DM status or peak glucose level (3-group tool) (P1: ≤ 140 mg/dL, P2: 141–220 mg/dL, P3: >220 mg/dL) on day 1. Although the DM group had a lower hazard ratio (HR) for 90-day mortality compared to non-DM patients, the adjusted HRs were insignificant. The modified Sequential Organ Failure Assessment-glucose (mSOFA-g) score can predict 90-day survival in patients with and without diabetes (β=1.098, p<0.001; β=1.202, p<0.001). The goodness of fit of the mSOFA-g score was 5 % higher than SOFA score of the subgroup without diabetes. The SOFA score and human leukocyte antigen-D-related (HLA-DR) expression were comparable between the groups. The P3 group had lower HLA-DR expression on days 1 and 3 and a higher 90-day mortality. The 3-group tool was useful for predicting 90-day mortality in patients with separate Kaplan–Meier survival curves and mortality HRs in the construction and validation cohorts.

Conclusions: Peak glucose level instead of diabetes status can be used as an easy adjunctive tool for mortality risk stratification in critically ill septic patients. The mSOFA-g score can be used to predict 90-day mortality in patients with sepsis, and can more precisely predict 90-day mortality in patients without diabetes.

Keywords: Diabetes Mellitus, glucose level, sepsis

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC02

Kirenol 通過調節促炎 NF□ B 通路和 AMPK2-/Nrf2-介導的 HO-1/AOE 通路對脂多醣誘導的急性肺損傷的保護作用

林巧峰 [1,2,]李宣信 [3],李怡靜 [2]何永全 [4],陳文英 [5], 陳春榮 [6], 徐維莉 [7],葉坤霖 [7],蔡青劭 [8], 關宇翔 [2]
中山醫學大學附設醫院胸腔外科, 中山醫學大學醫學系, 中山醫學大學公共衛生學系, 中山醫學大學應用化學系, 國立中興大學獸醫學系, 臺中榮民總醫院醫學研究部, 國立中興大學獸醫學系微生物暨公共衛生學研究所, 童綜合醫院達文西手術中心

Protective Effects of Kirenol against Lipopolysaccharide- Induced Acute Lung Injury through the Modulation of the Proinflammatory NF□ B Pathway and the AMPK2-/Nrf2-Mediated HO-1/AOE Pathway

Frank Cheau-Feng Lin [1,2,3], Shiuan-Shinn Lee [4,] Yi-Ching Li [5,6], Yung-Chuan Ho [7], Wen-Ying Chen [8] Chun-Jung Chen [9], Min-Wei Lee [10], Kun-Lin Yeh [8], Stella Chin-Shaw Tsai [11],† and Yu-Hsiang Kuan[5,6],*,†
[1] School of Medicine, Chung Shan Medical University, [2] Department of Thoracic Surgery, Chung Shan Medical University Hospital, [3] Department of Parenteral Nutrition, Chung Shan Medical University Hospital, [4] School of Public Health, Chung Shan Medical University, [5] Department of Pharmacology, School of Medicine, Chung Shan Medical University, [6] Department of Pharmacy, Chung Shan Medical University Hospital, [7] School of Medical Applied Chemistry, Chung Shan Medical University, [8] Department of Veterinary Medicine, National Chung Hsing University, [9] Department of Education and Research, Taichung Veterans General Hospital, [10] A Graduate Institute of Microbiology and Public Health, National Chung Hsing University, [11] Da Vinci Surgical Center, Tungs' Taichung MetroHarbor Hospital

Acute lung injury (ALI) is an acute and life-threatening inflammatory disease of the lung parenchyma that is associated with high mortality worldwide. No therapeutic strategies have been developed for the mitigation of the proinflammatory response that characterizes ALI. Kirenol has anti-inflammatory, antiarthritic, and immunoregulatory effects. In the present study, we investigated the protective effects of kirenol against lipopolysaccharides (LPS)-induced ALI in mice. Kirenol reduced the LPS-induced histopathology changes involving edema and thickening of the interstitial or alveolar walls, infiltration of leukocytes, formation of hyaline membrane. Pretreatment with kirenol reduced leukocytes infiltration in bronchoalveolar lavage fluid (BALF), the alveolar-capillary barrier disruption and lipid peroxidation in lung tissues induced by LPS. Kirenol significantly inhibited the secretion of cytokines, IL-1β, IL6, and TNFα, into the BALF of the mice with LPS-induced ALI through NFκB activation. Moreover, kirenol attenuated the downregulation of the antioxidant enzymes, superoxide dismutase, glutathione peroxidase, and catalase that was induced by LPS. HO-1 expression and the phosphorylation of Nrf2 and AMPK2 were also induced by kirenol. The results indicate that kirenol can be developed as a treatment strategy for ALI, and its effects are induced through the inhibition of the NF-κB proinflammatory pathway and promotion of AMPK2/Nrf2-mediated HO-1 and antioxidant enzymes (AOE) activation.

Keywords: lipopolysaccharide; acute lung injury; kirenol; NF-κB pathway; AMPK2/Nrf2-mediated HO-1; AOE pathway

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC03

少見的肺血管併發症-肺動脈剝離的臨床表現：病例報告及文獻回顧。

高傳紘[1], 賴寶民[1], 陳昭宏[1]，陳彥勳[1]

[1]台南新樓醫院內科加護病房

Unusual presentation of pulmonary vascular complication- A Presentation of Pulmonary artery dissection: A Case Report and Literature Review.

Chuan-hung Kao[1], Pao-min Lai[1], Chao-hung Chen[1], Yen-Hsun Chen[1]

[1]Section of ICU, Department of Internal Medicine, TainanSin-LauHospital

Introduction

Pulmonary artery dissection is a rare but fatal clinical challenge. It often happens in patients with long-standing pulmonary hypertension. The symptoms of pulmonary hypertension include acute, stabbing chest pain, progressive dyspnea, cardiogenic shock, or sudden death. Here we presents a case of 82 y/o female, presenting with dyspnea and the final diagnosis is pulmonary artery dissection.

Case Report

The 82 y/o female has past history of HTN, Af. She was admitted through ER due to dyspnea. EKG shows Af and non specific ST-T change. Cardiac enzyme shows dynamic change. NSTEMI is impressed initially. Dual anti-platelet therapy and heparinization are prescribed. However, cardiac echo later shows linear mass demonstrated from MPA to LPA. We arrange chest CT with contrast, which shows free flap at left pulmonary artery and pericardial effusion. After contrast injection, the Hounsfield unit increases in pericardial effusion. Pulmonary artery dissection with leakage to pericardial effusion is impressed. After discussing with the family, they decide to receive supportive care without surgical intervention.

Discussion

Pulmonary artery dissection is related to pulmonary artery dilatation, and long-standing pulmonary hypertension. Clinically, patients present with aggravation of dyspnea and chest pain. The chest pain is typically sharp and can mimic acute coronary syndrome or acute aorta dissection. Patient would also suffer from cyanosis, RV failure or sudden death. Most patients die suddenly due to cardiac tamponade or severe pulmonary bleeding. CTPA and MRI could confirm our diagnosis.

The treatment of pulmonary artery dissection is scarce and no confirmatory evidence of in the literature review. Surgical repair and heart-lung transplantation are the procedures of choice. As our care, though cardiac echography and chest CT angiography favor the diagnosis, the family preferr supportive care without surgical intervention.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC04

氣管切開術醫病共享在台灣呼吸照護中心長期人工呼吸器患者的臨床應用

黃健修

大林慈濟醫院胸腔內科,台灣佛教慈濟醫學基金會

The Clinical Application of the Tracheostomy Decision-Making Program in Respiratory Care Center Prolonged Mechanical Ventilation Patients in Taiwan

Chienhsiu Huang

Department of Internal Medicine, Division of Chest Medicine, Dalin Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Chiayi, Taiwan

Background: We applied the tracheostomy decision-making program for respiratory care center prolonged mechanical ventilation patients. Our objectives are to correct the misconception of patients about tracheostomy. We expect to understand whether the program is effective in educating patients and whether the patients are satisfied with the results of their decision-making. We compared the prognostic differences between patients receiving tracheostomy and those who continue to have an endotracheal tube, which serves as our basis to provide suggestions for patients in the shared decision-making program.

Materials and Methods: A retrospective study was conducted in Dalin Tzu Chi Hospital from January 2017 to December 2019. We set up a tracheostomy decision-making program. We tracked the survival of each patient and followed up on each patient to ask whether they thought they had made an optimal decision based on the results of their participation in the tracheostomy decision-making program in January 2020. Data of respiratory care center prolonged mechanical ventilation patients who participated in the tracheostomy decision-making program were collected and analyzed.

Results: Fifty-seven respiratory care center patients attended the tracheostomy decision making program. At the end of the study, 37 patients underwent tracheostomy (64.9%), and 20 patients maintained endotracheal tube intubation (35.1%). The survival rate of patients undergoing tracheostomy was 86.5% and 32 participants (86.5%) believed that they made an optimal decision after participating in the tracheostomy decision-making program. The survival rate of patients who maintained endotracheal tube intubation was 40%, and twenty (100%) participants believed that they made an optimal decision after participating in the tracheostomy decision-making program.

Conclusions: The clinical application of the tracheostomy decision-making program ensures that patients have a clearer understanding of the methods of tracheostomy and endotracheal tube intubation. Overall, 91.2% of the participants believed that they made an optimal decision despite the end result.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC05

尖峰血糖值和尖峰血糖差距在敗血症危急病患的死亡風險評估效用：多醫學中心回溯性世代研究

蔡怡萱 [1], 洪凱殷 [1,2]*, 方文豐 [1]

[1] 高雄長庚醫院胸腔內科 [2] 高雄長庚醫院營養治療科

Usefulness of peak glucose level and peak glycemic gap to evaluate mortality risk of critically ill sepsis patients with diabetes mellitus: a retrospective multicenter cohort study

Yi-Hsuan Tsai[1], Kai-Yin Hung[1,2]*, and Wen-Feng Fang[1]

[1]Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, Kaohsiung Chang Gung Memorial Hospital, Chang Gung University College of Medicine, Kaohsiung, Taiwan

[2]Department of Nutritional Therapy, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan

*Contributed equally to the manuscript as the first co-authors.

Background: We evaluated whether glycated hemoglobin (HbA1c) level, peak glucose level in the first three days post-admission and peak glycemic gap were associated with mortality in sepsis patients with diabetes mellitus (DM) admitted to the intensive care unit (ICU).

Methods: This retrospective, observational, multicenter cohort study evaluated critically ill patients with diabetes admitted due to sepsis between 2012 and 2017.

Results: The 15,884 sepsis patients were stratified by HbA1c and peak glucose (PG) level in the first three days. In-hospital mortality was higher among patients with HbA1c≤7% than HbA1c>7% (1953 (25%) vs. 1819 (22.5%), $p<0.001$). The patients with peak plasma glucose between 141~220mg/dL (P2) had the lowest mortality compared to peak glucose level ≤140mg/dL (P1) or >220mg/dL (P3) (P1:221(22.1%) vs. P2:250(14.4%) vs. P3:533(20.1%), $p<0.001$). Peak glucose level ≤ 80mg/dL (PG: 41-80: HR:1.417, $p=0.038$; PG: ≤40:HR: 1.872, $p=0.009$) and >500mg/dL (HR:1.421, $p=0.004$) increased the hazard ratio of in-hospital mortality risk compared to that from 141 to 180mg/dL. HbA1c ≤ 5.9% (HbA1c: 5-5.9%:HR:1.172,HbA1c <5%, $p=0.001$, HR:1.581, $p=0.001$) and HbA1c from 8 to 9.9% (HbA1c:8-8.9%: HR:1.153, $p=0.008$, HbA1c:9-9.9%: HR:1.148, $p=0.043$) also increased hazard ratio of in-hospital mortality compared to HbA1c from 6 to 6.9%, whereas HbA1c ≥10% did not increase the mortality. Peak glycemic gap(PGG) >146mg/dL increased in-hospital mortality compared to patients with peak glycemic gap from 0 to 40mg/dL (HR:1.405, $p=0.001$). The peak glycemic gap from -40 to -146mg/dL also increased mortality (PGG:-40~-72mg/dL: HR:1.389, $p=0.028$; PGG:-72~-146mg/dL: HR:.1.460, $p=0.011$).

Conclusion: Glycated hemoglobin and peak glucose levels had a U-shape model to predict the mortality of critically ill sepsis patients with diabetes. Dynamic glucose changes of patients with sepsis in the acute phase compared to baseline glucose levels were important risk predictors for mortality.

Keywords: Diabetes; Sepsis; Peak glucose level; peak glycemic gap; HbA1c; Mortality

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC06

Application of serial body composition variables for risk stratification in patients with severe pneumonia

運用系列身體組成參數於嚴重肺炎病患風險分析

方文豐[1], 洪凱殷[1,2],蔡怡萱[1], 張雅淳[1], 蔡孟耘[1], 黃國棟[1], 曾嘉成[1], 葉樺[1], 張雅婷[1],王逸熙[1], 林孟志[1]

[1] 高雄長庚紀念醫院胸腔內科 [2] 高雄長庚紀念醫院營養治療科

Background: We evaluated whether serial body composition parameters were associated with different 90-day survival in patients with severe pneumonia admitted to ICU. We also investigated the difference in body composition between community acquired pneumonia (CAP) and hospital acquired pneumonia (HAP).

Methods: This prospective observational study evaluated consecutive patients with pneumonia admitted to a medical ICU of a tertiary hospital between 2021/2 and 2021/5. Body composition was measured by means of non-invasively Bio-electrical Impedance Analysis (BIA) (InBody S10 [Biospace Co., Ltd., Seoul, Korea]) on day 1,3, and 8 of ICU admission.

Results: A total of 27 patients (n=22 in survival, 5 in non-survival)(n=20 CAP, 7 in HAP) were enrolled. Compared to CAP, HAP group had comparable age, gender, BMI, APACH II, PSI (pneumonia severity index), CURB 65, SIRS, sequential organ failure assessment (SOFA), qSOFA, but higher Charlson comorbidity index (6 vs. 4, p=0.048) and mortality (CAP 10%, HAP 42%, p=0.054). HAP had higher BIA parameters of TBW (total body water), ICW (Intracellular Water), ECW (Extracellular Water), SLM (Soft Lean Mass), FFM (Fat Free Mass) on day 1,3, and 8. CAP group had better nutrition intake (Kcal/kg [25.5 vs. 17.8 p=0.010], protein/kg [1.3 vs. 0.8, p=0.013]) on day 8. Cox proportional hazard model for 90-day mortality found that day 3 data regarding 50kHz-Whole Body Phase Angle, SMI (Skeletal Muscle Index) had significant positive hazard ratio (HR 1.496 95% CI [1.061-2.110] and 2.373 [1.000-5.628], respectively). Non-survival group had higher liver cirrhosis percentage (survival: 0% vs. Non-survival: 20%, p=0.033), day 3 SOFA score (6 vs. 8 , p=0.033), and borderline higher ICW (Intracellular Water).

Conclusions: There were different BIA parameters between CAP and HAP. Serial body composition analysis may be useful for mortality risk stratification in severe pneumonia.

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A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC07

Serial body composition analysis and dietitian intervention for patients with sepsis

運用系列身體組成參數及營養師介入治療敗血症之病患

洪凱殷[1,2], 方文豐[1], 陳姿秀[1,2], 李雅芬[1,2],蔡怡萱[1], 張雅淳[1], 吳宣鋒[1], 葉樺[1], 張雅婷[1], 林孟志[1]

[1] 高雄長庚醫院胸腔內科 [2] 高雄長庚醫院營養治療科

Background

We investigated whether serial body composition parameters were associated with different 90-day survival in critically ill septic patients. We also evaluated the effect of dietitian intervention on mortality and body composition.

Methods

This prospective randomized study enrolled consecutive septic patients admitted to the medical ICU in a tertiary hospital between 2021/2 and 2021/5. Body composition was measured by means of noninvasive Bio-electrical Impedance Analysis (BIA) (InBody S10 [Biospace Co., Ltd., Seoul, Korea]) on day 1,3, and 8 of ICU admission. Patients were randomized to dietitian intervention (the BIA data disclosed to dietitian when taking care of the individual patient) and control (BIA data not disclosed) group.

Results

A total of 37 patients (n=30 in survival, 7 in non-survival)(n=24 dietitian intervention, 13 in control) were enrolled. With comparable age, body mass index, gender, APACHE II, Charlson comorbidity index, patients who survived had better nutrition intake on day 3 (Kcal/kg =22.70 vs. 12.38, p=0.021; protein/kg=1.03 vs. 0.51, p=0.03). Non-survival group presented higher body composition values in day 3 ICW (Intracellular Water), FFM (Fat Free Mass), SMM (Skeletal Muscle Mass), SMI (Skeletal Muscle Index). Cox proportional hazard model for 90-day mortality found that day 3 data regarding TBW (total body water), ICW, ECW (extracellular water), SLM (Soft Lean Mass), FFM, SMM, 50kHz-Whole Body Phase Angle, SMI had significant positive hazard ratio. Dietitian intervention can significantly improve delta SOFA (day 8 to day 3, and day 8 to day 1) and borderline improved 90-day survival.

Conclusions

Serial body composition analysis for septic patients was useful for mortality risk stratification. Dietitian intervention with BIA data available may helpimprove patient care.

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A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC08

急性呼吸窘迫症患者血液中血管生成素-2 濃度與嚴重急性腎損傷相關程度優於其他內皮功能障礙與損傷生物標記

余文光 [1,2],沈曉津 [1,2],陽光耀 [1,2]

臺北榮民總醫院胸腔部 [1],國立陽明交通大學醫學系 [2]

Angiopoietin-2 Surpasses Other Endothelial Biomarkers Associated with Severe Acute Kidney Injury in Septic Patients with Acute Respiratory Distress Syndrome

Wen-Kuang Yu[1,2], Hsiao-Chin Shen[1,2], Kuang-Yao Yang[1,2]

Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan[1]

School of Medicine, College of Medicine, National Yang Ming Chiao Tung University, Taipei, Taiwan[2]

Purpose: Endothelial dysfunction and injury is a major pathophysiologic feature of sepsis. Sepsis is also the most frequent cause of acute kidney injury (AKI) in critically ill patients. Though most studies of AKI in sepsis have focused on tubular epithelial injury, the role of endothelial dysfunction and injury is less well studied. The goal of this study was first to investigate whether endothelial dysfunction and injury biomarkers were associated with severe AKI in sepsis patients with acute respiratory distress syndrome (ARDS). The second goal was to determine the best performing biomarker for severe AKI and whether this biomarker was associated with severe AKI across different etiologies of sepsis and clinical outcomes.

Materials and Methods: We studied adults with sepsis and ARDS enrolled in a prospective observational study. Plasma endothelial dysfunction and injury biomarkers, including angiopoietin-2, soluble vascular endothelial cadherin (sVE-cadherin), endocan and syndecan-1, were measured at study enrollment. Primary analysis focused on the association between endothelial biomarker levels with severe AKI (defined as Kidney Disease: Improving Global Outcomes [KDIGO] AKI stage 2 or 3) and other organ dysfunctions (defined by Brussels organ failure scores). ARDS was defined according to the Berlin definition, based on chest radiographs, blood gases and clinical data.

Results: Among 111 ARDS patients enrolled, 69 developed severe AKI. Plasma levels of angiopoietin-2, endocan, sVE-cadherin, and syndecan-1 were significantly higher in ARDS patients with severe AKI compared to those without severe AKI. Among four endothelial biomarkers, only angiopoietin-2 was independently associated with severe AKI (odds ratio 8.16 per log increase, 95% CI 1.92-34.73, $p < 0.001$). ARDS patients who died during hospitalization had significantly higher plasma angiopoietin-2 levels compared to those who survived. Plasma angiopoietin-2 levels by quartile were significantly higher in ARDS patients with hepatic and coagulation failure, but not circulatory failure. Plasma angiopoietin-2 levels were also significantly higher in ARDS patients with non-pulmonary sepsis compared to subjects with pulmonary sepsis.

Conclusions: Among four biomarkers of endothelial dysfunction and injury, angiopoietin-2 had the most robust independent association with development of severe AKI in sepsis patients with ARDS. Plasma angiopoietin-2 levels were also associated with other organ dysfunctions, non-pulmonary sepsis and death. These findings highlight the importance of endothelial dysfunction and injury in the pathogenesis of sepsis-induced AKI in patients with ARDS.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC09

血液中內皮細胞特異性分子 1 在敗血症併急性呼吸窘迫症候群的病人中與器官衰竭和預後不佳有關

沈曉津 [1], 余文光 [1],陽光耀 [1]

台北榮總胸腔部

Plasma endocan level is associated with organ dysfunction, fluid accumulation and poor outcome in septic patients with acute respiratory failure

Hsiao-Chin Shen[1], Wen-Kung Yu[1], Kuang-Yao Yang[1]

Department of Chest Medicine, Taipei Veterans General Hospital, Taiwan

Purpose: Widespread endothelial activation and dysfunction play a key role in sepsis pathogenesis. Endocan is a proteoglycan mainly expressed on endothelial cells. Because shedding of endocan is a marker of endothelial injury, we hypothesized that higher plasma level of endocan would associate with organ dysfunction and mortality in sepsis. To test this hypothesis, we measured plasma endocan in critically ill patients with severe sepsis and acute respiratory failure.

Methods: This was a prospective observational study of 228 ventilated medical ICU patients with sepsis. Plasma endocan was measured at enrollment (ELISA). The primary analysis focused on the association between quartiles of endocan and development of organ dysfunction (Brussels criteria), acute respiratory distgress syndrome (ARDS), acute kidney injury (AKI) and in-hospital mortality. ARDS was defined as meeting the Berlin definition on at least two consecutive days within the first 4 ICU days. AKI was defined according to Kidney Disease: Improving Global Outcomes [KDIGO] AKI criteria. Statistical analysis was performed using Mann-Whitney U test and linear-by-linear association.

Results: Sepsis patients who died during hospitalization had significantly higher plasma endocan levels compared to those who survived ($p = 0.002$). Plasma endocan levels by quartile were strongly associated with circulatory failure at enrollment ($p = 0.030$) and development of acute kidney injury within the first 4 ICU days ($p = 0.031$). Higher plasma endocan levels were significantly associated with positive fluid balance on enrollment day ($p< 0.001$), in the subsequent 24 ($p< 0.001$), 48 ($p< 0.001$) and 72 ($p< 0.001$) hours since enrollment.

Conclusions: Shedding of endocan from the injured endothelium is an important mechanism of clinical sepsis that has associations with poor outcome and organ dysfunction, especially circulatory failure and AKI. These findings suggest that there may be organ-specific mechanisms of endothelial dysfunction during sepsis.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC10

運用人工智慧介入改善呼吸器使用病人預後

陳欽明 [1,2]

台灣財團法人奇美醫學中心加護醫學部 [1], 品質管理中心 [2]

The intervention of artificial intelligence to improve the outcome of patients with mechanical ventilation

Chin-Ming Chen[1, 2]

Department of Intensive Care Medicine[1], Center for Quality Management [2], Chi-Mei Medical Center, Tainan, Taiwan

Purpose: Patients admitted to intensive care unit (ICU) with mechanical ventilator (MV) may have ventilator-associated adverse events and prolonged ICU stays. We performed an intervention of artificial intelligence (AI) to improve the outcome of patients with MV.

Materials and Methods: Wesurveyed the effect of all adult patients with MV admitted to a 19-bed medical ICU of a medical center in Southern Taiwan. We used big data and AI/machine learning technologies to establish new predictive models of the optimal timing to successfully weaning from the MV (no further intubation within 48 hours). An interdisciplinary team initiated the MV weaning protocol with the integration of AI. Two steps of weaning process (try weaning and weaning) were conducted with prediction models established for multiple periods of time based on clinical needs separately. We wanted to explore the outcome between phase 1 (before AI, May 1 to Nov 30, 2019) and phase 2 (after AI, May 1 to Nov 30, 2020).

Results: Compared with phase 1 (n=1298), phase 2 (n=1107) showed a shorter mean MV time (158.7 vs. 144.3 hours), ICU stays (8.8 vs. 8.3 days) and hospital stays (25.7 vs. 22.2 days), and a better weaning rate (97.3 vs. 98.0 %). We also found historically lowest events of unplanned extubation (n=13), equal to a rate of 0.58% per ventilated patient (13/2245).

Conclusions: The integration of AI with weaning protocol could improve the quality and outcome of patients with MV. We would apply the successful experiences to the other ICUs in our hospital, and may serve as a benchmarking for other hospitals in Taiwan.

Key words: artificial intelligence,intensive care unit, mechanical ventilation, weaning, outcome

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC11

使用電阻抗斷層掃描儀評估吐氣末正壓對顱內出血病患術後的影響

王耀震[1-2], 賴泓源[3], 李雅婷[3*]

中山醫學大學附設醫院胸腔內科[1], 中山醫學大學醫學系[2], 中山醫學大學附設醫院呼吸治療科[3]

The Impact of Positive End-Expiratory Pressure on Patients with Intracranial Hemorrhage after Craniotomy by Using Electrical Impedance Tomography

Yao-Chen Wang[1-2], Hung-Yuan Lai[3], Yia-Ting Li[3*]

[1]Division of Pulmonary Medicine, Department of Internal Medicine, Chung Shan Medical University Hospital; [2]School of Medicine, Chung Shan Medical University, Taichung, Taiwan; [3]Division of Respiratory Therapy, Department of Internal Medicine, Chung Shan Medical University Hospital, Taichung, Taiwan

Introduction: The positive pressure generated by mechanical ventilation could impede venous return and increase intracranial pressure. The impact could be critical in patients with intracranial hemorrhage. The use of positive end-expiratory pressure (PEEP) is usually abandoned in post-operation respiratory care, in order to reduce the increase of intracranial pressure (IICP). However, the physiologic benefits of PEEP are well established. We probe to discover an optimal equipoise through continuously inspecting Electrical Impedance Tomography (EIT) in these patients. In this case report, the effects of PEEP to the lungs that were applied in craniotomy patients are explored.

Case summary: This is a 74 years-old lady with the diagnosis of cerebellar hemorrhage and obstructive hydrocephalus. She received craniotomy, removal of hematoma, and external ventricular drainage (EVD). After the operation, ventilator settings were Pressure assist-control ventilation (PACV) with PC 18 cmH_2O, zero PEEP, and FiO_2 40%. Tidal volume was ranging between 420-500 ml and her SpO_2 was maintained at 98%. EIT was used to detect lung gas distribution. The lung was horizontally divided, from ventral to dorsal, into four layers (Region of Interest (ROI) 1 to 4). The initial gas distribution in each layer was 23%, 27%, 28%, 22% respectively. Ventilator settings were unchanged for three days while sedative was administered. Chest X-ray was followed and the image showed left lower lobe collapse. EIT was repeated and the gas distribution in each layer was 7%, 32%, 58%, 4% respectively. Both ventral and dorsal region of the lung was remarkably decreased and $8cmH_2O$ of PEEP level was recommended to increase the FRC of this region. Furthermore, PEEP could attenuate atelectasis injury, demonstrated by decreasing Regional Ventilation Delay (RVD) from 8.6 to 5.2, and improve lung compliance (CW 0 % /CL 0% to CW 21 % /CL 4%). Ventilator settings were then changed to Pressure support ventilation (PSV) so spontaneous diaphragm contraction could be maintained and enhanced. Because there's no IICP sign, therefore, PEEP was applied to mitigate lung atelectasis. The resolution of LLL collapse was confirmed by chest X-ray.

Conclusion: Airway secretion retention causing lung atelectasis and ventilator-induced lung injury could occur after brain surgery, anesthesia and sedatives used. If PEEP setting is routinely abandoned, this vicious cycle could be triggered and sustained. Optimal PEEP titration in accordance with ICP may attenuate the detrimental lung injury.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC12

機械動力於使用俯臥治療之流感肺炎相關急性呼吸窘迫症候群病患

張克威, 邱立忠, 高國晉

林口長庚呼吸胸腔科

Mechanical Power in Patients with Influenza Pneumonia–Related Acute Respiratory Distress Syndrome Who Underwent Prone Positioning

Ko-Wei Chang, Li-Chung Chiu, Kuo-Chin Kao

Department of Thoracic Medicine, Chang Gung Memorial Hospital, Taoyuan, Taiwan

Purpose: Mechanical power (MP) refers to ventilator-delivered energy to the lungs, which may induce lung injury. We examined the relationship between MP and mortality in patients with influenza pneumonia–related acute respiratory distress syndrome (ARDS) who underwent prone positioning.

Materials and Methods: This multicenter retrospective study included data on all patients admitted to the intensive care units of eight referral hospitals in Taiwan due to influenza pneumonia–related ARDS from January 2016 to March 2016. The data were obtained from the electronic medical records of each hospital by using a standard case report form. MP was calculated as follows: MP (J/min) = 0.098 × VT × RR ×(Ppeak − 1/2 × ΔP).

Results: We included 65 patients who underwent prone positioning. Among them, 28-day survivors had significantly lower MP/compliance values after prone positioning (0.8 ± 0.3 vs. 1.1 ± 0.4, p = 0.048) and significantly lower changes in MP, MP/ predicted body weight (PBW), and MP/compliance (0.0 ± 6.7 vs. 4.4 ± 9.6, p = 0.043; 1.5 ± 113.1 vs. 81.4 ± 162.1, p = 0.044; −0.1 ± 0.3 vs. 0.3 ± 0.4, p = 0.001, respectively). Multivariate Cox regression revealed that the pneumonia severity score (hazard ratio [HR]: 1.015, p = 0.038) and change in MP/compliance (HR: 26.363, p = 0.006) were independent predictive factors for 28-day mortality.

Conclusions: In patients with influenza pneumonia–related moderate to severe ARDS treated with prone positioning, MP/compliance, change in MP, change in MP/PBW, and change in MP/compliance after prone positioning differed significantly between 28-day survivors and nonsurvivors. Further randomized controlled research is required to elucidate the potential causality of decreased MP and improved clinical outcomes.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC13

肺復張率評估肺復張能力的臨床應用性

李雅婷[1],賴泓源[1], 廖子庭[1], 陳怡方[1], 王耀震[2-3*]

中山醫學大學附設醫院呼吸治療科[1], 中山醫學大學附設醫院胸腔內科[2], 中山醫學大學醫學系[3]

Clinical Applications of the Recruitment-to-Inflation Ratio to Evaluate Lung Recruitability

Yia-Ting Li[1], Hung-Yuan Lai[1], Tsu-Ting Liao[1], Yi-Fang Chen[1], Yao-Chen Wang[2, 3*]

[1]Division of Respiratory Therapy, Department of Internal Medicine, Chung Shan Medical University Hospital, Taichung, Taiwan; [2]Division of Pulmonary Medicine, Department of Internal Medicine, Chung Shan Medical University Hospital; School of Medicine, Chung Shan Medical University, Taichung, Taiwan

Introduction: Recruitment-to-Inflation Ratio (R/I ratio) is the measurement of ratio compliance of the recruited lung (Crec) to compliance of the baby lung. R/I ratio greater than 0.5 suggests there's more potential for lung recruitability. However, the clinical applications of the R/I ratio are not well documented.

Methods: Four patients who received invasive mechanical ventilation and met the criteria for moderate Acute respiratory distress syndrome (ARDS; PaO_2/FiO_2 ratio <200mmHg by Berlin definition) were enrolled. All the patients were under continuous infusion of sedatives. Airway opening pressure (AOP) and R/I ratio as the previous study described were measured respectively. Electrical Impedance Tomography (EIT) was used to validate lung recruitability.

Results: All the enrolled patients had no cardiac disease but the hemodynamic change was unanimously observed during the measurement of AOP and R/I ratio. Heart rate variations were noted in three patients and the average variation was 39% when compared with pre-measurement. Arrhythmia was induced in two patients and SpO_2 dropped 15% was detected in one patient. In this patient, SpO_2 further dropped from 88% to 68% despite receiving FiO_2 100%. The measurement had to be terminated in these patients. Only one patient completed the measurement. In this patient, the heart rate was widely fluctuated (from110 bmp to 140 bmp; +27%) during the measurement of AOP. However, the R/I ratio and lung recruitability would be completely different if the AOP measurement was omitted.

Conclusion: It's important to know whether PEEP has a positive influence on lung recruitment in ARDS patients. R/I ratio measurement was developed so that the lung recruitability could be readily evaluated without a special instrument. However, the impact on hemodynamic could indeed impose certain limitations and difficulties in the clinical application (the failure rate is 75% in this study). Patients should therefore be meticulously evaluated before the measurement, particularly in patients with cardiovascular disease.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC14

助咳機輔助腹部重量訓練對長期呼吸器使用病人肺功能的影響

洪采憶[1], 劉世豐[1,2,3], 林孟志[1,2,3], 蔡玉琴[1],張嘉玲[1], 吳汶蘭[4]

高雄長庚呼吸治療科, 呼吸胸腔內科; 高雄醫學大學運動醫學研究所

Effect of abdominal weight training assisted by cough assist machine on lung function in the patients with prolonged mechanical ventilation

Tsai-Yi Hung[1], Shih-Feng Liu[1,2,3], Meng-Chih Lin[1,2,3], Yuh-Chyn Tsai[1], Chia-Ling Chang[1], Wen-Lan Wu[4]

[1]Department of Respiratory Therapy, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung 833, Taiwan

[2]Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung 833, Taiwan

[3]Medical Department, College of Medicine, Chang Gung University, Taoyuan 333, Taiwan

[4]Department of Sports Medicine, Kaohsiung Medical University, Kaohsiung 807, Taiwan

Purpose: The patients with prolonged mechanical ventilation have the the risk of ineffective coughing and infection due to diaphragm weakness, making it more difficult to wean. This study aimed to explore the intervention of abdominal weight training assisted by cough machine on lung function, respiratory muscle strength and cough ability in these patients.

Design and Methods: 40 patients with prolonged mechanical ventilation were randomly assigned to three groups: abdominal weight training group (AWT group, n = 12), cough machine assisted abdominal weight training group (AWT+CM group, n = 14) and control group (n= 14). The abdominal sandbag weight training was performed in the AWT group for 30 minutes/time, while AWT+CM group was performed in the same way as AWT group plus the auxiliary treatment of cough machine for 10-15 minutes/time. The training period was 2 times / day, 5 days / week for 2 weeks. The effectiveness on pulmonary function, respiratory muscle strength and cough ability were compared among these three groups.

Results: The maximum inspiratory pressure before and after the intervention in AWT group (30.50±11.73 vs 36.00±10.79; $p<0.05$), and AWT+CM group(29.8±12.14 vs 36.14±10.42; $p<0.05$)showed significant improvements, compared to control group(28.43±9.74 vs 26.71±10.77; $p>0.05$).

Maximum expiratory pressure in AWT group (30.58±15.19 vs 41.50±18.33; $p<0.05$), and AWT+CM group (27.29±12.76 vs 42.43±16.96; $p<0.05$) showed significant improvements, compared to control group (28.86±10.25 vs 29.57±14.21; $p>0.05$) and peak coughing flow in AWT group (105.83±16.21 vs 114.17±15.20; $p<0.05$), and AWT+CM group (108.57±18.85 vs 131.79±38.96;$p<0.05$) showed significant improvements, compared to control group (108.57±19.96 vs 109.86±17.44; $p>0.05$). The AWT+CM group had significantly greater improvements than the control group in maximum expiratory pressure and peak cough flow than the control group (13.71±11.28 vs 19.64±29.90, $p <0.05$).

Conclusion: AWT can significantly improve lung function, respiratory muscle strength, and cough ability in the long-term ventilator-dependent patients. AWT+CM can further improve their expiratory muscle strength and cough ability.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC15

俯臥治療在嚴重新冠肺炎病人的使用：我們可以預測治療反應嗎？

湯硯翔[2,3], 徐淑芬[4,5], 王玠仁[1], 鍾心珮[1,2], 陳昭賢[1,2], 張文魁[1,2], 郭冠志[1,2], 陳彥婷[1,2], 吳柔君[1,2], 林長怡[1,2,*]

[1]馬偕醫院胸腔內科; [2]馬偕醫學院醫學系; [3]馬偕醫院重症醫學科; [4]馬偕醫院護理部護理長; [5]陽明交通大學臨床護理研究所博士班; [*]通訊作者

Prone Position Application in Critically Ill COVID Patients: Can We Predict the Response?

Yen-Hsiang Tang[2,3], Shu-Fen Hsu[4,5], Chieh-Jen Wang[1], Hsin-Pei Chung[1,2], Chao-Hsien Chen[1,2], Wen-Kuei Chang[1,2], Kuan-Chih Kuo[1,2], Yen-Ting Chen[1,2], Jou-Chun Wu[1,2], and Chang-Yi Lin[1,2,*]

[1] Division of Pulmonary, department of internal medicine, MacKay memorial hospital, Taipei, Taiwan

[2] Department of medicine, MacKay memorial collage, New Taipei City, Taiwan

[3] Department of Critical Care Medicine, MacKay Memorial Hospital, Taipei, Taiwan

[4] Head nurse; Nursing department, MacKay Memorial Hospital, New Taipei City, Taiwan

[5] Doctor of nursing practice; School of Nursing, National Yang Ming Chiao Tung University, Taipei, Taiwan

Purpose: Severe Acute Respiratory Syndrome Coronavirus 2(SARS-COV-2) has been known to cause pandemic since 2019. The disease caused by this virus, which was later named as COVID-19, can induce acute respiratory failure in significant portion of patients got infected. Some of them even develops acute respiratory distress syndrome (ARDS). Prone position (PP) has been widely adopted as an alternative maneuver for patient with severe ARDS for years, but its application completely relies on manpower. The risk of contamination among excess personnel in a small space makes it use in COVID-19 ARDS patients remain inconclusive.

Materials and Methods: Patients received prone position management were 64.5 years old in average with male predominant (71.4%). Their average body mass index (BMI) was 29.0 (kg/m2), Charlson comorbidity index (CCI) was 3.3, and sequential organ failure assessment (SOFA) score was 5.1. The mean time delay from the onset of severe ARDS to prone position adoption was 2.8 days. The baseline respiratory mechanics and ventilator-derived parameters were PaO2/FiO2 (P/F): 90.9, tidal volume: 8.2 ml of ideal body weight, positive end-expiratory pressure (PEEP): 8.8cmH2O, Crs: 37.7ml/cmH2O, plateau pressure (Pplt): 23.8cmH2O, and driving pressure (ΔP): 13.8cmH2O. The improvement of P/F ratio (p=0.0037) and the reduction of ΔP (p=0.046) in the second day after first PP were correlated with ICU mortality. The predictors of successful termination of PP, defined as PaO2/FiO2 ≥ 150 mmHg with PEEP ≤ 10 cm H2O and FiO2 ≤ 0.6 after turning back to supine position and lasted at least 4 hours were: driving pressure reduction at 1st hour after PP, lower tidal volume at 4th hour after PP, and P/F ratio improvement at 2nd day after PP.

Conclusions: The improvement of second day P/F ratio and ΔP reduction correlated with mortality reduction. Three parameters can successfully predict the termination of PP but still need further investigation.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC16

rCAST 是否可以預測心臟停止病人接受低溫療法的預後：外部效度檢測研究

陳昭賢[1,3],王玠仁[1,*], 王薏婷[2], 鍾心珮[1,3], 楊勝雄[1], 王雅蕙[4], 林長怡[1,3]

[1]馬偕醫院胸腔內科; [2]馬偕醫院重症科; [3]馬偕醫學院醫學系; [4]耕莘醫院醫學研究中心; [*]通訊作者

Does rCAST score predict the hospital outcome of post cardiac arrest patients receiving targeted temperature management? An external Validation

Chao-Hsien Chen[1,3], Chieh-Jen Wang[1,*], I-Ting Wang[2], Sheng-Hsiung Yang[1], MD, Hsin-Pei Chung[1,3], Ya-Hui Wang[4], and Chang-Yi Lin[1,3]

[1] Division of Pulmonary, department of internal medicine, MacKay memorial hospital, Taipei City, Taiwan; [2] Division of Critical Care Medicine, MacKay memorial hospital, Taipei City, Taiwan; [3] Department of medicine, MacKay memorial collage, New Taipei City, Taiwan; [4] Medical Research Center, Cardinal Tien Hospital, New Taipei City, Taiwan

Purpose: The prognosis of patients experienced out-of-hospital cardiac arrest (OHCA) following return of spontaneous circulation (ROSC) remained poor, even after introduction of targeted temperature management (TTM) from 2002. The early prediction on the outcome of post cardiac arrest syndrome (PCAS) was difficult, especially for those who wish to withdrawal of life-sustaining treatment. The rCASTscore,which was proposed by Nishikimi et al, was a simplified score before TTM implantation, and was found to effective in predicting the mortality and neurologic outcome among OHCA patients. But its application was not yet validated in the setting other than Japan or in the in-hospital cardiac arrest (IHCA) patients.

Materials and Methods: It is a retrospective study. All PCAS patients admitted to intensive care unit (ICU) in MacKay memorial hospital for TTM between Jul. 01 2015 and Jun. 30 2021 were enrolled for analysis. Their baseline patient profile, laboratory data, and their hospital outcomes were collected for analysis.

Results: There were 142 PCAS patients received TTM during this period. One hundred and eight (76.1%) of them were admitted due to OHCA and thirty-four (23.9%) patients were due to IHCA. The average age was 65.5±14.7 years, and 90 (63.4%) were male. The median of rCAST score was 5.5 and ranged from 0.0 to 16.0. The area under curve (AUC) of receiver operating characteristic curve (ROC) curve using rCAST score were 0.763 ($p < 0.001$) in all patients, 0.793 ($p < 0.001$) in OHCA and 0.807 ($p < 0.001$) in IHCA patients to predict 28-day mortality, respectively. The AUC of ROC were 0.783 ($p < 0.001$) in all patients, 0.788 ($p < 0.001$) in OHCA and 0.800 ($p = 0.002$) in IHCA patients to predict poor neurologic outcome.

Conclusions: The rCAST score showed moderate accuracy in PCAS patients either due to OHCA and IHCA to predict 28-day mortality and poor neurologic outcome.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC17

共病症相較驅動壓力對預測輕度呼吸窘迫患者的預後更具決定性

歐偉凡[1],游於藝[2],吳珈潤[1,3],楊惠喬[2], 楊宗穎[1], 吳杰亮[1,3], 詹明澄[1,2]

臺中榮民總醫院內科部胸腔內科[1],呼吸治療科[2],重症醫學部[3]

Comorbidities, rather than driving pressure, are major determinants of mortality in patients with mild acute respiratory distress syndrome

Wei-Fan Ou[1], Yu-Yi Yu[2], Jia-Jun Wu[1], Hui-Chiao Yang[2], Tsung-Ying Yang[1], Chieh-Liang Wu[1,3], Ming-Cheng Chan[1,2]

Division of Chest Medicine[1], Division of Critical Care and Respiratory Therapy[2], Department of Internal Medicine, Taichung Veterans General Hospital, Taichung, Taiwan.

Department of Critical Care Medicine[3], Taichung Veterans General Hospital, Taichung, Taiwan.

Background: Acute respiratory distress syndrome (ARDS) is common among critically ill patients needing mechanical ventilation. The mortality of these patients remains high, even in those with mild ARDS. We thus conducted an investigation of the risk factors of mortality in mild ARDS patients.

Method: This is a retrospectively analysis of prospective acquired data which was conducted in a tertiary referral hospital in central Taiwan. These data were collected from clinical audit program for quality improvement of critical care. Patients with acute respiratory failure needing invasive mechanical ventilation were screened from July 2018 to December 2020. Those who met the criteria of ARDS by Berlin Definition were included for analysis.

Results: A total of 3175 patients needing mechanical ventilation admitted ICUs were screened. Of these, 814 patients meeting the criteria of ARDS were included for analysis. The incidence of ARDS was 25.6%. The overall mortality rate was 41% (34% mild ARDS, 42.5% moderate, and 48.6% severe respectively, $P = 0.005$). For all ARDS patients, those with higher Charlson comorbidity index (CCI) and driving pressure (DP) had higher mortality rate. Particularly, patients with diabetes mellitus (DM) were associated with lower mortality rate.For mild ARDS, patients with higher APACHE II score, SOFA scores, and CCI without DM had associated with higher mortality rate. The mean DP was 12.6cm H_2O (12.1 and 13.0 cm H_2O for survivors and non-survivors, respectively, $P = 0.308$). The mean CCI without DM was 3.5 (3.1 and 4.2 for survivors and non-survivors, respectively, $P = 0.002$). By multivariable analysis, CCI without DM (aOR: 1.138, 95% CI 1.030-1.260, $P = 0.013$) was independently associated with higher mortality in mild ARDS patients. However, these patients with DM (aOR: 0.533, 95% CI 0.303-0.937, $P = 0.029$) was associated with a lower mortality rate. The impact of CCI score without diabetes was assessed by the Kaplan-Meier analysis. The mortality increased with CCI scores without diabetes, 24.7% (21/85) for patients with scores 0-1, 32.6% (28/86) for patients with scores 2-5, and 43.3% (42/97) for patients with scores greater than 5 ($P = 0.029$).

Conclusion: Comorbidities are independent predictors of mortality in ARDS patients. However, diabetes is a protective factor. CCI score without diabetes, rather than driving pressure, independently predicts outcome of mild ARDS patients.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC18

急性呼吸窘迫症病人驅動呼吸和反向驅動呼吸的電阻抗影像分析

林偉傑[1] 蘇柏嵐[2] 陳昌文[1,2]

成大醫院重症科[1] 胸腔內科[2]

Analysis of triggered and reversed trigger breaths using electrical impedance tomography (EIT) in patients with acute respiratory distress syndrome

Wei -Chieh Lin[1], Po-Lan Su[2], Chang-Wen Chen[1,2]

Divsion of critical care medicine[1], chest medicine[2], National Cheng-Kung University Hospital

Purpose: Breath due to reverse triggering (RT) is an interesting issue in mechanically ventilated patients and Pendelluft is known to occur in ARDS patients with increasing breathing effort. In current prospective study, by using EIT and esophageal pressure monitoring, we investigated the physiological changes and Pendelluft in triggered and RT breaths in ventilated ARDS patients.

Materials and Methods: EIT and transpulmonary pressure (P_L) were recorded and analyzed in 21 mechanically ventilated ARDS patients during daily interruption of muscle relaxant. Recording lasted up to 60 minutes.

Results: Triggered breaths were recorded in 95% cases. RT was present in 76% cases recorded and usually occurred continuously. Breath stacking was present sporadically in 48% cases and Ineffective breath was present in 29% cases transiently. Further analysis was done in triggered and RT breaths. **Part 1: Change in P_L**. In 13 cases, triggered breaths spacing low to high effort were available for comparison of transpulmonary pressure (P_L) changes. In comparison to resting state (paralysis), End expiratory transpulmonary pressure ($P_{Lendexp}$) were progressively lower with increasing breathing efforts (rest: 0.6 $\pm$ 2.8; low effort (<5 cmH_2O): -0.7 $\pm$ 3.5; moderate effort(5-10cmH_2O): -1.2 $\pm$ 3.0; high effort (> 10 cmH_2O) -2.2 $\pm$ 3.2 cmH_2O, p = 0.18). Peak P_L, mean inspiratory and expiratory P_L were also decreased with increasing breathing effort. In 9 cases, reverse triggered breaths spacing low to high effort were available for comparison of P_L changes. Similar trend was found as trigger breaths but to a lesser degree.**Part 2: EIT investigation.** Regional ventilation increased in dependent region with increasing effort in both triggered and RT breaths. End-expiratory lung impedance(EELI) was significantly decreased with increasing breathing efforts (rest:3082 $\pm$ 1893; low effort: 2495 $\pm$ 1028; moderate effort: 1869 $\pm$ 1181; high effort:1407 $\pm$ 1079 AU, P < 0.0001). For triggered breaths, maximum Pendelluft ranged from 0.7 to 66.3ml and the median is 9.3ml. Maximum Pendelluft ranged from 0.1 to 28.7ml for RT breaths and the median is 3.4ml. Global inhomogeneous index (GI) was significantly higher with high effort in the high Pendelluft group (>meadian)in comparison to the rest (0.55 $\pm$ 0.11 vs 0.78 $\pm$ 0.35, p = 0.03) while it was nearly unchanged in the low Pendelluft group (< median) despite high effort (0.52 $\pm$ 0.08 vs 0.55 $\pm$ 0.09, p = 0.37).

Conclusions: Reverse triggering represents the major patient ventilator dyssynchrony in ARDS patient during daily interruption of muscle relaxant. Both RT and triggered breaths lead to changes in P_L. Pendeluft change was more significant with high effort and high Pendelluft group patients. Only patients with high Pendelluft exhibited significantly increased GI.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC19

台灣單一醫學中心亞急性呼吸照護病房出院後一年之預後分析

歐偉凡[1],楊宗穎[1], 詹明澄[1,2], 王俊隆[1,2,4]

臺中榮民總醫院內科部胸腔內科[1],呼吸治療科[2],重症醫學部[3] 中興大學生命科學系[4]

The one-year prognosis after discharge from Respiratory Care Center (Single Medical Center Experience in Central Taiwan)

Wei-Fan Ou[1],Tsung-Ying Yang[1], Ming-Cheng Chan[1,2], Jiun-Long Wang[1,4]

Division of Chest Medicine[1], Division of Critical Care and Respiratory Therapy[2],Department of Internal Medicine, Taichung Veterans General Hospital, Taichung, Taiwan.

Department of Critical Care Medicine[3], Taichung Veterans General Hospital, Taichung, Taiwan.

Department of Life Sciences, and Agricultural Biotechnology Center, National Chung Hsing University, Taichung[4]

Backgrounds: Patients who survive from acute disease stage from intensive care unit and admit to subacute respiratory care center (RCC) had high cost and long hospital stay. However, there are limited information about the long-term prognosis of these patients after discharge from RCC. Thus, the purpose of this study is to investigate the survival and predictor factors for patients after discharge from RCC of the tertiary medical center in central Taiwan.

Methods: This is a retrospective study including patients admitted to RCC of Taichung Veterans General Hospital (TCVGH) during January 2014 to December 2018. Patients who were alive and discharged from RCC were further included for analysis of one-year mortality and associated factors.

Results: Totally, 1047 patients admitted to RCC were screened. There were 907 patients discharged from RCC successfully. Among these patients, the mean age was 68 years and male were predominant (61.6%). The one-year mortality rate was 41.9% (380/907). Older age was associated with higher mortality rate (65.6 and 71.0 years for survival and non-survival, respectively, $P < 0.0001$). Among comorbidities, coronary artery disease (CAD), congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), malignancy, and patients receiving long-term hemodialysis were associated with higher mortality rate. Among blood exam, patients with higher hemoglobin and cholesterol level had better outcome. The initial mean albumin level was 3.1 and 2.8 for survival and non-survival respectively. The initial mean prealbumin level was 0.19 and 0.15 for survival and non-survival respectively. Among survival, the change of prealbumin level was significantly higher than non-survival (0.01 and 0.001, respectively, $P = 0.022$).

Conclusion: The one-year survival rate after discharge from RCC was high. Patients who had comorbidities was associated with poor outcome. Positive change of prealbumin level was associated with better outcome.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC20

使用口服磷酸鈉溶液鏡檢前大腸準備導致的滲透性脫髓鞘症候群

吳秀麗, 林鎮均

新光吳火獅紀念醫院胸腔內科

Osmotic Demyelination Syndrome Associated with Oral Sodium Phosphate Solution Administration for Colon Preparation

Wu, Hsiu-Li; Lin Chen-Chun

Division of Pulmonary Medicine, Shin Kong Wu Ho-Su Memorial Hospital, Taiwan

Background

Central pontine myelinolysis and extrapontine myelinolysis are collectively known as osmotic demyelination syndromes. Rapid correction of hyponatremia has been well known associated with osmotic demyelination syndrome(ODS), but it is not universal finding in ODS. It has also found in other clinical condition, for instance hyperglycermia hypertonic syndrome, refeeding syndrome, alcoholism and liver transplant. Here, we report an elderly patient who developed central pontine myelinolysis after administration of 90 ml of oral sodium phosphate solution for colon preparation.

Case presentation

A 78-year-old male was admitted because of progressive dyspnea, severe anemia (Hb 5.3 g/dl) and hyponatremia(104mmol/L). He was conscious and hemodynamically stable. Therefore, normal saline solution was administered at the rate of 40 ml/hr for just 1 day. One week after admission, colonoscopy has been arranged to survey the cause of anemia. A total of 90ml of oral sodium phosphate solution, contains 43.2 g of monobasic sodium phosphate (NaH2PO4) and 16.2 g of dibasic sodium phosphate (Na2HPO4), was administered for colon preparation. However, muscle weakness developed on the next day of sodium phosphate solution administration. Dysarthria and consciousness disturbance turned to coma developed one day later. He was intubated and transferred to ICU for intensive care. The laboratory data revealed phosphate 11.2mg/dl, lactate 146.2mg/dl, potassium 2.8mmol/L, and sodium 147mmol/L. Brain MRI revealed symmetrical hyperintense diffusion-weighted imange (DWI) signal at pons which was compatible with central pontine myelinosis. After several weeks of supportive treatment, he regained his consciousness but remained ventilator dependent.

Conclusion

Almost any electrolyte imbalance can be the cause of ODS. In elderly patient, administration of sodium phosphate solution may cause an acute rise in serum phosphate level and volume depletion from colon preparation. It may resulted to acute rise in serum osmolarity and lead to ODS. In conclusion, use of oral sodium phosphate solution in an elderly patient for colon preparation should be administered in caution, especially in those who have concomitant hyponatremia.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC21

使用面罩防止意外氣管內管自拔管和減少身體約束—回顧性觀察研究

林鎮均[1], 吳秀麗[1], 游韻茹[2], 陳思穎[2]

[1] 新光吳火獅紀念醫院胸腔內科

[2] 新光吳火獅紀念醫院護理部

Reduce Physical Restraint in Respiratory Step-Down Unit – A Retrospective Observational Study

Lin, Chen-Chun[1], Wu, Hsiu-Li[1], Chen, Szu-Yin[2], Yu, Yun-Ju[2]

Division of Chest Medicine, Shin Kong Wu Ho-Su Memorial Hospital

Department of Nursing, Shin Kong Wu Ho-Su Memorial Hospital

Introduction

Unplanned endotracheal self-extubation is one of the most serious complication in mechanically ventilated patients. Various strategies were implemented to reduce the unplanned extubation in the clinical settings. However, sedation and physical restraints remained the most widely used methods to prevent unplanned extubation.Several studies showed that physical restraints failed to reduce unplanned extubation. Furthermore, some studies reported that physical restraints itself might increase the risk of unplanned self-extubation.

Method

This retrospective, observational study evaluated whether use of a facial shield could reduce unplanned extubation rate and physical restrain rate in a respiratory step down unit from December 2016 to April 2021. In an 8-bed respiratory step down unit, a facial shield was introduced to prevent patients from unplanned extubation since April 2017. Patients who were admitted to this unit if they were hemodynamically stable and expected to be on prolonged mechanical ventilation.

Results

During the 4 years of observation period, the unplanned self-extubation rate was reduced from 0.72 to 0.15 events/per 100 intubation days (p=0.009). The physical restraints rate was reduced from the 13.68 to 3.89 events/per 100 intubation days (P<0.0001).

Conclusion

In conclusion, use of facial shield to prevent unplanned extubation and physical restraints in mechanically ventilated patients is a safe and effective method. We believed that use of facial shield could reduce unplanned extubation in various critically-ill patients. However, because the disease severity of ICU patients are much higher that step down unit and usually have more complicating life-supporting devices. Whether use of the facial shield could reduce the physical restraint rate in the ICU need to be further investigated.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC22

個案報告: 70 歲男性患 Amiodarone 相關之肺纖維化接受 Linezolid 治療後產生橫紋肌溶解症

楊哲豪,林鎮均

新光醫院胸腔內科

Case Report: A 70-year-old man with amiodarone related lung fibrosis developed rhabdomyolysis while receiving Linezolid to treat MRSA pneumonia.

Che-Hao Yang, Chen-Jun Lin

Division of Thoracic Medicine, Shin Kong Wu Ho-Su Memorial Hospital.

Abstract: Linezolid, a drug of choice to treat the infection disease caused by methicillin-resistant Staphylococcus aureus(MRSA) , had been reported to cause rhabdomyolysis in some case reports. We present a patient who was admitted due to amiodarone related lung fibrosis, developed rhabdomyolysis after receiving Linezolid to treat his MRSA related hospital acquired pneumonia.

Case presentation: The 70-year-old man, a smoker, has coronary artery disease, hypertension, dyslipidemia, and chronic atrial fibrillation(Af). He started to receive amiodarone to control his heart rate since 2021/1/26, when he was admitted due to non-ST elevation myocardial infarction. He was sent to our emergency department on 2021/7/26 due to progressive shortness of breath. The chest computed tomography(CT) showed diffuse ground-grass opacity(GGO) of whole lung.

He developed acute respiratory distress and got intubated on 2021/8/3. After we concluding his lung injury's culprit was amiodarone by several negative studies, we started to use systemic steroids with initial dose of methylprednisolone (IV) 40mg/day and his chest x-ray getting improving since then. Yet we found he had profound muscle weakness when we were trying to wean his ventilator. Elevated creatine-phospho-kinase(CPK), lactate, and creatinine level were also noted. Rhabdomyolysis was impressed. After detailed survey, we concluded Linezolid to be the culprit so we stopped it since 2021/8/23 and started urine alkalization(He started to receive it since 2021/8/10, where sputum culture from broncho-alveolar lavage yielded MRSA). His muscle power gradually improved. The patient later got extubated smoothly and discharged on 2021/9/24.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC23

COVID-19 導致肺栓塞和侵襲性肺麴菌病的病例報告

呂秉杰[1], 張建群[2], 張厚台[3], 張晟瑜[4]
亞東醫院內科[1], 亞東醫院重症醫學部[2], 亞東醫院重症醫學部[3], 亞東醫院胸腔內科[4]

COVID-19 associated pulmonary embolism and invasive pulmonary aspergillosis - A case report

Bing-Jie Lee[1], Chien-Chun Chang[2], Hou-Tai Chang[3], Cheng-Yu Chang[4]
Department of Internal Medicine, Far Eastern Memorial Hospital[1]; Department of Intensive Care Medicine, Far Eastern Memorial Hospital[2]; Department of Intensive Care Medicine, Far Eastern Memorial Hospital[3]; Division of Chest Medicine, Department of Internal Medicine, Far Eastern Memorial Hospital[4]

Case presentation: A 61-year-old man with an underlying disease of hypertension and type 2 diabetes mellitus presented with progressive dyspnea for 5 days. He had a fever and was coughing with yellowish sputum since May 15, 2021. The physical examination revealed bilateral crackles of breathing sound and the chest film showed bilateral increased pulmonary infiltrate. The critical COVID-19 pneumonia was diagnosed by PCR examination and acute respiratory distress syndrome occurred on the next day. The patient received intubation and therapeutic drugs such as Remdesivir, Dexamethasone, Tocilizumab and Enoxaparin were prescribed. Acute dyspnea and consciousness disturbance were noted after 2 weeks of treatment and the chest computed tomography showed bilateral pulmonary embolism and consolidation. The initial level of D-dimer was 516 ng/ml FEU and was elevated to >10000 ng/mL FEU after 10 days treatment. The Enoxaparin 80 mg QD was used for 3 weeks before the hemoptysis halted the treatment. The bronchoscopy was performed for poor response of antibiotics to ventilator associated pneumonia and revealed positive for aspergillus antigen. The oral voriconazole (200 mg Q12H) was given for treatment of invasive pulmonary aspergillosis. The patient had quadriplegia symptoms after one month of COVID-19 pneumonia. The nerve conduction velocity showed severe demyelinating axonal sensorimotor polyneuropathy. The chest computed tomography without contrast was followed up 2 months later which showed no remarkable pulmonary embolism and reversible some residual fibrotic change. Two months later from COVID-19 pneumonia , the patient was discharged with tracheostomy under T-piece and continued rehabilitation.

Discussion: The incidence of pulmonary embolism was 20.6% in COVID-19 infection patients who required an intensive care unit (ICU). It happened within a median time from ICU admission of 6 days (range, 1-18 days). The pathogenesis includes endothelial injury directly by virus and indirectly by inflammatory cytokines. Enoxaparin was used for prophylaxis under the indications of SIC score≥ 4 or D-dimer > 3000 ng/mL. The incidence of invasive pulmonary aspergillosis with diagnosis of COVID-19 was 19.4% and within a median of 5 days (range, 3–28 days) after ICU admission. The pathogenesis includes virus induced releasing of danger-associated molecular patterns (DAMPs) and inflammatory cytokines that cause hyperinflammation which favors fungal pathogenesis. The diagnosis was based on the 2020 European Confederation of Medical Mycology (ECMM) and the International Society for Human and Animal Mycology (ISHAM) consensus criteria which classified diagnosis to be proven by biopsy, probable by broncholavage fluid and serum, possible by non-broncholavage fluid. We presented a patient of COVID-19 pneumonia that was complicated with pulmonary embolism even under prophylaxis low-molecular weight heparin (enoxaparin). The patient was also complicated with invasive pulmonary aspergillosis and quadriplegia during the treatment period. The patient had sequelae of pulmonary fibrosis but weaned off the ventilator.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC24

類固醇在成人急性呼吸窘迫症候群治療:系統性回顧及統合分析

姚宗漢 [1, 2],張嘉凌 [2,3]

國立臺灣大學醫學院附設醫院癌醫中心分院內科部 [1]

國立臺灣大學醫學院附設醫院內科 [2]

國立臺灣大學醫學院附設醫院新竹台大分院內科部 [3]

Corticosteroid Treatment in Adult Patients with Acute Respiratory Distress Syndrome: A Systemic Review and Meta-analyses

Zong-Han Yao[1, 2], Chia-Ling Chang [2, 3]

Department of Internal Medicine, National Taiwan University Cancer Center[1]

Department of Internal Medicine, National Taiwan University Hospital[2]

Department of Internal Medicine, National Taiwan University Hospital Hsin-Chu Branch[3]

Purpose: Whether corticosteroid can reduce mortality in patients with acute respiratory distress syndrome (ARDS) is still unclear. We aim to do a systemic review and meta-analysis and try to find the best strategy for corticosteroid use in patients with ARDS.

Materials and Methods: We searched Pubmed and Cochrane Central Register of Controlled Trial from 2000 to June,2021. We included randomized, controlled trials (RCTs) and cohort studies comparing corticosteroid use to usual care/placebo and reporting mortality (30 days or 60 days) in mechanically ventilated adults with ARDS. Subgroup analysis including types of corticosteroid, time to use of corticosteroid, cause of ARDS, severity of ARDS and dosage of corticosteroid were performed. Meta-analyses used random effects model and were performed by Review Manager Software version 5.4.1

Results: Five RCTs and eight cohort studies fulfilled entry criteria including total 3167 patients and 1809 patients for 30 days and 60 days mortality analysis, respectively. There was no significant difference between corticosteroid use and non-use in 30 days (risk ratio [RR]: 0.99, 95%CI 0.82-1.10) and 60 days mortality (RR: 0.92, 95%CI 0.71-1.18). In subgroup analysis, influenza related ARDS revealed higher 30 days mortality rate in patients with corticosteroid use (RR:2.01, 95%CI 1.23-3.29, p=0.006). There was no significant decrease in either 30 days (RR: 1.09, 95%CI 0.83-1.42, p=0.55) or 60 days (RR: 1.06, 95%CI 0.58-1.91, p=0.86) mortality in patients with COVID-19 related ARDS. Methylprednisolone had lower 30 days mortality rate (RR 0.74, 95%CI 0.55-0.99, p=0.04) while dexamethasone had lower 60 days mortality rate (RR 0.74, 95%CI 0.55-0.99, p=0.04). No statistic significant differences were noted in other subgroup analysis including time to use of corticosteroid, cause of ARDS, severity of ARDS and dosage of corticosteroid.

Conclusions: Corticosteroid did not result in significantly lower mortality rate in patient with ARDS. Dexamethasone may have a beneficial role in ARDS treatment in long-term survival.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC25

單純疱疹病毒肺炎之病患於加護病房中死亡率的預測因子

張文睿、王信堯、林錞語、黃于真、黃崇旂
林口長庚呼吸胸腔內科, 林口長庚紀念醫院檢驗醫學部, 長庚大學醫學院

Predictors for mortality in patients with herpes simplex virus-1 (HSV-1) bronchopneumonia in the intensive care unit.

Wen-Jui Chang MD, Hsin-Yao Wang MD, Chun-Yu Lin MD, Yu-Chen Huang MD, Chung Chi Huang MD
Department of Thoracic Medicine, Chang Gung Memorial Hospital, Taipei, Taiwan.
Department of Laboratory, Chang Gung Memorial Hospital, Taipei, Taiwan.
College of Medicine, Chang Gung University, Taoyuan, Taiwan.

BACKGROUND: Herpes simplex virus type 1 (HSV-1) bronchopneumonia could develop in immunocompetent patients or critical illness patients. With high prevalence of acute respiratory distress syndrome (ARDS) and mortality, factors that predicted mortality in the patients with HSV-1 bronchopneumonia has not been well investigated. Our aim is to use traditional statistical analysis and machine learning method to identify specific features that associated with mortality in these patients.

METHODS: In this retrospective cohort study, patients with (1) positive of HSV-1 from broncho-alveolar lavage specimens or sputum detecting by polymerase chain reaction (PCR) or culture, (2) infiltrations from chest film, and (3) critical illness condition, were reviewed and divided into survivor and non-survivor groups. Univariable and multivariable Cox regression models and the elastic net penalized Cox proportional hazards regression model were applied for mortality outcome. The receiver operating characteristic curve (ROC) was evaluated to estimate the optimal threshold for the selected parameter.

RESULTS: Among 119 patients with HSV-1 bronchopneumonia (age: 65.8 ±16.9), 46 subjects survived while 73 patients were mortality. Independent factors related to the mortality were presence of diabetes mellitus (DM) (odds ratio (OR) 0.12, 95% confidence interval (CI): 0.02-0.51, p=0.0009), ARDS (OR 3.18, 95% CI: 0.86-12.18, p<0.0001), and APACHE II score (OR 1.08, 95% CI: 1.00-1.18, p=0.02). The optimal cut-off value for APACHE II score was 30 from ROC curve. Features that associated with mortality, selecting from the elastic net penalized Cox proportional hazards regression model, included APACHE-II, absolute lymphocyte counts (ALC) (cells/ul), height (m), proportion of lymphocyte (%), white blood cell counts (cells/ul), age (year), and CRP (mg/dl).

CONCLUSIONS: The mortality of ICU patients with HSV-1 bronchopneumonia could be predicted by the diagnosis of DM, ARDS, and APACHE-II score on admission in the ICU. In the elastic net penalized Cox proportional hazards regression model, APACHE II is also an important feature that associated with mortality. When the APACHE II score was over 30, patients were predicted to have higher mortality rate.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC26

敲響"新冠肺炎病毒變種雞尾酒"警鐘？

王東衡 [1]

[1] 佛教慈濟醫療財團法人關山慈濟醫院胸腔內科

TRIGGER THE "COCKTAIL OF SARS-COV-2 VARIANTS " ALARM?

Tung-Heng Wang [1]

[1]Depatment of Thoracic Medicine, Guanshan Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation

An E-mail from Carlo Urbani sent to the WHO 2003 successfully triggered the alarm of SARS-CoV-1, and made the pandemic disappeared in less than a year. Luo Yijun's warning documents, in the CDC Taiwan and to the WHO, Jan 2020 were only initially blocked SARS-CoV-2 invading Taiwan. This and later, Li Wenliang's Facebok warnings, did not block the ongoing global panepidemic!

Infected with the virus, SARS-CoV-2 mutates, and presented with pandemic waves in the real world for the past 22 months! Vaccination can't protect being infected, but can reduce severe cases and death? With breakthrough infections and global data of confirmed and mortality cases, even in the United States(the month of Oct. 2021/22months accumulated = 50K/700K mortality cases), countries reaching a certain high level of vaccine coverage, the global pandemic is not actually eased!

Is it reasonable to infer that accumulation of breakthrough asymptomatic or mild-symptomatic cases erupt "cocktail of SARS-CoV-2 variants" in individuals and in communities? Will the virus continues to mutate until the individual and herd immunity are overwhelmed and diseases developed?

Not only the clinical manifestations, but also the mortality rate is difficult to predict. More likely in a short duration, a lot of cases will break out. A wild varieties of the documented, the brand new, and even, the totally unknown, variants identified by the collected specimen. Not only the investigations of the infection sources, contacts, and chains, but also the measures of quarantine, lockdown, and NPI's become ineffective.

How to "**TRIGGER THE "COCKTAIL OF SARS-HCOV-2 VARIANTS " ALARM?**

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC27

成人新型冠狀病毒之急性呼吸窘迫症候群與機械功：匹配世代研究

錢穎群[1*], 林淑珍[2], 阮聖元[1], 簡榮彥[1], 郭律成[1], 黃俊凱[1], 古世基[1]
臺大醫院胸腔內科[1], 臺大醫院綜合診療部呼吸治療科[2]

Adult COVID-19 Acute Respiratory Distress Syndrome and Mechanical Power: a Matched Cohort Study

Ying-Chun Chien[1*], Shwu-Jen Lin[2], Sheng-Yuan Ruan[1], Jung-Yien Chien[1], Lu-Cheng Kuo[1], Chun-Kai Huang[1], Shih-Chi Ku[1]
[1]Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan; [2]Department of Integrated Diagnostics & Therapeutics, National Taiwan University Hospital, Taipei, Taiwan

Purpose: Energy applied to the respiratory system by ventilator is called mechanical power (MP), reflecting the risk of ventilation-induced lung injury. This study aims to explore the MP applying to the adult acute respiratory distress syndrome (ARDS) patients with and without COVID-19.
Materials and Methods: This matched case-control study included adult patients who received mechanical ventilation for community-acquired pneumonia from June 2019 to July 2021 in a medical center in Taipei, Taiwan. Use of mechanical ventilation less than 24 hours were excluded. The patients with COVID were matched to those without COVID by age, sex, and PaO2/FiO2. MP (J/min) was calculated as 0.098 × minute ventilation (L/min) × [(peak inspiratory pressure + positive end-expiratory pressure)/2]. Qualitative or categorical variables were compared using the chi-square or Fisher exact test. Continuous variables were compared using the student's *t* test for independent data. Logistic regression was used to evaluate the association between survivors and non-survivors at day 28 for risks of mortality.
Results: A total of 66 mechanically ventilated patients were included and half of them were COVID patients. The median age was 68 years (Interquartile range [IQR], 62-77). As comparison to non-COVID patients, the 28-day and in-hospital mortality of COVID patients were 9.1% vs 21.2%, and 21.2% vs 27.3%. There were no significant differences in co-morbidities, except less COVID patients were smoker, p=0.02. sequential organ failure assessment (SOFA) score was lower in COVID patients, 6.7 ± 3.2 vs 9.0 ± 3.2, p=0.006. The MP was no difference between COVID or non-COVID patients at first and second day of invasive ventilator use. COVID patient received more MP on the second day as compassion to the first day, p=0.048. In multivariable analysis model, the adjusted odds ratio of MP at first day was 1.070 (95% CI, 1.003-1.161, p=0.041) and higher SOFA score was 1.271 (95% CI, 1.010-1.599, p=0.041) for 28-day mortality.
Conclusions: Adult COVID ARDS patients matching with similar PaO2/FiO2 to non-COVID ones, COVID patient received more MP on the second day as compassion to the first day. The cause of this finding should be elucidated in a prospective protocol-controlled study.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC28

氣切病人長期使用呼吸器後自發性呼吸測試時之橫膈膜移動分析

吳家豪[1], 郭耀文[2], 林鳳卿[2], 陳彥霖[1], 許甯傑[1], 鄭之勛[1], 吳惠東[2]

臺大醫院內科部[1], 臺大醫院綜合診療部[2]

Diaphragm movement during unassisted breathing trials in prolonged mechanical ventilation tracheostomized patient

Chia-Hao Wu[1], Yao-Wen Kuo[2], Feng-Ching Lin[2], Yen-Lin Chen[1], Nin-Chieh Hsu[1], Jih-Shuin Jerng[1], Huey-Dong Wu[2]

Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan[1], Department of Integrated Diagnostics & Therapeutics, National Taiwan University Hospital, Taipei, Taiwan

Purpose: Diaphragm movement is easy to access and may provide additional information in predicting liberation from mechanical ventilation and understanding the cause of weaning failure. This study aimed to analyze the correlation between diaphragm movement evaluated by sonography and the associated respiratory parameters during unassisted breathing trials in prolonged mechanical ventilation.

Materials and Methods: This prospective study was conducted at the Respiratory Care Center (RCC), a dedicated weaning unit, of National Taiwan University Hospital, Taiwan. The inclusion criteria included: age 20 years or older, prolonged mechanical ventilation with tracheostomy, low ventilator support with following settings: inspired oxygen fraction < 0.4, pressure support at ≤ 8 cmH_2O and positive end-expiratory pressure ≤ 5 cmH_2O. Definition of weaning success was liberation from mechanical ventilation for ≥ 48hrs. The evaluation of diaphragm movement was conducted by measuring the mean movements of liver/spleen displacements via ultrasound, at 0min, 10mins, 30mins, 60mins, 120mins during the UBT. Respiratory parameters and esophageal pressure were collected continuously by a measuring kit and esophageal balloon respectively once the patient underwent a UBT.

Results: From October 2019 to May 2021, a total of seventeen patients were eligible. Their mean age was 72.9 years (SD:13.6), and 10 (58.9%) were male. The most common causes of respiratory failure were pneumonia (52.9%) and intracranial hemorrhage (41.2%). The most common comorbidities were hypertension (58.8%) and diabetes mellitus (41.2%). The diaphragm movement at 10mins during UBT in the weaning success group and the failure group was 11.5mm and 11.1mm respectively(p=0.816); 11.4mm and 11.6mm at 30mins(p=0.862); 12.5mm and 10.2mm at 60mins(p=0.304); 13.0mm and 13.6mm at 120min (p=0.88). Diaphragm movement at 0 min correlated negatively with maximal inspiratory pressure(pimax) (R^2=0.192, p=0.326). Diaphragm movement correlated negatively with esophageal pressure (R^2=0.186, p=0.0086), oxygen consumption (R^2=0.205, p=0.0011) and carbon dioxide production (R^2=0.074, p=0.056).

Conclusions: This study showed the value of diaphragm movement in negative correlation with pimax, esophageal pressure, oxygen consumption and carbon dioxide production. Larger sample size is warranted to establish a prediction model.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC29

晚發性乳糜心包積液及乳糜胸發生在肺結節的胸腔鏡手術後

洪會洋[1]、李彥龍[2]、楊志仁[1]

高雄醫學大學附設醫院內科部胸腔內科[1,2] 高雄市大同醫院外科[1]

Late-onset Chylopericardium and Chylothorax After a Video-assisted Thoracic Surgery for a lung nodule.

Huei-Yang Hung1, Yen-Lung Lee[2], Chih-Jen Yang [1]

[1]Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan, [2]Department of Surgery, Kaohsiung Municipal Ta-Tung Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan

Introduction: Chylopericardium is a rare condition which chylous fluid accumulates in the pericardial cavity and the most common etiology is secondary to injury of thoracic duct during thoracic or cardiac surgery. However, late-onset chylopericardium and chylothorax is very rare.

Case presentation:A 59-year-old female who was healthy before and a 0.6cm nodule over right lower lobe was noted under a low dose computed tomography. She underwent a right lower segment 8 segmentectomy and mediastinal lymph node dissection by video-assisted thoracic surgery. Intrapulmonary lymph node was finally reported and she was discharged uneventfully. Nevertheless, about one month later, she felt dyspnea on exertion and right-side massive pleural effusion and massive pericardial effusion. Thoracentesis with pleural effusion study showed a transudative chylothorax (triglycerides 203mg/dL, LDH 93 IU/L, protein 2.4g/dL). Surgical pericardial window creation was performed to avoid cardiac tamponade and 775ml milk like pericardial effusion was drained out. Further pericardial fluid analysis revealed these fluids contained high triglycerides level (376mg/dL) with high protein content (4.2g/dL), indicated the diagnosis of chylopericardium. Contrast chest computed tomography did not find the leakage or obstructive site. Low fat diet was encouraged and the drainage amount of the chylous effusion from chest tubedecreased gradually. The chest tube was removed 2 weeks later. There was no recurrent pleural effusion noticed during the outpatient departmentfollow up.

Conclusion: Chylopericardium and chylothorax are crucial complications of thoracic or cardiac surgery. Some reports published that chylopericardium after surgery combined with mediastinum lymph node dissection, including lobectomy for lung cancer and radical esophagectomy. Conservative treatment like low fat diet or off-label use of somatostatin could be considered for patient without symptoms. However, cardiac tamponade is the urgent complication of chylopericardium. Once tamponade sign presents, pericardiocentesis or tube pericardiostomy should be performed as soon as possible.
The late-onset complication of chylous leakage could happen after an associated operation, even one month later.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC30

超音波下消失的心臟：警示心包氣腫的徵兆

黃柏堯[1],曾皓陽[2], 黃維俊[2], 陳傑龍[2], 林裕超[2], 梁信杰[2], 陳韋成[2, 3*]

中國醫藥大學附設醫院急診部, 胸腔內科暨重症系, 中國醫藥大學生物醫學研究所

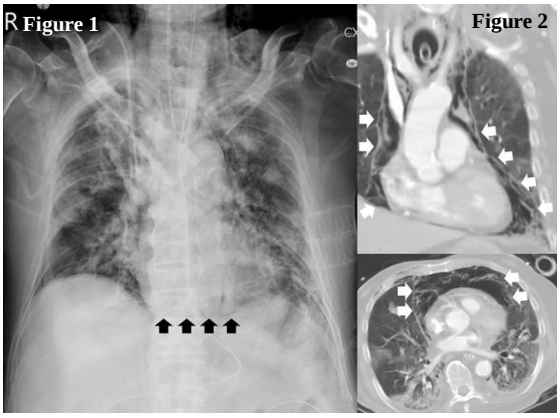
A Vanished heart on Ultrasound: The Warning Sign of Pneumopericardium

Po-yao Huang[1], How-Yang Tseng[2], Wei-Chun Huan[2], Chieh-Lung Chen[2], Yu-Chao Lin[2], Shinn-Jye Liang[2], Wei-Cheng Chen[2, 3*]

1. Emergency department, China Medical University Hospital, Taiwan; 2. Division of Pulmonary and Critical Care Medicine, China Medical University Hospital, Taiwan; 3. Graduate Institute of Biomedical Sciences, China Medical University, Taiwan

Purpose: Pneumopericardium could be a surgical emergency. Here we showed a pneumopericardium presenting as an air-obscured heart on ultrasound in a patient admitted for *Pneumocystis jirovecii*pneumonia (PJP) related acute respiratory distress syndrome (ARDS).

Materials and Methods: This 82-year-old man with a history of old cerebrovascular disease, chronic kidney disease, and psoriasis presented with fever for ten days accompanied with dry cough and dyspnea. Endotracheal intubation and mechanical ventilation were initiated because of hypoxemia and disoriented consciousness. Lung protective strategy was applied for ARDS (PaO_2/FiO_2 =132.6) to diminish lung injury. Muscle relaxant and prone positioning were used for better synchronization and oxygenation. Sulfamethoxazole/Trimethoprim was added due to positive *Pneumocystis jirovecii* PCR. However, the cardiac ultrasound cannot find out the heart. Chest X-ray (CXR) showed continuous diaphragm sign (Fig.1). The involvement of pneumopericardium and pneumo-mediastinum were much more extensive on computed tomography (Fig.2). Airway laceration was suspected the cause, and the air diminished after adjusting endotracheal tube position. Because of post-infectious lung fibrosis and ventilator dependence, he was stepped down to respiratory care center after stabilization.



Results: *Pneumocystis jirovecii* triggers host inflammatory response and results in alveolar damage and lung injury. Pneumothorax and subsequent pneumomediastinum and pneumopericardium are common complications. However, PJP-induced pneumomediastinum and pneumopericardium alone without pneumothorax were rare. Trauma, fistulization, tracking of air along the perivascular sheath, gas-forming bacterial infection, or congenital defect were possible causes of pneumopericardium. In our case, tracheal laceration may be the cause based on the history and the spontaneous improvement after timely adjusting endotracheal tube position.

Conclusions: When the heart was obscured by the air on ultrasound, pneumopericardium is an important differential diagnosis and needs timely confirmation.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC31

新冠肺炎 Alpha 變異株的病人恢復期時的高解析度胸部電腦斷層

侯承伯[1] 李鼎專[2];陳宗家[3];曾婷玉[3];鐘威昇[3*]

[1]衛生福利部臺中醫院家庭醫學科 [2]衛生福利部臺中醫院放射科;[3]衛生福利部臺中醫院內科

HRCT findings in convalescent pts with SARS-COV-2 alpha variant

Cheng-Po Hou[1] Ding-Chuang Lee[2] Tsung-Chia Chen[3] Ting-Yu Tseng[3] Wei-Sheng Chung, M.D., Ph.D.[3*]

[1]Department of Family Medicine, Taichung Hospital, Ministry of Health and Welfare, Taichung, Taiwan

[2]Department of Radiology, Taichung Hospital, Ministry of Health and Welfare, Taichung, Taiwan

[3]Department of Internal Medicine, Taichung Hospital, Ministry of Health and Welfare, Taichung, Taiwan

Purpose Genetic variants of SARS-CoV-2 came out around the world and alpha variant has been circulating in Taiwan since 2021 May. Previous studies have suggested that chest high-resolution computed tomography (HRCT) showed ground glass opacification (GGO) predominantly unilateral peripheral, multifocal, and in preclinical patients with coronavirus 19 (COVID-19) and became bilateral and diffuse pattern in the first week of onset. However, studies on chest HRCT in convalescent patients with SARS-CoV-2 alpha variant are lacking. We investigated chest HRCT findings in patients with SARS-CoV-2 alpha variant in a regional hospital of the Central Taiwan from May 1, 2021 to June 30, 2021.

Materials and Methods: All patients with positive polymerase chain reaction test for COVID-19 were admitted to the isolation room in the regional hospital. The patients with COVID-19 in convalescence were defined as: 1> negative results of SARS-CoV-2 in 1 specimen or cycle threshold value ≥ 30; 2> fever subside ≥ 1 day and symptom remission; 3> symptom onset >10 days since June 23, 2021. We investigated chest HRCT for these patients with COVID-19 alpha variant in convalescence from May 1, 2020 and June 30, 2021.

Results: In total, 46 patients (28 male and 18 female) were admitted to the isolation room at a regional hospital. Their mean age was 40.2±17.2 years. The average length of stay was 6.2±3.9 days. 9/46 (20%) of inpatients with COVID-19 alpha variant received oxygen therapy by using nasal cannula, venturi mask, non-rebreathing mask, or high flow nasal cannula. 2 patients deteriorated to receive endotracheal tube with ventilator support and extracorporeal membrane oxygenation. 37 patients received HRCT at their convalescence and the discharge day. Among 37 patients, 30 (81.1%) showed abnormal HRCT findings. 24 patients (65%) showed bilateral multifocal peripheral ground-glass opacities (GGOs). Among them, 12 patients had multilobar peripheral, subpleural GGOs and fibrosis.

Conclusion: The patients with SARS-CoV-2 alpha variant in convalescence phase remained a high probability (65%) of bilateral peripheral GGOs in HRCT.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC32

探討肺泡巨噬細胞之第二型血管張力素轉化酶表面蛋白的臨床調控因子

郭鈞瑋 [1, 2], 廖信閔 [1,2], 蘇柏嵐 [1], 林建中 [1], 楊思雋 [1], 黃堂修 [1], 陳建維 [1], 蔡政軒 [1,2], 謝奇璋 [2]

成大醫院胸腔內科; 成功大學臨床醫學研究所

Investigation of Clinical Regulatory Factors for Angiotensin Converting Enzyme Expression of Alveolar Macrophages

Chin-Wei Kuo[1,2], Xin-Min Liao[1,2], Po-Lan Su[1], Chien-Chung Lin[1], Szu-Chun Yang[1], Tang Hsiu Huang[1,2], Chian-Wei Chen[1], Jeng-Shiuan Tsai[1,2], Chi-Chang Shieh[2]

Division of Chest Medicine, Department of Internal Medicine, National Cheng Kung University Hospital, 1. Institute of Clinical Medicine, College of Medicine, National Cheng Kung University2

Purpose: Angiotensin converting enzyme 2 (ACE2) is the entrance protein for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). SARS-CoV-2 is easier to infect alveolar macrophages (AlvM) expressed high level ACE2, leading to cytokine storm and acute respiratory distress syndrome. We aim to survey the clinical regulatory factors of ACE2 on AlvMs.

Materials and Methods: We prospectively collected pulmonary cells by bronchioalveolar lavage, which is retrieved from clinical patients without active infection. ACE2 expression level of AlvMs were analyzed by flowcytometry. Mann-Whitney u test, Spearman's and Pearson's correlation and linear regression were performed for calculating the ACE2 expression level and clinical factors.

Results: We retrieved BAL sample from 56 clinical patients. Active smoker had higher ACE2 expression than previous smoker and never smoker ($P<0.05$). Age, sex, COPD and lung cancer do not affect the ACE2 level. ACE1 is highly correlated to ACE2 expression (Pearson's $r =0.8181$, $P<0.05$). FEV1 is not correlated to ACE2 expression. In multivariable linear regression model, the active smoking is the independent risk factor for increasing ACE2 level (β co-efficiency=0.7026, p=0459).

Conclusions: Active smoking is the independent risk factor of increasing ACE2 expression of AlvM.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC33

病例報告: 於一老年女性發現之氣管乳頭狀瘤

蔡孟耘[1], 賴建豪[1], 方文豐[1], 林孟志[1], 王逸熙[1]

[1] 高雄長庚醫院胸腔內科

Tracheal papillomatosis in an elderly female patient---a case report

Meng-Yun Tsai[1], Chien-Hao Lai[1], Wen-Feng Fang[1], Meng-Chih Lin[1], Yi-Hsi Wang[1]

[1]Division of Pulmonary and Critical Care Medicine, Kaohsiung Chang Gung Memorial Hospital

Introduction: Tracheal paoillomatosis(TP) is a type of respiratory papillomatosis(RP), and is a benign and rare condition characterized by papillomatous growth of the bronchial epithelium that involves the trachea. TP is usually associated with HPV-6 and HPV-11 infection. There are also 2 types of this disease, juvenile-onset form and the adult-onset form, most of the patients are juvenile onset, and the common age of adult onset form is about 20 to 40 years old, with men predominance. The incidence of the disease has been reported between 3 and 10 per 1000000. In this article, TP found in an elderly female patient is reported.

Case: This is a 67-year-old woman with history of type 2 diabetes mellitus, end stage renal disease under hemodialysis and coronary artery disease. Chronic cough for 6 months presented, and dyspnea on excertion developed in recent 2 months. Pulmonary function test was arranged and revealed fixed airway obstruction. Chest CT was arranged and endotracheal mass with airway narrowing 2 cm below vocal cord were found. Bronchoscopy examination confirmed cauliflower tumors over trachea (2.5cm and 5cm below vocal cords) with airway obstruction (<10 % patency), for the patient could not tolerated with further bronchoscopy intervention, surgeon was consulted. After discussion, tumor excision with creation of tracheostomy was done under the support of bi-venous e*xtracorporeal membrane oxygenation (ECMO) smoothly. Pathology report revealed* squamous cell papilloma/papillomatosis with mild to moderate dysplasia, tracheal papillomatosis was diagnosed. Post-operative bronchoscopy revealed some residual lesion with an improved airway patency (>90%).

Discussion: TP and RP in adult patient are rare tumor of trachea that usually found in middle-aged men, in this case, the lesion was found in an elderly woman, without specific sexual contact history. The first consideration in treatment option is to secure airway, especially in patients with extensive airway obstruction such as this case presented. There are no guidelines for the treatment, but current standard care is surgical intervention to remove the tumor as possible. ECMO support during the procedure is a choice for such patient, the advantage in this circumstance is providing complete ventilation and oxygenation and providing an apneic unobstructed surgical field.

Conclusion: There were few reports of surgical resection of TP or RP under ECMO support, in our case, there is a benefit, as a result, referral to hospital with ECMO team should be considered as a standard treatment option in patients with extensive TP or RP complicated with severe airway obstruction.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC34

鳥型分枝桿菌複合體肺部疾病的臨床治療經驗

張嘉凌[1], 余忠仁[1], 薛博仁[2,3], 簡榮彥[2]

國立臺灣大學醫學院附設醫院新竹台大分院內科部[1]

國立臺灣大學醫學院附設醫院內科部[2]

中國醫藥大學附設醫院檢驗醫學中心、內科部[3]

Treatment responses and outcomes in patients with *Mycobacteriumavium-intracellulare* complex pulmonary disease

Chia-Ling Chang[1], Chong-Jen Yu[1], Po-Ren Hsueh[2], Jung-Yien Chien[2]

Department of Internal Medicine, National Taiwan University Hospital Hsin-Chu Branch[1]

Department of Internal Medicine, National Taiwan University Hospital[2]

Department of Internal Medicine, China Medical University Hospital[3]

Abstract

Introduction: Treatment responses and outcomes in patients with *Mycobacterium avium-intracellulare*complex pulmonary disease (MAC-PD) remain uncertain.

Methods: This study was conducted from 2011-2015 in a northern hospital in Taiwan. Successful treatment is defined as three consecutive negative sputum cultures over a minimum period of 3 months and a complete additional treatment judged by physician. Relapse was defined as the occurrence of two or more positive sputum cultures during a period of 2 weeks, regardless of radiographic appearance, after conversion to negative and completion of a full course of treatment.

Results: A total of 97 patients with MAC-PD were treated. Median time from diagnosis to treatment was 79.0 (0-1866) days. Among them, thirsty patients (30.9%) had successful treatment. Sputum smear negative-conversion rate was 40.4% (19/47 patients). Median time from negative conversion in sputum smear and culture to complete treatment were 111(7-438) and 229 (0-1466) days, respectively. Most of patients (n = 91) received treatment for less than 2 years. Patients with successful treatment had higher 2-month (p = 0.001) and 6-month (p<0.0001) sputum smear conversion and longer treatment duration (p = 0.015). 24 patients with successful treatment were followed up for one year. One-year relapse rate after complete treatment was 20.8% (5/24 patients). More patients with 1-year relapse had old pulmonary tuberculosis (p = 0.037) and gastroesophageal reflux disease (p = 0.046).

Conclusions: Sputum smear negative-conversion after treatment for 2 months was associated with higher rate of successful treatment. In addition, patients with old pulmonary tuberculosis or gastroesophageal reflux disease had higher relapse rates.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC35

心搏過緩在新冠肺炎感染的病人：朋友還是敵人？

吳柔君 [1],王玠仁 [1,*], 陳昭賢 [1,2], 鍾心珮 [1,2], 陳彥婷 [1,2], 郭冠志 [1,2], 張文魁 [1,2], 林長怡 [1,2]
[1] 馬偕醫院胸腔內科; [2] 馬偕醫學院醫學系; [*] 通訊作者

Bradycardia in COVID-19 Infected Patients: Friend or Foe?

Jou-Chun Wu[1,3], Chieh-Jen Wang[1,*], Chao-Hsien Chen [1,2], Hsin-Pei Chung [1,2], Yen-Ting Chen [1,2], Kuan-Chih Kuo [1,2], Wen-Kuei Chang [1,2], and Chang-Yi Lin[1,2]
[1] Division of Pulmonary, department of internal medicine, MacKay memorial hospital, Taipei City, Taiwan
[2] Department of medicine, MacKay memorial collage, New Taipei City, Taiwan

Purpose: COVID-19, a novel coronavirus known for causing respiratory tract infection, has been the worldwide pandemic since 2019. However, it might also affect multiple organ systems, such as the cardiovascular system. Some studies reported significant COVID-associated bradycardia events and this phenomenon might be an indicator of poor prognosis. Treatment related bradycardia was also a concern, especially Remdesivir, which is one of the most common prescription options for COVID-19 pneumonia. But it might also induce bradycardia. In this study, we aimed to investigate the prevalence of bradycardia in our patient group and its relationship with the patient outcome.
Materials and Methods: Patients admitted to MacKay memorial hospital for COVID-19 infection between May 2021 to Jun. 2021 were enrolled. Patients under 18-year-old, using medications for rate control, or bradycardia happened before end-of-life were excluded. Their baseline patient profile, laboratory data, medication use during hospitalization, and their hospital outcomes were collected for analysis. Bradycardia event was defined as a persisted heart rate less than 60 beats per minutes on two separate occasions with a minimum of 4 hour apart during hospitalization.
Results: A total of 259 people were included in the research analysis. They were 61.4 years old in average and male predominant (54.8%). One hundred and eighty-four of them (29%) experienced bradycardia during their hospitalization. Patients with bradycardia was significant older (median 67, range 41-89 vs. 60, 19-91; $p = 0.003$). Bradycardia was also common in patient received supplemental oxygen (93.3% vs. 69.0%, $p< 0.001$) and mechanical ventilation (MV) (42.7% vs. 10.9%, $p< 0.001$) compared with those without.
Medication use was found to be related to the occurrence of bradycardia but became insignificant after multiple logistic regression analysis. Bradycardia events occurred more frequently on elderly people (OR 1.03, CI 1.01-1.05) and more on patients who received MV (OR 5.03, CI 1.94-13.04). Besides, bradycardia was related to lower mortality, with an OR of 0.32 (CI 0.10-0.98).
Conclusions: The incidence of bradycardia was 29% in our patient group. Bradycardia is associated with higher oxygen and MV use, which might suggest its association with disease severity. The finding of patients with bradycardia had lower mortality was different from the previous studies. The relationship between bradycardia and COVID-19 deserved further research.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC36

以電腦斷層表現特徵評分並比較膿瘍分枝桿菌治療前後變化

江品儀[1], 樹金忠[2,3], 黃昱森[1,2], 張允中[1,2]

國立台灣大學附設醫院影像醫學部, 內科部, 國立台灣大學醫學系

Assessing post treatment changes in Mycobacterium abscessus infection with designated computed tomography scoring system.

Pin-Yi Chiang[1], Chin-Chung Shu[2,3], Yu-Sen Huang[1,2], Yeun-Chung Chang[1,2]

[1]Department of Medical Imaging, and [2]Internal Medicine, National Taiwan University Hospital, [3]National Taiwan University College of Medicine, Taipei 100, Taiwan[2]

Department of Internal Medicine, National Taiwan University Hospital, Taiwan[3]

Purpose: The objective image scoring system is scarcely investigated for *Mycobacterium abscessus* complex lung disease (MABC-LD), especially regarding its treatment outcome. We aimed to establish a comprehensive scoring system using computerized tomography (CT) for quantification characteristics of MABC-LD.

Materials and Methods: We conducted this study in National Taiwan University Hospital during 2006/01~2020/12. Patients were recruited if they had diagnosis of MABC-LD, received anti-MABC treatment and had serial CT scans before and after the treatment. In brief, CT characteristics (bronchiectasis, bronchiolitis, cavitation, consolidation and nodules) and extent scores were recorded. We analyzed the correlation between treatment outcome and serial changes of CT scores.

Results:A total of 34 patients (30 [88%] female; mean age, 60 years) were recruited retrospectively. Among them, seventeen of the 34 patients (50%) were classified as the treatment failed (TF) group and the remaining 17 were the treatment success (TS) group. An inter-rater correlation for the CT score was excellent (>0.8). After we compared the pre- and post-treatment CT scores in the two group, 13 (76.5%) patients in the TF group and 7 (41.2%) patients in the TS group had an increase in overall CT scores. The CT score changes between two groups were statistically significance (p<0.005). Among the characteristics of the CT score, the changes of bronchiectasis, cavitation and nodular pattern were statistically significant between the two groups (all p<0.005). Multivariable logistic regression identified pre-treatment cavitation extension, post-treatment consolidation extension, and progression of CT score as independent factors for treatment failure.

Conclusions: In treatment of MABC-LD, a disease with high treatment failure rate (50%), a comprehensive CT score could be a reliable and accurate tool to predict treatment success. Pre-treatment cavitation extension, and post-treatment consolidation extension as well as increasing total CT score during the treatment should be an alarm for clinician because they are correlated with treatment failure.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC37

侵襲性麴菌感染罕見併發症---支氣管食道廔管

Acquired bronchoesophageal fistula caused by invasive`e aspergillosis in immunocompromised patient ---A case report

Pei-Chia Mei[1], Jung-Yueh Cheng[1,3], Chi-Kuei Hsu[1,2,3]

[1]Division of Pulmonary Medicine, Department of Internal Medicine, E-Da Hospital , Kaohsiung, Taiwan.

[2]Department of Intensive Care Medicine, E-Da Hospital,Kaohsiung, Taiwan.

[3]School of Medicine, College of Medicine, I-Shou University, Kaohsiung, Taiwan.

Tracheoesophageal fistula (TEF) and bronchoesophageal fistula (BEF) were pathologic connections between the esophagus and large airways. Most TEF/BEF in adults are acquired and due to esophageal or lung cancer. Fungal infection, especially *Aspergillus* is one of the possible benign cause of TEF/BEF, although this etiology is rare. Because of the low yield rate of fungus culture to prove aspergillus TEF/BEF, the diagnosis was mainly depend on the pathology evidence from the biopsy specimen.

Here, we reported a case of aspergillus BEF in a patient who has had acute myeloblastic leukemia and received several cycles of chemotherapy. Febrile neutropenia happened several times after each time chemotherapy. While we did sepsis workup, elevated serum aspergillus galactomannan test was noticed. Contrast enhanced chest-abdomen computed tomography(CT) was arranged to survey suspicious invasive pulmonary aspergillosis (IPA). A new soft tissue defect was noted between the esophagus and left main bronchus, adjacent hypo-density lesion with partial enhancement was also noted. Bronchoesophageal fistula and mediastinal abscess formation were impressed. The panendoscopy examination confirmed a fistula about 1.5cm in length at middle esophagus and a necrotic tumor like lesion protruding from airway into the esophagus. Tumor biopsy specimens disclosed necrotic tissue infiltrated with numerous fungal hyphae and some inflammatory cells. So we confirmed the acquired bronchoesophageal fistula was resulted from invasive aspergillosis infection.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC38

新冠肺炎呼吸衰竭病患併發反覆性院內感染菌血症-病例報告

陳品睿[1],黃靜芝[1], 蕭秀鳳[1], 林恕民[1, 2],
林口長庚呼吸治療科[1], 呼吸胸腔內科[2]

Recurrent nosocomial bacteremia in a COVID-19 patient with acute respiratory failure- a case report

Pin-Rui Chen[1], Ching-Tzu Huang[1], Hsiu-Feng Hsiao[1], Shu-Min Lin[1, 2],
Department of Respiratory Therapy [1], Department of Thoracic Medicine [2], Linkou Chang Gung Memorial Hospital and Chang Gung University, College of Medicine, Taiwan

Purpose: Coronavirus disease (COVID-19) was declared a global epidemic in 2020.It was observed that blood cultures were positive as a result of relevant bacteremia in subgroup of COVID-19 patients. This raised concerns about the occurrence of bacteremia and bacterial co-infections in COVID-19 patients. For COVID-19, little is known about the occurrence of bacterial co-infections and the causative pathogens.

Case report: We describe the case of a patient without prolonged immunosuppression or underlying diseases, with recurrent bacteremia episodes, while being treated in a tertiary hospital for COVID-19 infection. This 78 year-old male patients was admitted to a tertiary hospital due to severe COVID-19. The initial presentation included fever, cough, and chest tightness. The chest X ray revealed bilateral ground glass opacities. Patients received 6L/m O2 therapy on admission. However, acute respiratory developed on days 8 even under anti-viral agent; remdesivir treatment. Immuno-modulatory agents including tocilizumab and dexamethasone therapies were administered subsequently according to the treatment guidelines. The pneumonia was improved and patient was ready for weaning from mechanical ventilator. But high fever and hypotension developed on day 15 of admission. Blood culture revealed *Enterobacter cloacae*. After antibiotics therapy, the fever was subsided and shock was reversed. Recurrent fever developed 7 days later and blood culture showed carbapenem resistant-Acinetobacter. In addition, the 3rd episode of bacteremia was noted 1 week later. The blood culture showed *Acinetobacter baylyi, Chryseobacteriumindologenes* , *Delftiaacidovorans*. After proper antibiotics therapy, patient's condition improved gradually. He was liberated from ventilator after 55 days of respiratory failure and discharged from the hospital with a total length of stay for 64 days.

Conclusions: Nosocomial bacteremia may develop in COVID-19 patients with critical illness. The contribution of immune-modulatory therapies in nosocomial bacteremia CVOID-19 patients deserves further investigation.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC39

N 端前腦利鈉肽預測住院病人肺炎死亡率

曾敬華，古志霖，陳錦華，蔡靜雯，余明治，李枝新

臺北市立萬芳醫院內科部胸科內科，臺北醫學大學數據處統計中心，臺北醫學大學管理學院資料科學研究所

N-terminal pro-brain natriuretic peptide predicts mortality in hospitalized patients with pneumonia

Ching-Hua Tseng[1], Chih-Lin Goo[1],Jin-Hua Chen[2,3], Ching-Wen Tsai[2], Ming-Chih Yu[1,4], Chih-Hsin Lee[1,4], Division of Pulmonary Medicine[4], Department of Internal Medicine[1], Wan Fang Hospital, Taipei Medical University, Taipei, Taiwan; Statistics Center[2], Office of Data Science, Taipei Medical University, Taipei, Taiwan;Graduate Institute of Data Science[3], College of Management, Taipei Medical University, Taipei, Taiwan

Purpose:

We aim to investigate the possible relationship between the mortality and N-terminal pro-brain natriuretic peptide (NT-proBNP) among the patients hospitalized for pneumonia.

Materials and Methods:

We retrospectively investigated the independent predictors for mortality among adult patients (age ≥18) hospitalized for pneumonia in Wan Fang Hospital during the study period of 2017 January to 2021 April with an emphasis on the role of NT-proBNP by using multivariate logistic regression. For each patient with repeated admissions, only the last one was included for analysis.

Results:

During the study period, a total of 4064 admission records of 2659 adult patients were retrieved. The mean age was 78.1±14.9 years and the male-female ratio was 1.52. The hospital mortality rate was 29.0% with a mean duration of hospitalization of 20.6±18.6 days. NT-proBNP results were available in 622 records, and were higher among the patients died (median 4288.5 pg/mL) than those survived (median 3192.5 pg/mL, $p < 0.001$ by Mann-Whitney U test). The hospital mortality rates were 26.3%, 43.7% and 57.4% for patients with NT-proBNP of below 450, 450 – 11200, and over 11200 pg/mL, respectively. Higher levels of NT-proBNP were associated with increased risks of mortality with adjusted odds ratios of 1.924 (1.036 – 3.575) and 3.465 (1.767-6.794) for NT-proBNP 450 - 11200 pg/mL and over 11200 pg/mL, respectively. C-reactive protein more than 6 mg/dL, and underlying malignancy were also independent risk factors predicting mortalities.

Conclusions: A strong positive association between the mortality of pneumonia and level of NT-proBNP was identified. Further prospective studies to evaluate the potential benefit of integrated multi-disciplinary care programs for optimized management of subclinical cardiac dysfunction are warranted among adult patients hospitalized for pneumonia.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC40

支氣管肺泡灌洗於新冠肺炎插管病患：案例系列報告

吳秉宸, 張克威
林口長庚呼吸胸腔科

Bronchoalveolar Lavage for Intubated COVID-19 Pneumonia Patients: A Case Series

Bing-Chen Wu, Ko-Wei Chang
Department of Thoracic Medicine, Chang Gung Memorial Hospital, Taoyuan, Taiwan

Introductions: COVID-19 outbreak occurred since the end of 2019 and influenced the whole world, and 12 to 24 percent of hospitalized patient had been intubated due to respiratory failure. Bronchoalveolar lavage (BAL) for pathogen survey in these patients is seldom performed due to the high risk of transmission. We presented a case series of bronchoscopy examination in the intubated COVID-19 pneumonia patients.

Materials and Methods: We collected all of the COVID-19 pneumonia intubated patients who received BAL in Chang Gung Memorial Hospital, Linkou branch since May 2021 to Jul.2021. We arranged the bronchoscopy for guiding percutaneous dilation tracheostomy in all of patients, and we did the BAL right after the operation. The pathogen survey such as nCoV PCR, bacterial culture, fungal culture and so on were sent under clinical suspicion.

Results: Five patients were included in this study. The average interval between BAL and the day of diagnosed COVID-19 was 45 days. NCoV PCR of BAL showed positive in two patients, while their nCoV PCR of throat swab were negative within 2 days. A patient had newly positive BAL bacterial culture which yielded Stenotrophomonas. Successful liberation from mechanical ventilation has been performed in 4 patients. No medical personnel were infected by COVID-19 during the bronchoscopy examinations.

Conclusions: With adequate personal protective equipment, bronchoscopy with BAL is a feasible and safe procedure for intubated COVID-19 patients., and it may provide additional clinical information.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC41

Pulmonary Artery Mycotic Pseudoaneurysm, Report of Two Cases and Literature Review

Chi-Jui, Chen[1]; Chih-Bin, Lin[2]

[1]Department of Internal Medicine, Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Hualien, Taiwan; [2]Division of Chest Medicine, Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Hualien, Taiwan

Introduction: Pulmonary artery pseudoaneurysm (PAP) is an uncommon vascular abnormality of pulmonary arterial circulation. It could present ranging from asymptomatic characteristics incidentally discovered on images to life-threatening massive hemoptysis while rupture, unfortunately. It could arise from infections, associated neoplasms, traumatic episodes, secondary to cardiac catheterization, pulmonary valvular stenosis with subsequent left-to-right shunting flow. Early recognition of these PAP cases might be the match point of the timing of treatment. We aim to share two cases of impressive images of PAPs, and also share the experience of clinical care.

Case presentation: The first case is a 63-year-old schizophrenic man with underlying type 2 diabetes mellitus (DM), who was presented to our hospital due to massive hemoptysis with green sputum. Chest computed tomography (CT) with/without contrast showed a 2.6*2.0 cm contrast-filling mass with surrounding fluid accumulation and septa located at the left lower lung. We took conservative strategies without bronchoscopic intervention nor radiological intervention. Piperacillin/Tazobactam and clindamycin were prescribed, and following sputum culture grew Klebsiella pneumoniae. After 10-day treatment, the patient was discharged after hemoptysis improved. Two months later, the following chest CT revealed resolved PAP and surrounding abscess formation.

Another case is a 64-year-old male ironworker with underlying hypertension and gastric ulcer, who was presented to our hospital due to hemoptysis for two days. Chest CT revealed a 1.7*1.6 cm contrast-filling mass with surrounding fluid accumulation, also outlined by a well-defined abscess formation. In addition, several cavitary nodules were found in the right lower lobe and left lower lobe. Emergent angiography was performed and trans-arterial embolization (TAE) was done successfully. The following chest CT three days later showed resolved PAP, and thoracic surgery of left lung decortication and chest tube placement were performed. Follow up chest CT revealed obvious resolving but still residual locular pleural fluids at the left lower chest. After nearly two month treatment, the patient was discharged.

Conclusion: We present two cases of PAPs, which were both presented with hemoptysis and confirmed by chest CT. Both of the PAPs were located at the left lower lung, which might be missed under ordinary X-ray chest film. One of them was treated conservatively with antibiotics, and the other was treated by embolization and following surgical intervention for empyema. Both of the patients were discharged successfully and the PAPs resolved from the following chest CT. In summary, early detection of PAPs is the key point of its treatment option. Individualized treatment plans might take the patient's age, comorbidities, and surgical risk as consideration.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC42

可能的隱球菌肋膜炎在免疫正常的年輕人

李妊旻[1], 謝子禹[2], 楊志仁[3,1]高雄醫學大學附設中和紀念醫院內科專科護理室

[2] 高雄醫學大學附設中和紀念醫院內科,高雄台灣,[3] 高雄醫學大學附設中和紀念醫院內科,高雄台灣

A Possible Pleural Cryptococcosis in an Immunocompetent Young Man

Jen-Min Lee [1], Zi-yu Xie[2], Chih-Jen Yange[3], [1] Department of Specialist Nursing Office, Faculty of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan

[2] Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan, [3] Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan

Introduction: Cryptococcosis is a relatively invasive fungal infection, pleural cryptococcosis is very rare, and may presented in immunocompetent hosts who may expose and inhaled to avian (e.g. pigeon) droppings. The spectrum of pulmonary cryptococcosis depends on the host's defenses, the method of entry is usually by inhalation of cryptococcal particles into the lungs, causing pulmonary infection.

Case report: A 41-year-old man with medical history of hypertension was admitted because of right chest wall pain and intermittent fever since June 2021, and he mentioned that many pigeon breeders near his house. Physical examination showed decrease breathing sound over right lower lung field, chest x ray revealed right lung pleural effusion, bedside echo showed thickened pleura with some sticky effusion, and the chest CT. showed loculated right sided pleural effusion. Empyema should be considered serum cryptococcal antigen (Ag) showed positive and the titer was 1:40. VATS based decortication of the right pleural and the cryptococcal Ag in effusion showed positive and the titer was 1:20. His biochemical data was normal and negative for serum HIV ELISA exam indicated his is immunocompetent. In addition to intravenous Amoxicillin /Clavulanate for 2 weeks, we also prescribed fluconazole 400mg QD for him and his serum cryptococcal Ag titer was undetectable one month later and not symptomatic.

Discussion: Cryptococcosis was believed to be confined in immunocompromised patients. However, several reports indicated cryptococcosis was not uncommon in immunocompetent patients. The diagnosis of cryptococcosis relied on pathological report or fungal culture. Cryptococcal antigen in serum or body fluid had a high sensitive and specific tool to make a diagnosis of cryptococcal infection or a follow-up tool, especially in who had higher titer. Cryptococcal effusion was very rare and always in immunocompromised patent and it was extremely rare in immunocompetent patient. The progress of the cryptococcal empyema was relatively indolent as in our present patient, had lasted for several weeks before diagnosis. The management of plural cryptococcosis always depends on surgical decortication and treated with antifugal agents.

Conclusion: Pleural cryptococcosis is rare, we carefully showed the diagnosis and clinical course of a pleural cryptococcosis in an immunocompetent patient and successful treated with surgical decortication and antifugal agents. We share our experience and make a literature review.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC43

COVID-19 重症患者之肺部麴菌症：台灣單一中心回溯性世代研究

黃仲儒[1]、沈曉津[1]、孫傳硯[1]、馮嘉毅[1,2]、陽光耀[1,2]、陳育民[1,2]

[1]臺北榮民總醫院胸腔部,[2]國立陽明交通大學醫學系

COVID-19-associated pulmonary aspergillosis in ICU patients: single centric retrospective cohort study in Taiwan

Jhong-Ru Huang[1], Hisao-Chin Shen[1], Chuan-Yen Sun[1], Jia-Yih Feng[1,2], Kuang-Yao Yang [1,2],Yuh-Min Chen[1,2]

[1]Chest Department, Taipei Veterans General Hospital, [2]National Yang Ming Chao Tung University, Taipei, Taiwan

Purpose: During pandemic of COVID-19, the increasing number of reports on COVID-19-associated pulmonary aspergillosis (CAPA) raise concerns about this superinfection as an additional contributing factor to adverse outcomes. Furthermore, corticosteroid is the current standard of treatment in COVID-19. Role of corticosteroid in increasing susceptibility of CAPA in patients with COVID-19 needs to be elucidated. This study investigated incidence of CAPA in patients with COVID-19 admitted to the intensive care unit (ICU), described the epidemiology, and evaluated its impact on prognosis.

Materials and Methods: This is a retrospective study conducted in four ICUs of Taipei Veterans General Hospital. All the patients diagnosed with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection by RT-PCR method(Roche Cobas® 6800 system) during 14 May through 3 August 2021 were enrolled. Diagnostic testing of aspergillus was performed according to clinical judgement liberally. Definition of CAPA is according to 2020 ECMM/ISHAM consensus criteria. Differences in treatment outcomes, including 30- day mortality, ventilator using days, and hospital stay, between COVID-19 patients with and without CAPA were analyzed. Clinical factors associated CAPA, especially the exposure to dexamethasone, were investigated as well.

Results: A total of 72 patients with COVID-19 were enrolled. Their median age was 66(57-74) years old and 65% (45/72) of them were male. The incidence rate of CAPA was 15% (11/72) in overall COVID-19 patients with ICU admission, and was 23% (11/48) in those need mechanically ventilator. The median times from symptom onset and ICU admission to CAPA diagnosis were 23(6-69) days and 15(4-57) days, respectively. Kaplan-Meier analysis showed a significantly higher in-hospital mortality in CAPA group (55% vs 13%, p=0.024). The mean daily dose(mg/day) of dexamethasone was significant higher in CAPA group as compared to those without CAPA (7.0 vs 2.8, P=0.008). Usage of tocilizumab didn't statistically increase the incidence of CAPA(18% vs 13%, p=0.558).

Conclusions: The risk of CAPA superinfection in COVID-19 patients with ICU admission is high. As compared to non-CAPA cases, CAPA cases have higher daily exposure to dexamethasone and are associated with higher in-hospital mortality.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC44

台灣非結核性分枝桿菌肺部感染之流行病學–多中心回顧性研究

謝欣融[1], 簡榮彥[1], 陳彥甫[2], 劉家榮[3], 林書永[1], 張嘉凌[3]

臺大醫院內科部[1], 臺大雲林分院內科部[2], 臺大新竹分院內科部[3]

Epidemiology of nontuberculous mycobacteria pulmonary disease in Taiwan - A retrospective, multi-center study

Hsin-Jung Hsieh[1], Jung-Yien Chien[1], Yen-Fu Chen[2], Chia-Jung Liu, Shu-Yung Lin, Chia-Ling Chang

Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan [1]

Department of Internal Medicine, National Taiwan University Hospital, Yunlin branch, Yunlin, Taiwan[2]

Department of Internal Medicine, National Taiwan University Hospital,Hsin-Chu Branch, Hsinchu, Taiwan[3]

Purpose : Nontuberculous mycobacteria pulmonary disease (NTM-PD) are increasingly recognized due to its resultant of respiratory symptoms and even respiratory failure. Pulmonary *Mycobacteria tuberculosis* (MTB), nonetheless, shared the similar clinical features with NTM-PD. In this regard, we aimed to identify the different patient's characteristics between NTM-PD and MTB.

Materials and Methods:We retrospectively evaluated patients who had respiratory cultures positive for mycobacteria in a single hospital database from 2007 to 2017. Total 2,527 patients met the 2007 American Thoracic Society (ATS) criteria of NTM-PD and 601 patients had pulmonary MTB. We analyzed the gender, age and underlying disease of patients with NTM-PD, and compared with patients with MTB infection.

Results : Compared with MTB infection, those with NTM-PD were older (63.4 ± 20.3 versus 65.8 ± 15.72 years, p=0.007) and less male predominant (68.4% versus 52.5%, p<0.001). Regarding to the underlying disease, patients with NTM-PD had higher prevalence of chronic obstructive pulmonary disease (p<0.001), autoimmune disease (p=0.007), bronchiectasis (p<0.001) and lung cancer (p=0.018), as compared with MTB group. Among the enrolled patients with NTM-PD, *Mycobacterium avium intracellulare complex* (MAC) was the most common pathogen (45.4%), followed by *M. abscessus* (23.7%), *M. fortuitum* (12.0%) and *M. kansassi* (8.5%). The number of MAC and *M. abscessus* infection increased during the past decade, while the number of *M. kansassi*infection was decreasing. In addition, patient with MAC infection had the most advanced age (67.27±14.55 years), and those with *M. kansassi* infection was the most male predominant (70.7%).

Conclusions: Patients with NTM-PD were older and less male predominant than MTB. Besides, the prevalence of chronic obstructive pulmonary disease, autoimmune disease, bronchiectasis and lung cancer were higher in NTM-PD group.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC45

新型冠狀病毒感染（COVID-19）重症個案之 Tocilizumab 的使用與侵襲性麴菌病的相關性

伍國綸[1]、郭立國[2,3]、胡亭宇[2,3]

The association of Tocilizumab and Invasive pulmonary aspergillosis in critically ill patients with severe COVID-19 pneumonia and acute respiratory distress syndrome

Kuo-Lun, Wu[1];Li-Kuo Kuo[2,3]; Ting-Yu Hu, MD[2,3]

[1]Division of Pulmonary and Critical Care Medicine, Mackay Memorial Hospital, Taipei City, Taiwan;

[2]Department of Critical Care Medicine, Mackay Memorial Hospital, Taipei, Taiwan;

[3]Department of Medicine, Mackay Medical College, New Taipei City, Taiwan

Abstract

Novel coronavirus 2019 is known to cause severe pneumonia and acute respiratory distress syndrome. According to current treatment consensus, immunosuppressants such as dexamethasone and IL-6 antagonist play an important role in early stage of COVID-19 infection. However, in these critically ill patient, viral, fungal and bacterial co-infection leads to significantly raised of fatality rate. This literature included 32 adults confirmed COVID-19 infection with severe pneumonia or ARDS in a single-center. Among them, 6 patients with invasive pulmonary aspergillosis co-infection. Brief history and case presentation of two patient and additional clinical data were performed. We had discussed whether immunosuppressant such as Tocilizumab increased the risk of infection or increased risks of Invasive aspergillosis in COVID-19 patients.

Current data showed that there is no consensus in the link between Tocilizumab and secondary infection rate. More research might be needed to determine suitable time, dose and frequency of Tocilizumab to minimize potential harm.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC46

第二型糖尿病對於非結核分枝桿菌肺病之疾病病程的影響

劉家榮[1],黃虹綾[2,3,5], 李孟叡[6], 鄭孟軒[3,5], 盧柏樑[3,5], 王振源[6], 鍾飲文[3,4,5], 余忠仁[1,6]

新竹台大分院內科部 1, 大同醫院內科部 2, 高雄醫學大學附設中和紀念醫院內科部 3, 呼吸治療科 4, 高雄醫學大學臨床醫學研究所 5, 台大醫院內科部 6

The influence of type 2 diabetes mellitus on the risk of progression in nontuberculous mycobacterial lung disease

Chia-Jung Liu[1], Hung-Ling Huang[2,3,5],Meng-Rui Lee[6], Meng-Hsuan Cheng[3,5], Po-Liang Lu[3,5], Jann-Yuan Wang[6], Inn-Wen Chong[3,4,5], Chong-Jen Yu[1,6]

Department of Internal Medicine, National Taiwan University Hospital, Hsin-Chu Branch1, Department of Internal Medicine, Kaohsiung Municipal Ta-Tung Hospital2, Department of Internal Medicine3, Departments of Respiratory Therapy4, Kaohsiung Medical University Hospital, Graduate Institute of Medicine, College of Medicine, Kaohsiung Medical University5, Department of Internal Medicine, National Taiwan University Hospital, Taipei6

Purpose: It is well known that type 2 diabetes mellitus (DM) confers susceptibility and poor prognosis to tuberculosis (TB). Though nontuberculous mycobacteria (NTM) infection has a similar pathophysiology as TB, the impact of type 2 DM on the clinical course of NTM-lung disease (NTM-LD) remains unclear. Therefore, we conducted this retrospective cohort study to evaluate the influence of type 2 DM on the risk of progression in patients with NTM-LD.

Materials and Methods: Clinical characteristics, microbiological and radiographic outcome within one year for adult patients with NTM-LD diagnosed in six hospitals in Taiwan from January 2007 to December 2017 were obtained. The association between type 2 DM and NTM-LD progression within one year was investigated.

Results: Among 15,299 cases with respiratory NTM isolates, 563 patients with NTM-LD patients were enrolled. Of them, 95 (16.9%) patients had type 2 DM, and were older, more likely to be male, had a higher body-mass index, liver cirrhosis and chronic kidney disease, and less likely to have bronchiectasis. Progression of NTM-LD was less likely to occur in DM patients (33.7 % vs. 51.1 %, p=0.002), with an adjusted odds ratio of 0.30 (95% CI: 0.16–0.54) under multivariable logistic regression analysis. This association existed irrespective of glycemic control and metformin use.

Conclusions: Presence of type 2 DM was associated with a lower risk of NTM-LD progression regardless glycemic control and metformin use. This counterintuitive finding highlights the complex interaction between type 2 DM and NTM-LD. This could be an active area of future research.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC47

Cefoperazone-Sulbactam 與延長輸注 Piperacillin-Tazobactam 在治療院內肺炎及呼吸器相關肺炎的臨床效益比較：回朔性多中心研究

孫傳硯[1], 陳家弘[2], 涂志彥[2], 王耀東[3], 賴志政[4], 傅彬貴[5], 郭立國[6], 方文豐[7], 陳欽明[8], 古世基[9], 陳威志[1,10,11]

[1]臺北榮民總醫院胸腔部, [2]中國醫藥大學附設醫院, [3]中山醫學大學附設醫院, [4]高雄榮民總醫院台南分院, [5]台中榮民總醫院, [6]馬偕紀念醫院, [7]高雄長庚紀念醫院, [8]奇美醫院, [9]台大醫院, [10]陽明交通大學醫學系, [11]陽明交通大學急重症醫學研究所

Clinical Efficacy between Cefoperazone-Sulbactam and Prolonged Infusion of Piperacillin-Tazobactam in the Treatment of Hospital-Acquired Pneumonia and Ventilator-Associated Pneumonia: a retrospective multicenter cohort study

Chuan-Yen Sun[1], Chia-Hung Chen[2], Chih-Yen Tu[2], Yao-Tung Wang[3], Chih-Cheng Lai[4], Pin-Kuei Fu[5], Li-Kuo Kuo[6], Wen-Feng Fang[7], Chin-Ming Chen[8], Shih-Chi Ku[9], Wei-Chih Chen[1,10,11]

[1]Department of Chest Medicine, Taipei Veterans General Hospital, [2]China Medical University Hospital, [3]Chung Shan Medical University Hospital, [4]Kaoshiung Veterans General Hospital, Tainan Branch, [5]Taichung Veterans General Hospital, [6]Mackay Memorial Hospital, [7]Kaoshiung Chang Gung Memorial Hospital, [8]Chi Mei Medical Center, [9]National Taiwan University Hospital, [10]School of Medicine and [11]Institute of Emergency and Critical Care Medicine, College of Medicine, National Yang Ming Chiao Tung University

Purpose: To compare the clinical efficacy of Cefoperazone-sulbactam (CPZ-SBT) to that of prolonged infusion of piperacillin-tazobactam (PIP-TAZO) against hospital-acquired pneumonia (HAP) and ventilator-associated pneumonia (VAP).

Materials and Methods: This study extracted data from BATTLE study (The efficacy and safety of Brosym®). BATTLE study was conducted in nine hospitals in Taiwan from March 2018 to May 2019. We compared the clinical characteristics and outcomes of patients who received either CPZ-SBT or different administration strategy of PIP-TAZO for more than 5 days for HAP and VAP. The primary outcome was clinical cure rate.

Results: During the study period, 401 patients under the diagnosis of HAP/VAP were enrolled. Of these, 200 patients received CPZ-SBT, 185 patients received bolus PIP-TAZO and 16 patients received PIP-TAZO prolonged infusion. Patients who were under CPZ-SBT treatment had higher Charlson score and APACHE II score than both bolus PIP-TAZO and PIP-TAZO prolonged infusion groups. The clinical cure rate was 81% (CPZ-SBT), 80% (bolus PIP-TAZO) and 81.3% (PIP-TAZO prolonged infusion), respectively (p=0.967). In secondary outcomes, clinical effective rate was 81% (CPZ-SBT), 80.5% (bolus PIP-TAZO) and 81.3% (PIP-TAZO prolonged infusion) (p=0.992) and in-hospital mortality was 24.5% (CPZ-SBT), 21.1% (bolus PIP-TAZO) and 18.8% (PIP-TAZO prolonged infusion) (p=0.674), respectively. After adjusting disease severity by propensity score matching, the clinical outcomes remained unchanged.

Conclusions: The clinical efficacy of CPZ-SBT in the treatment of HAP and VAP was comparable to PIP-TAZO prolonged infusion.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC48

慢性麴菌感染進展至侵襲性麴菌感染之診斷挑戰：從一個重症病例進行文獻探討

莊子逸[1], 傅彬貴[2]

臺中榮民總醫院內科部[1]; 臺中榮民總醫院重症醫學部[2]

A diagnostic challenge of invasive pulmonary aspergillosis progression from chronic pulmonary aspergillosis- Literatures review from a critically ill patient

Tzu-I Chuang[1], Pin-Kuei Fu[2]

[1] Department of Internal Medicine, Taichung Veterans General Hospital, Taichung, Taiwan

[2] Department of Critical Care Medicine, Taichung Veterans General Hospital, Taichung, Taiwan

Purpose: Chronic pulmonary aspergillosis (CPA) is a progressive destructive disease of pulmonary parenchyma that often found in patients with structure lung diseases, such as bronchiectasis, cavitary lesion post tuberculosis infection or sarcoidosis. There three types of CPA according to image pattern, which are chronic cavitary pulmonary aspergillosis (CCPA), chronic fibrotic pulmonary aspergillosis (CFPA) and chronic narcotizing pulmonary aspergillosis (CNPA). Some patients with CPA will progress into invasive pulmonary aspergillosis (IPA) during relative immunosuppressive status, such as systemic steroid exposure, sepsis or septic shock due to bacterial or viral infection. Herein, we report a patient with a history of recent infection of pulmonary tuberculosis (TB) and presented as massive hemoptysis and acute respiratory failure.

Case report: A 64 y/o male, who has been diagnosed as pulmonary TB on March 2020 was admitted on the reason of recurrent hemoptysis for more than 1 month. The hemoptysis did not improve even after 4 days course of antibiotics and transamine acid intravenous treatment. He was intubated and experienced cardiopulmonary resuscitation for acute respiratory failure, unclear conscious and hypovolemic shock due to massive hemoptysis on the 5th hospital day. The patient was transferred to intensive care unit for intensive care. Chest tomography scan showed cavitary and consolidative lesions over bilateral upper lung field. CPA progressive into IPA was diagnosed in this patient according to positive results of Aspergillus DNA PCR test of transbronchial aspiration and bronchoalveolar lavage (BAL). The value of cycle threshold (Ct) of sputum sample was 30.04 and 28.91 from BAL sample. The aspergillus Galactomannan (GM) test in sputum was 0.451 and in BAL was 2.983. The Aspergillus IgG level in serum was 70. Voriconazole was prescribed for IPA in this patient on the 5th ICU date. The patient was extubated and weaned from ventilator after 7 days course voriconazole treatment.

Conclusion: In this case report, we will review the diagnostic tool of CPA and IPA. In addition, we will also compare the power of diagnostic tool and its cut-off value between CPA and IPA. Physicians should consider the diagnosis of CPA and IPA in patients presented with massive hemoptysis, especially in those with history of structure lung disease, such as pulmonary TB and bronchiectasis.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC49

重複感染在 COVID-19 重症病患之臨床重要性: 回溯性世代研究

胡耕寧[1], 阮聖元[1], 錢穎群[1], 郭律成[1], 黃俊凱[1],簡榮彥[1], 古世基[1]

國立臺灣大學醫學院附設醫院內科部胸腔內科[1]

Clinical significance of superinfection in critical COVID-19 patients: a retrospective cohort study

Geng-Ning Hu[1], Sheng-Yuan Ruan[1], Ying-Chun Chien[1], Lu-Cheng Kuo[1], Chun-Kai, Huang[1], Jung-Yien Chien[1], Shih-Chi Ku[1]

Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan [1]

Purpose: Coronavirus disease 2019 (COVID-19) pneumonia has resulted in numerous episodes of hypoxemic respiratory failure requiring mechanical ventilation during the pandemic. Previous data suggested that secondary infection played an important role on outcomes among the ventilated COVID-19 patients. However, geographical variation in infectious diseases has limited the generalizability of previous data. The epidemiology of secondary infection in COVID-19 in East Asia remain obscure. This study aimed to describe the epidemiology of microorganisms isolated from COVID-19 patients in the ICU.

Materials and Methods: This retrospective study included 89 patients with critical COVID-19 pneumonia requiring ICU admission in a medical center between March 1 2020 and July 31, 2021. All patients underwent protocolized microbiological examination after the ICU admission. We evaluated the incidence of secondary infection and its impact on patient outcomes.

Results: The median age of the study cohort was 67 [IQR, 60-75] years and the median length of stay in the ICU was 35.6 [IQR, 19-46] days.

The prevalence of at least one microorganism during ICU stay was 58.4% (52/89). According to sputum specimens, the most common pathogens were *Cytomegalovirus* (CMV) (the cumulative number was 11 (12.4%) during three weeks of mechanical ventilation), followed by*Staphylococcus aureus* (7.9%) and *Stenotrophomonas maltophilia* (7.9%). On the other hand, the most frequent microorganisms in blood specimens were *Aspergillus* (the cumulative number was 31 (34.8%) during three weeks of mechanical ventilation), followed by CMV (19.1%).

On adjusted analysis, within first week of mechanical ventilation, fungal microorganism in sputum specimens (OR, 11.167; 95% CI, 1.095-113.881; $p = 0.013$), and positive CMV PCR in blood specimens (OR, 26.8; 95% CI, 3.0-239.411; $p < 0.001$) were independently associated with ICU mortality. Furthermore, during first three weeks, fungal microorganism in sputum specimens (OR, 7.765; 95% CI, 1.311–46.003; $p = 0.01$), and gram negative bacterial microorganism in blood specimens (OR, 11.167; 95% CI, 1.095–113.881; $p = 0.013$) were independently associated with ICU mortality. In the patients who need mechanical ventilation, presence of Aspergillus antigen ($p = 0.05$) was independently associated with 90-day mortality.

Conclusions: Our data suggest an increased mortality among critical COVID-19 patients with positive microorganism isolation other than SARS-CoV-2. The findings also support the use of microbiological surveillance testing in patients with severe COVID-19 requiring ICU admission.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC50

一位有縱隔腔淋巴結腫大的類鼻疽病人

陳鼎翰[1]，陳傑龍[1]，鄭文建[1]，吳秉儒[1]，廖偉志[2]，陳家弘[1]，涂智彥[1]

[1]中國醫藥大學附設醫院胸腔暨重症系，[2]中國醫藥大學附設醫院高壓氧治療中心

Mediastinal lymphadenopathy in the patient with Melioidosis

Case Report

The 54-year-old male labor with a history of poor-controled diabetes mullitus was presented to our outpatient department because of intermittent fever for one week.

Two weeks ago, cough and whitish sputum developed. Then, he suffered from clow grade fever . There was no dyspnea, chest pain, cold sweating or body weight loss. He visited local medical department for admission under the diagnosis of pneumonia. After admission, he was received antibiotics treatment with Unasyn. However, persistent low grade fever with productive cough. Therefore, he discharge and admitted via our outpatient department. Chest X-ray revealed alveolar pattern in right upper lobe and right hilar enlargement. Levofloxacin was prescribed for suspected atypical pneumonia. However, delayed resolution of alveolar pattern was noted on chest X-ray. Then, the chest CT was done for suspected lung cancer. However, CT reported mediastinal lymphadenopathy. EBUS-TBNA was done for lymph node biopsy. Sputum culture and tissue culture were also collected. The pathological report showed no evidence of malignancy. But the culture yielded *Burkhloderiapseudomallei* . The antibiotics was then shifted to Ceftazidime. The fever and cough improved. The patient discharge under stable condition.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC51

非結核分枝桿菌肺病之菌株分型與疾病惡化風險研究

李昶慶[1]、潘聖衛[1,2]

[1]台北榮民總醫院胸腔部,[2]國立陽明大學醫學系,

Disease progression in different species of nontuberculous mycobacterial pulmonary disease

Chang-Ching Lee[1], Sheng-Wei Pan[1,2]

[1]Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan

[2]School of Medicine, National Yang-Ming University, Taipei, Taiwan

Purpose:

Nontubeculous mycobacterium (NTM), with at least 200 subspecies, lives in our environment numerously. Because of slow disease progression and low person-to-person transmission risk, the NTM infection is seldom emphasized. However, despite of many colonization, NTM infection can develop into NTM pulmonary disease (NTM-PD), of which incidence increases annually. When to treat, and how to treat NTM-PD are becoming important issues nowadays.

Previous studies often emphasize on the risk of NTM-PD in different NTM subspecies or on disease progression rate of single subspecies. Seldom studies compare disease progression risk between each subspecies. Thus, our retrospective observational study, enrolling all patients with positive NTM culture from 2016-2019, will analyze the disease progression risk factor between each subspecies. We hope that our result could help physician discuss with the patient and make more precise medical treatment.

Materials and Methods: This is a retrospective observational study, enrolling all patients with at least 2 sets respiratory samples positive for NTM culture from 2016-2019 at Taipei Veterans General Hospital. Subspecies analyses were done. According to ATS diagnostic criteria, we identified the patients who meets the NTM-PD criteria. Then, we followed those NTM-LD patients at least one year for image and clinical data to see whether the patient had disease progression. The definition of disease progression includes starting treatment within one year, new NTM-PD associated image findings, or increased radiographic score. We assessed disease progression in different species.

Results: We total enrolled 436 patients with 32.6%(N=142) M. avium complex, 18.6% (N=81) M. abscessus, 11% (N=48) M. gordonae. 91 patients were excluded for no particular subspecies identified. Preliminary data of some MAC and M.abscessus were analyzed. Of 24 patients analyzed, 45% (N=11) were M. Abscessus and 55% (N=13) were MAC. Among those M. abscessus patient, 54% (N=6) meets ATS criteria of NTM-PD, 16.67% (N=1) of which had disease progression in 1 year. Among those MAC patients, 84% (N=11) meets ATS criteria of NTM-PD, 45% (N=5) of which had disease progression in 1 year. Further analysis would be done.

Conclusions: According to preliminary data, MAC NTM-PD seems to be more likely to disease progression in 1 year. Early treatment of MAC NTM-PD should be considered. (Further analysis of all 436 patient would be done and the results might be different)

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC52

合併靜脈注射氟喹諾酮類抗生素能降低重症肺結核病人之死亡率

張旭良[1], 林佩珈[2], 倪詩婷[2], 蔡忠榮[3,4], 張維安[3,5], 陳煌麒[6], 林英琦[2], 許超群[3,5]

高雄市立大同醫院內科[1], 高雄醫學大學藥學系[2], 高雄醫學大學醫學系[3], 高雄市立旗津醫院內科[4], 高雄醫學大學附設醫院胸腔內科[5], 高雄市立小港醫院內科[6]

Combined treatment with intravenous fluoroquinolones reduces mortality in critically ill patients with pulmonary tuberculosis

Hsu-Liang Chang[1], Pei-Chia Lin[2], Shih-Ting Ni[2], Jong-Rung Tsai[3,4], Wei-Ann Chang[3,5], Huang-Chi Chen[6], Ying-Chi Lin[2], Chau-Chyun Sheu[3,5,]

Department of Internal Medicine[1], Kaohsiung Municipal Ta-Tung Hospital; School of Pharmacy[2], College of Pharmacy, Kaohsiung Medical University, Kaohsiung, Taiwan; School of Medicine[3], College of Medicine, , Kaohsiung Medical University, Kaohsiung, Taiwan; Department of Internal Medicine[4], Kaohsiung Municipal Cijin Hospital, Kaohsiung, Taiwan; Division of Pulmonary and Critical Care Medicine[5], Kaohsiung Medical University Hospital, Kaohsiung, Taiwan; Kaohsiung, Taiwan. Department of Internal Medicine[6], Kaohsiung Municipal Hsiao-Kang Hospital, Kaohsiung, Taiwan.

Purpose: Critically ill patients with pulmonary tuberculosis (TB) usually have unstable enteral absorption which may diminish the effect of first-line anti-TB medications. Combination therapy with intravenous fluoroquinolones (FQ) may increase change of successful treatment. FQ have been used for severe community-acquired pneumonia and have good in vitro and in vivo activity against *Mycobacterium tuberculosis*. The aim of this study was to investigate the effectiveness of combined intravenous FQ on mortality in ICU patients with pulmonary TB receiving anti-TB treatment.

Methods: We conducted a multicenter retrospective cohort study. Adult critically ill pulmonary TB patients receiving first-line anti-TB treatment within 2 weeks were included. Patients who received ≥3 days intravenous FQ were defined as FQ group. The primary endpoint was 30-day mortality. Propensity score (PS) matching with 1:1 was adopted to minimize potential bias related to the differences in disease severity and clinical characteristics between FQ and non-FQ groups.

Results: A total of 136 patients were enrolled, including 48 patients (34.5%) in the FQ group and 88 patients (64.7%) in the non-FQ group. After PS matching, there were 42 patients in each group. Mortality rates were significant lower in the FQ group than the non-FQ group in 30 days (21.4% vs. 50%, P = 0.012) and 90 days (40.5% vs. 59.5%, P = 0.012). In multivariable analysis, BMI (adjusted hazard ratio [aHR] 0.87, P = 0.008), APACHE II score (aHR 1.05, P = 0.039), and combination treatment with FQ (aHR 0.29, P = 0.002) were independently associated with increased 30-day mortality. When comparing different FQ, the mortality rate was lowest in patients receiving moxifloxacin (0/8, 0%), followed by levofloxacin (5/20, 25%), and ciprofloxacin (4/5, 80%).

Conclusions: Our study showed that combined treatment with intravenous FQ reduced mortality in critically ill patients with pulmonary tuberculosis.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC53

類固醇治療增加重症肺結核病人之死亡率：一多中心回溯性世代研究

陳煌麒[1], 倪詩婷[2], 林佩珈[2], 蔡忠榮[3,4], 張維安[3,5], 張旭良[6], 林英琦[2], 許超群[3,5]

高雄市立小港醫院內科[1], 高雄醫學大學藥學系[2], 高雄醫學大學醫學系[3], 高雄市立旗津醫院內科[4], 高雄醫學大學附設醫院胸腔內科[5], 高雄市立醫院大同內科[6]

Corticosteroid treatment increases hospital mortality in critically ill patients with pulmonary tuberculosis: a multicenter retrospective cohort study

Huang-Chi Chen [1], Shih-Ting Ni [2], Pei-Chia Lin [2], Jong-Rung Tsai[3,4], Wei-Ann Chang[3,5], Hsu-Liang Chang[6], Ying-Chi Lin[2], Chau-Chyun Sheu[3,5,]

Department of Internal Medicine[1], Kaohsiung Municipal Hsiao-Kang Hospital; School of Pharmacy[2], College of Pharmacy, Kaohsiung Medical University, Kaohsiung, Taiwan; School of Medicine[3], College of Medicine, , Kaohsiung Medical University, Kaohsiung, Taiwan; Department of Internal Medicine[4], Kaohsiung Municipal Cijin Hospital, Kaohsiung, Taiwan; Division of Pulmonary and Critical Care Medicine[5], Kaohsiung Medical University Hospital, Kaohsiung, Taiwan; Kaohsiung, Taiwan. Department of Internal Medicine[6], Kaohsiung Municipal Ta-Tung Hospital, Kaohsiung, Taiwan.

Purpose: Corticosteroid is commonly prescribed for ICU patients. Adjunctive corticosteroid therapy may provide survival benefits for patients with severe infectious diseases, including those with severe pneumonia or COVID-19. However the effects of corticosteroid therapy on severe pulmonary tuberculosis (TB) remains unclear. We conducted a multicenter retrospective cohort study to evaluate the effects of corticosteroid on hospital mortality in critically ill patients with pulmonary TB.

Methods: Consecutive adult critically ill patients with active pulmonary TB receiving anti-TB treatment within 2 months were included. Patients who received ≥3 days intravenous FQ were defined as FQ group. Early corticosteroid treatment was defined as receiving ≥ 200 mg hydrocortisone equivalent dose within 3 days after ICU admission. The primary endpoint was hospital mortality. We used propensity score (PS) matching to minimize potential bias related to the choice of corticosteroid treatment. The association between early corticosteroid treatment and hospital mortality was analyzed using multivariable logistic regression model.

Results: A total of 175 patients were enrolled. After PS matching, there were 58 patients in each group. The hospital mortality was 63.8% in patients with early corticosteroid treatment, compared to 48.3% in patients without ($P < 0.001$). In multivariate analysis, higher APACHE II score (OR 1.07, 95 % CI 1.01-1.14, $P = 0.023$), lower BMI (OR 0.79, $P < 0.001$), chronic liver disease (OR 4.00, $P = 0.049$), lower platelet counts (OR 1.00, $P = 0.046$), and early corticosteroid treatment (OR 4.53, 95% CI 1.82-11.25, $P = 0.001$) were associated with higher hospital mortality. There was a trend that the risk of hospital mortality increased with higher cumulative dose of corticosteroid treatment (OR 1.07, 95% CI 1.00-1.14, $P = 0.062$). The results were consistent across all subgroups.

Conclusions: Early corticosteroid treatment was associated with a significantly higher hospital mortality in critically ill pulmonary TB patients. Earlier treatment and higher dosing were associated with higher hospital mortality. We recommend that clinicians should be cautious when using corticosteroids in this patient population.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC54

論老虎黴素與阿米卡星於膿腫分枝桿菌肺部感染之治療預後

楊政晧[1],王秉槐[2], 潘聖衛[3,4], 魏裕峰[5], 陳崇裕[6,7], 李和昇[5], 樹金忠[7,8], 吳丁樹[1,]

林口長庚感染醫學科,亞東紀念醫院內科部, 陽明大學醫學系, 台北榮民總醫院胸腔內科部, 義大醫院內科部,台大醫院雲林分院內科部; 台灣大學醫學院

TREATMENT OUTCOME IN PATIENTS WITH MYCOBACTERIUM ABSCESSUS COMPLEX LUNG DISEASE: THE IMPACT OF TIGECYCLINE AND AMIKACIN

Jeng-How Yang[1], Ping-Huai Wang[2], Sheng-Wei Pan[3,4], Yu-Feng Wei[5], Chung-Yu Chen[6,7], Ho-Shen Lee[5], Chin-Chung Shu[7,8,*], Ting-Shu Wu[1,*]

[1]Division of Infectious diseases, Department of Internal Medicine, Chang Gung Memorial Hospital, Linkou Medical Center, Chang Gung University College of Medicine, No. 5, Fuxing St., Guishan Dist., Taoyuan City 33305, Taiwan, [2]Department of Internal Medicine, Far-Eastern Memorial Hospital, New Taipei city, Taiwan, [3]School of Medicine, National Yang-Ming University, Taipei, Taiwan, [4]Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan, [5]Department of Internal Medicine, E-Da Hospital, Kaohsiung city, Kaohsiung, Taiwan, [6]Department of Internal Medicine, National Taiwan University Hospital Yunlin Branch, Yunlin County, Taiwan, [7]College of Medicine, National Taiwan University, Taipei, Taiwan, [8]Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan

Background: The contemporary guideline has recommended multiple antimicrobial therapy along with oral macrolides for the treatment of *Mycobacterium abscessus* complex lung disease (MABC-LD). However, there is little evidence supporting the parenteral tigecycline-containing regimens against MABC-LD. Therefore, we conducted this study to evaluate the effect of intravenous tigecycline-containing regimens on treatment of MABC-LD.

Methods: A retrospective study was conducted from 6 medical centers. Patients with MABC-LD followed up at ≥ 12 months were enrolled. *Mycobacterium abscessus* subspecies were identified by *hsp65*, *rpoB*, *secA1* gene PCR and sequencing. Antimicrobial susceptibility was determined for 34 patients using broth microdilution methods following the Clinical and Laboratory Standards Institute (CLSI) guideline. The microbiology and treatment outcomes were defined as either success or failure. The impacts of tigecycline and amikacin were adjusted for age, comorbidities, surgical resection and radiologic scores.

Results: During the study period, seventy-one patients were enrolled for final analysis. The microbiology failure rate was 61% (43/71) and treatment failure rate was 62% (44/71). For *M. abscessus* complex, 97% (33/34) of tigecycline MIC were ≤ 1mg/L. Amikacin also demonstrated great susceptibility (94.1%; 32/34). Treatment with regimens containing tigecycline plus amikacin provided better microbiology success (adjusted OR 17.724; 95% CI 1.227–267.206) and treatment success (adjusted OR 14.085; 95% CI 1.103–166.667).

Conclusion: The outcome of MABC-LD is always unsatisfactory. Treatment regimens with oral macrolide in combination with tigecycline and amikacin were correlated with increased microbiology success and less treatment failure.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC55

單核球細胞 PD-L1 表現與活動性結核病臨床表現及治療反應相關性探討- 人體與動物研究

馮嘉毅[1,2*],潘聖衛[1,2,3], 樹金忠[4], 黃仲儒[1], 李昶慶[1], 曾彥寒[1,2], 陳念榮[5], 蘇維鈞[6], 陳育民[1,2]

台北榮民總醫院胸腔部, 國立陽明交通大學醫學系, 國立陽明交通大學公衛所, 國立台灣大學附設醫院內科部, 國立陽明交通大學微免所, 中國醫藥大學台北分院

PD-L1 expression in monocytes correlates with bacterial burden and treatment outcomes in active pulmonary tuberculosis- human and animal model

Jia-Yih Feng[1,2]*, Sheng-Wei Pan[1,2] Chin-Chung Shu3, Jhong-Ru Huang[1], Chang Ching Lee[1], Yen-Han Tseng[1,2], Nien-Jung Chen[4], Wei-Juin Su[5], Yuh-Min Chen[1,2]

[1]Department of Chest Medicine, Taipei Veterans General Hospital, [2]School of Medicine, National Yang Ming Chiao Tung University, [3]Department of Internal Medicine, National Taiwan University Hospital, [4]Institute of Microbiology and Immunology, School of Life Sciences, National Yang Ming Chiao Tung University, [5]Division of Chest Medicine, China Medical University Hospital, Taipei Branch

Purpose: This study aims to identify the role of PD-1/PD-L1 pathway activation in determining clinical characteristics and treatment outcomes in pulmonary tuberculosis (PTB) patients in human and animal model.

Materials and Methods: We prospectively enrolled PTB, latent TB infection (LTBI), and non-TB, non-LTBI subjects. Expression of PD-1 and PD-L1 on T cells and on monocytes of peripheral blood mononuclear cells (PBMCs) was measured in these subjects. Immunohistochemistry (IHC) and immunofluorescence (IF) were used to visualize PD-1- and PD-L1-expressing cells in lung tissues. The findings in humans were verified in THP-1 monocyte cell lines and mouse macrophages with *Mycobacterium tuberculosis* (MTB) related stimulation, and in mice with intratracheal injection of heat-killed MTB.

Results: A total of 76 PTB, 40 LTBI, and 28 non-TB, non-LTBI subjects were enrolled. The expression of PD-1 on CD4+ T cells and PD-L1 on CD14+ monocytes was significantly higher in PTB cases than non-TB subjects. PTB patients with positive smear and sputum smear/culture unconversion at 1 and 2 months displayed higher PD-L1 expression on monocytes before treatment initiation. IHC analysis demonstrated abundant PD-L1-expressing macrophages in lung tissues from PTB patients. In vitro MTB whole cell lysate/EsxA stimulation of THP-1 cells and mouse macrophages demonstrated increased PD-L1 expression, which can be down-regulated by co-treatment of NF-kB pathway inhibitor. IF analysis demonstrated co-localization of PD-L1 and macrophages were identified in lung tissues from mice with intratracheal injection of heat-killed MTB.

Conclusions: Increased expression of PD-L1 on monocytes in PTB patients correlated with bacterial burden and treatment outcomes. Cell and mice models confirm that MTB-related stimulation increased PD-L1 expression in macrophages. The findings suggest the involvement of the PD-1/PD-L1 pathway in MTB-related immune responses.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC56

手術切除後的分枝桿菌培養陰性肺肉芽腫可能不需常規使用抗結核藥物治療：一個回溯性全國多中心的世代研究

鐘哲良[1],黃偉彰[2], 黃虹綾[3,4], 覃俊士[2], 鄭孟軒[4], 李孟叡[5], 林聖皓[6], 王振源[5], 林慶雄[6], 鍾飲文[4], 施金元[5], 余忠仁[5]

員林基督教醫院內科部[1]，台中榮民總醫院胸腔內科[2]，高雄市立大同醫院內科部[3]，高雄醫學大學附設中和紀念醫院胸腔內科[4]，國立臺灣大學醫學院附設醫院內科部[5]，彰化基督教醫院胸腔內科[6]

Subsequent Antituberculous Treatment may not be Mandatory among Surgically Resected Culture-Negative Pulmonary Granulomas: a Retrospective Nationwide Multicenter Cohort Study in Taiwan

Che-Liang Chung[1], Wei-Chang Huang[2], Hung-Ling Huang[3,4], Chun-Shih Chin[2], Meng-Hsuan Cheng[4], Meng-Rui Lee[5], Sheng-Hao Lin[6], Jann-Yuan Wang[5], Ching-Hsiung Lin[6], Inn-Wen Chong[4], Jin-Yuan Shih[5], and Chong-Jen Yu[5]

Department of Internal Medicine, Yuanlin Christian Hospital, Taiwan[1], Division of Chest Medicine, Department of Internal Medicine, Taichung Veterans General Hospital, Taiwan[2], Department of Internal Medicine, Kaohsiung Municipal Ta-Tung Hospital, Taiwan[3], Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, Kaohsiung Medical University Hospital, Taiwan[4], Department of Internal Medicine, National Taiwan University Hospital, Taiwan[5], Division of Chest Medicine, Department of Internal Medicine, Changhua Christian Hospital, Taiwan[6]

Purpose: Histologic diagnosis of granuloma is often considered clinically equivalent to a definite diagnosis of pulmonary tuberculosis (TB) in Taiwan. Optimal management of surgically resected granulomatous inflammation in lung with negative mycobacterial culture results, however, remains unclear. We aim to investigate clinical outcome of this special but emerging clinical entity.

Materials and Methods: From seven medical institutions in northern, middle, and southern Taiwan between January 2010 and December 2018, patients whose surgically resected pulmonary nodule(s) had histological features suggestive of TB but negative microbiological study results and who received no subsequent anti-TB treatment were identified retrospectively. All patients were followed up for 2 years until death or active TB disease was diagnosed.

Results: A total of 116 patients were enrolled during the study period. Among them, sixty-one patients (52.6%) were clinically asymptomatic, and 36 (31.0%) patients were immunocompromised. Solitary pulmonary nodule accounted for 44 (39.6%) of all cases. The lung nodules were removed by wedge resection in 95 (81.9%), lobectomy in 17 (14.7%), and segmentectomy in 4 (3.4%) patients. The most common histological feature was granulomatous inflammation (n=116, 100%), followed by caseous necrosis (n=39, 33.6%). Tissue AFS showed positive results in 7 (6%) patients. During follow-up (218.4 patient-years), none of the patients developed active TB.

Conclusions: In patients with surgically resected culture-negative pulmonary granulomas, the incidence rate of subsequent active TB is low. Watchful monitoring along with regular clinical, radiological, and microbiological follow-up, instead of routine anti-TB therapy, may be considered.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC57

糖尿病嚴重度與 DPP4 抑制劑對於後續得到非結核分枝桿菌肺病的影響

樹金忠[1], 劉家榮[2], 陳光宏[1], 王雅蕙[3], 王誠一[3,4]

[1]台大醫院內科部, [2]台大醫院新竹分院, [3]耕莘醫院醫研部, [4]耕莘醫院內科部

The impact of diabetes severity and DPP4-inhibitor on the risk of nontuberculous mycobacterial lung disease

Chin-Chung Shu[1], Chia-Jung Liu[2], Kuang-Hung Chen[1], Ya-Hui Wang[3], Cheng-Yi Wang[3,4]

[1]Department of Internal Medicine, National Taiwan University Hospital; [2]National Taiwan University Hospital, Hsin-Chu Branch; [3]Department of Medical Research and [4]Internal Medicine, Cardinal Tien Hospital, Taiwan

Background: Diabetes mellitus (DM) is a prevalent disease and causes underlying immune dysfunction leading subsequent infectious disease. Concerning the increasing global burden of nontuberculous mycobacterial lung disease (NTM-LD), the impact of DM severity and the medications on NTM-LD was rarely investigated.

Methods: We retrospectively reviewed a 10-year database from a medical center in northern Taiwan. We identified DM by diagnosis and medications. We followed up the DM cohort and the outcome was defined as the occurrence of NTM-LD, which was defined by microbiologic criteria of American Thoracic Society. We reviewed the DM severity by adjusted DM complications severity score (aDCIS) and the medications. We analyzed the risk and association factors for NTM-LD in DM patients.

Results: We identified 11,698 DM patients and among them, 84 (0.72%) patients have subsequent NTM-LD in the average follow up of 2.4 years. The mean age was 67.8 years (SD=12.8 year), male gender accounted 58.2%, and aDCIS was 1.02±1.58. Patients with the occurrence of NTM-LD was older (72.4±12.8 vs 67.8±12.8 years, p=0.001), high underlying pulmonary disease (16.7% vs. 9.7%, p=0.040) and had lower aDCIS score (0.56±0.94 vs 1.02±1.59, p=0.008). In regard to the medications, the use of metformin did not significantly correlate with the occurrence of NTM-LD whereas the use of DPP4-inhibitor was associated with the lower risk of NTM-LD than non-user (0.91% vs 0.33%, p<0.0001). The crude relative risk (RR) for NTM-LD by DPP4-inhibitor was 0.33 (0.20-0.65). In multivariable Poisson regression, the adjusted relative risk (aRR) by DPP4-inhibitor was still significantly (0.39 [95% CI: 0.21-0.73]) after adjusted significant factors in univariable analysis. After stratified by aDCIS, the NTM-LD risk was particularly lower in DPP4-inhibitor users with low aDCIS (score 0, aRR: 0.29 [95%CI: 0.12-0.75]).

Conclusions: In this large-scale study, DM patients had high risk of subsequent occurrence of NTM-LD. The significant associated factors included old age, low aDCIS, presence of underlying pulmonary comorbidities and no use of DPP4 inhibitor. Interestingly, DPP4 inhibitor had more significant low aRR in zero aDCIS subpopulation, worthy further validation and investigation.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC58

支氣管壁增厚肋膜增厚胸部 X 光造影為偽氣胸結果為隱藏肺結核病灶

李瑞源 [1]

[1] 台中醫院

Peribronchial thickening, parietal pleural line superimposed in pulmonary hyperlucency back ground mimicking of pneumothorax obscured Pul-TB

Ruei Yuan Li[1]

[1]Ministry of Health and Welfare Taichung Hospital

Fungus influence on obstructive lung disease: case hint

Introduction: TB Cases imported were still common from abroad especially those as foreign migrant workers from Southeast Asia. Anti-epidemic policy should be accurately executed included microbiology and image two-pronged approach.

Materials and Methods: case brief summary

A 29-year-old man presented to the outpatient department with informed CXR abnormality for consultation. He denied any respiratory symptoms. Physical examination did not reveal any abnormality. Chest radiography showed a small lucent area with obviously abrupt curve line over the right upper thorax. The chest radiography report indicated a right pneumothorax; however, HRCT was subsequently performed days later. A sharp minor fissure pleural line over right thorax and multiple micro-nodules with tree-bud over the left upper lung. He underwent anti-tuberculous therapy.

Result: One abrupt minor fissure curved pleural line over right upper thorax and multiple micro-nodules with tree-bud over the left upper lung. He underwent anti-tuberculous therapy after image confirmation though 3- set sputum AFS smear and culture were negative.

Discussion: pneumothorax usually easily interpret from standing chest x ray with visible visceral pleural edge, sharp white line no lung markings are seen peripheral space is radiolucent compared to the adjacent lung e.tc. Whenever diagnosis is questionable .Advanced image modality such as HRCT is strongly recommend. Micro-nodules, large nodules and centri-lobular nodules were the most common HRCT findings in smear-negative TB. The most common HRCT findings are presented in. HRCT enables diagnosis of diffuse micro-nodular lung disease by appearing the distribution of micro-nodules in or around the secondary lobule. Centri-lobular branching linear structures, tree-in-bud appearance or macro-nodules were most commonly seen in cases of active disease. The lesions occurred in the apical or posterior segment of the upper lobes, the superior segment of the lower lobes in patients with smear-negative and culture-negative PTB sometime required tissue proved. Avoided misdiagnosis by the physicians ignored the details.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC59

粒線體游離 DNA 追蹤肺結核及區分非結核分枝桿菌的角色

蔡宗燁[1]、潘聖衛[1,2]、曾彥寒[1,2]、馮嘉毅[1,2]、陳育民[1,2]

[1]台北榮民總醫院胸腔部,[2]國立陽明交大醫學系

Mitochondrial Cell-free DNA in monitoring and differentiating PTB from NTM-LD.

Tsung-Yeh Tsai[1], Sheng-Wei Pan[1,2], Yen-Han Tseng[1,2],Jia-Yih Feng[1,2], Yuh-Min Chen[1,2]

[1]Taipei Veterans General Hospital,[2]National Yang Ming Chao Tung University, Taipei, Taiwan

Purpose: Both pulmonary tuberculosis (PTB) and non-tuberculous mycobacterial lung disease (NTM-LD) are chronic infectious disease and it is difficult to differentiate the two diagnosis at first glance. It has been reported that mitochondria cell free DNA (cfDNA) may elevate in patients with inflammatory disease. However, the values of mitochondria cfDNA in differentiating PTB from NTM-LD and its role in monitoring treatment response in PTB remains unclear.

Materials and Methods: This is a prospective study conducted at Taipei Veterans General Hospital. We enrolled adult patients with PTB and NTM-LD and extracted cfDNA from plasma in patients with PTB and NTM-LD. We measured the level of mitochondrial cfDNA and nuclear cfDNA through qPCR method targeting hMito and hB2M. We used student *t* test to compare with plasma cfDNA levels between patients with PTB and NTM-LD and paired *t* test to evaluate post-treatment changes of mitochondrial cfDNA in patients with PTB.

Results: We enrolled 93 PTB and 43 NTM-LD patients during 2018-2021. Patients with PTB were more male-predominant (59% vs 35%, p=0.010) and had a higher BMI (21.9 vs 19.7kg/m^2, p<0.001) but a relatively lower ratio of sputum-smear positivity (35% vs 53%, p=0.042) than NTM-LD patients. PTB patients had higher level of mitochondrial cfDNA (11.29±19.69 vs 4.96±8.16 [10^6-copy/ul], p=0.009) and nuclear cfDNA (118.5±330.7 vs 43.2±82.4 [10^3-copy/ul], p=0.042). Mitochondrial cfDNA level were associated with PTB diagnosis vs NTM-LD (Spearman's rho=0.181, p=0.035) but were not correlated with age, sex, BMI, smear-positivity and comorbidities and nuclear cfDNA levels. In a logistic analysis, mitochondrial cfDNA> 3.4 x10^6copies/ul-plasma was correlated to 2.57-fold increased possibility of PTB diagnosis vs NTM-LD (cured OR, 2.675 [95% CI, 1.193-5.537]; P = 0.016), but this is not significant for nuclear cfDNA and m/n ratio. After adjustment for male sex, BMI, and smear positivity, high level of mitochondrial cfDNA remained associated with the diagnosis of PTB (adjusted OR, 2.395 [1.032–5.559]; P = 0.042). For 53 PTB patients with follow-up data, mitochondrial cfDNA significantly declined 2 months after treatment (12.39±19.59 to 5.18±5.52 [10^6-copy/u l], p=0.008).

Conclusions: Mitochondrial cfDNAsignificantly elevated in PTB cases compared with NTM-LD patients and its level declined after 2-month treatment, suggesting its potential value in differentiating PTB from NTM-LD case and monitoring treatment response in PTB patients.

A. ☐原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. ☐口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC60

病例報告: 六十一歲短腸症男性診斷肺結核出現藥物吸受不良

高美士[1]

[1]亞東醫院

A case report : 61-male with short bowel syndrome, diagnosed with pulmonary tubercullosis, who had poor drug absorption

Felisbela Gomes[1]

[1]far Eastern Memorial Hospital

Abstract

Abdomen blunt or penetrating trauma may require massive bowel resection. Theremore, short bowel syndrome is a possible complication of massive bowel resection.

Short bowel syndrome may cause poor absorption including nutrition and drugs. The prevalent of Pulmonary tuberculosis in Taiwan is approximately 45.7people out of one hundred thousand in 2015. Pulmonary tuberculosis was standardly treated by oral form of a combination therapy HERZ therapy (combination of isoniazid, ethambutol, rifampin & pyrazinamide). Unfortunately. A patient with short bowel syndrome may compromised the absorption of HERZ therapy (a combination of isoniazid, ethambutol, rifampin & pyrazinamide).

Introduction

We describe a case of a 61-year-old Asian man with short bowel syndrome, who was diagnosed with pulmonary tuberculosis. HERZ therapy (a combination of isoniazid, ethambutol, rifampin & pyrazinamide) wer prescribed. Unfortunately, the drug was excreted from his jejunostomy in its origin form, malabsorption of anti-tubercullosis mycobacterium agent was noted. We then suggested him to take his medication before he go to sleep. We encouraged him to lay down immediately after taking his medication. No drugs was noted from his jejunostomy anymore and his clinical symptoms, showed improved.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC61

膿瘍分枝桿菌肺部疾病之針劑抗生素處方情形與臨床效果：一多中心研究

麗艾昕[1], 林淑文[1,2], 楊政皓[3], 王秉槐[4], 潘聖衛[5], 魏裕峰[6], 陳崇裕[7], 李和昇[6], 吳丁樹[3], 樹金忠[8]

[1]台大臨藥所, [2]台大癌醫藥劑部, [3]林口長庚內科部, [4]亞東醫院胸腔內科, [5]台北榮總胸腔部, [6]義大醫院內科部, [7]台大雲林分院內科部, [8]台大醫院內科部

The Adherence of Intravenous Antibiotic Regimens and Clinical Outcomes of *Mycobacterium abscessus* Complex Lung Diseases: a multicenter study

Ai-Hsin Pang[1], Shu-Wen Lin[1,2], Jeng-How Yang[3], Ping-Huai Wang[4], Sheng-Wei Pan[5], Yu-Feng Wei[6], Chung-Yu Chen[7], Ho-Shen Lee[6], Ting-Shu Wu[3], Chin-Chung Shu[8]

[1]Graduate Institute of Clinical Pharmacy, National Taiwan University, [2]Department of Pharmacy, National Taiwan University Cancer Center, [3]Department of Internal Medicine, Chang Gung Memorial Hospital, Linkou Medical Center, [4]Department of Internal Medicine, Far-Eastern Memorial Hospital, [5]Department of Chest Medicine, Taipei Veterans General Hospital, [6]Department of Internal Medicine, E-Da Hospital [7]Department of Internal Medicine, National Taiwan University Hospital Yunlin Branch, [8]Department of Internal Medicine, National Taiwan University Hospital

Purpose: Mycobacterium abscessus complex (MABC) is one of the most common pathogens responsible for nontuberculous mycobacterial lung disease in non-HIV hosts. Treatments of MABC lung diseases (MABC-LD) require a combination of at least 3 drugs including at least 1 intravenous (IV) agent as the initial phase. As current adherence as well as the importance of early using IV antibiotics according to guidelines of MABC-LD remain unknown, this study aimed to identify the use of IV antibiotic regimens of MABC-LD, and its association with clinical outcomes.

Methods: A retrospective cohort study was conducted in 6 hospitals in Taiwan. Patients diagnosed with and received treatment of MABC-LD during 2006 and 2020 were included. We excluded patients with treatment duration <14 days or with HIV. Treatment outcome was defined microbiological cure or clinical cure plus no more sputum positive for MABC.

Results: Thirty-four (38.2%) of the 89 enrolled patients had received IV agents in their treatment course. The median time to IV initiation was 1 day (IQR: 1-49), and 24 (70.6%) of them received IV agents within 4 weeks. Forty-two patients (47.2%) achieved modified microbiological cure. Early IV antibiotics use within 4 weeks was associated with better modified microbiological cure (adjusted odds ratio [aOR] 8.58, 95% CI: 2.31-31.86), whereas high radiological score (aOR 0.83, 95% CI: 0.70-0.98) and long treatment course (aOR 0.998, 95% CI: 0.996-0.999) were negatively associated with modified microbiological cure. The optimal cutoff value for initiation of IV antibiotics was 25 days by the method of ROC curve.

Conclusions: The ratio of IV antibiotic use was low, which was inconsistent with the ATS/IDSA recommendations. Low radiological score at presentation, and early initiation of IV antibiotics may improve the probability of cure. In the future, larger and prospective studies are needed to define a clearer association between patient characteristics, regimens, and treatment outcomes.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC62

Detection of active TB among contacts of MDR-TB patients in Quang Ninh

Kim-Chung Bui[1, 2], Thien – An Bui[2], xuan-chau – tang[2], Ming-Chih Yu[3], Chen-Yuan Chiang[3], Hua-Lun Wu [3], Ya-Chu Juang[3].

[1]Viet Nam, Quang Ninh Department of Health

[2]Quang Ninh Lung Hospital

[3]Taipei Municipal Wangfang Hospital

Purpose: Household contacts of tuberculosis cases were at high risk of infection of tuberculosis. In the low-income country context in VietNam, screening and management of latent tuberculosis infection (LTBI) among household contacts of tuberculosis patients was not routinely performed. A collaborative work between Wanfang hospital, and Quang Ninh Department of Health conducted an active screening by chest X-ray among contacts of multidrug-resistant tuberculosis patients. The objectives were to identify household contacts-related factors that were associated with time to TB-detected and suspected.

Methods: Data of patients admitted in Quang Ninh Lung hospital, a provincial specialized hospital, between 2019 and 2021 was combined with screening records from 293 household contacts in the study. Kaplan-Meier curves and log-rank tests were used to assess the risk of infection. Mixed-effects Cox proportional hazards modeling was used for multivariate analysis.

Results: The incidence rate of TB was 1/293, and of abnormal chest X-ray screening was 27/293. Infectious status relevanted to BMI, urban, KAP, socio-economic status and other factors.

Conclusion: A better understanding of the risk of infection among household contacts is necessary to improve
effectiveness to TB-case finding strategy.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC63

Statin 使用與活動性結核藥物治療時發生的肝炎風險: 一世代研究

黃俊凱[1,2], 樹金忠[1*], 王鶴健[1,3], 簡國龍[1,2]

[1] 國立臺灣大學醫學院附設醫院內科部, [2] 臺大公共衛生學院流行病學與預防醫學研究所, [3] 國立臺灣大學醫學院附設醫院癌醫中心分院

The Statin Use on the Risk of Anti-Tuberculosis Drug-Induced Hepatotoxicity among Patients with Active Tuberculosis: A Cohort Study

Chun-Kai Huang[1, 2], Chin-Chung Shu[1*], Hao-Chien Wang[1,3], Kuo-Liong Chien[1,2]

[1]Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan

[2] Institute of Epidemiology & Preventive Medicine, College of Public Health, National Taiwan University

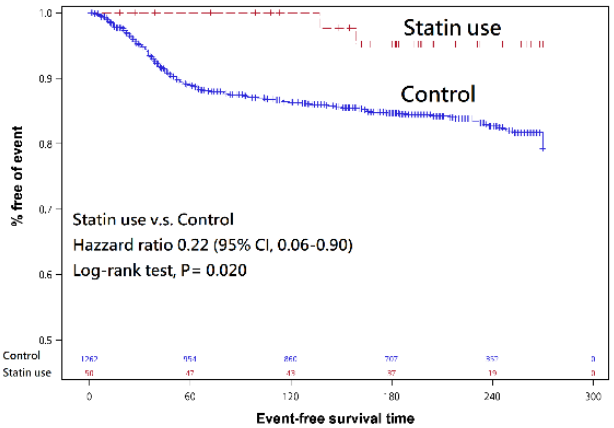
[3] The National Taiwan University Cancer Center

Background: Tuberculosis (TB) remains prevalent worldwide. During TB treatment, anti-tuberculosis drug is not uncommon to complicate with drug-induced hepatotoxicity. Statins have pleiotropic effects which may decrease inflammation and achieve immunomodulation. However, the pleiotropic effects of statins have scarcely studied on the impact for the risk of drug-induced hepatotoxicity during standard anti-TB treatmentfor active TB.

Purpose: To investigate whether statins prevent anti-tuberculosis drug-induced hepatotoxicity among active tuberculosis patients on standard anti-TB drug therapy

Materials and Methods: We conducted a hospital-based retrospective cohort study using the claims data from the Integrated Medical Database of National Taiwan University Hospital (NTUH-iMD). Patients with positive TB culture were included from 2008 to 2016. Use of statin was defined with a daily equivalent dose more than 0.5 mg of pitavastatin. Deterioration of liver function was evaluated by elevated liver function. The primary and secondary endpoint were three- and five-time upper limit normal (ULN) of liver enzymes. The prognostic value of statin was evaluated by Kaplan-Meier analysis, univariable and multivariable Cox proportional hazards model.

Results: A total of 1312 patients [37.9% women, mean age: 60.2 ± 19.4 years] with diagnosis of TB and receiving anti-tuberculosis treatment were included in this study. During cohort period, 185 patients had three times and 132 patients had five times ULN of liver enzyme. Kaplan-Meier analysis showed significant difference between statin group and control group (p=0.02) for hepatotoxicity. In multivariable Cox proportional hazards model, statin showed protective value against 3 times and 5 times ULN. Also, the protective effect of statin showed a dose-response relationship against hepatotoxicity (p=0.036 for 3 ULN).



Conclusions: Statin use showed protective value for decreasing risk of anti-tuberculosis drug-induced hepatotoxicity with positive dose-response relationship and was the only significant and adjustable predictor for hepatotoxicity events.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC64

曾接受診斷性組織切片之肺結核確診病人的組織病理型態及結核菌培養分析

王恭仰[1],簡榮彥[1],薛博仁[1],余忠仁[1]

臺大醫院內科部[1]

The histopathology finding and tissue mycobacterial culture results among pulmonary tuberculosis with tissue biopsy for diagnosis

Kung-Yang Wang[1], Jung-Yien Chien[1], Po-Ren Hsueh[1], Chong-Jen Yu[1]

Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan[1]

Abstract

Background: Taiwan, an endemic area of tuberculosis, where many patients presented as pulmonary disease. As sputum smear and mycobacterial culture do not always yield positive results, biopsy for tissue proof plays a vital role in diagnosis.

Material and Method: We retrospectively reviewed the histopathology findings and mycobacterial culture results from patients with pulmonary tuberculosis who had received tissue biopsy for diagnosis before treatment in NTUH.

Results:During 2015 – 2019, a total of 264 pulmonary TB patients who had received tissue biopsy for diagnosis before treatment were enrolled. Among those, 214 cases have tissue mycobacterial culture results (48 were extrapulmonary and 166 were lung tissue). The TB culture positive rate of tissue were 72.2%(26 of 36 cases), 48.7%(38 of 78 cases), 12.5%(2 of 16 cases) and 33.3%(12 of 36 cases) in tissue taken by bronchoscopy biopsy, surgical biopsy, CT-guided biopsy and echo-guided biopsy, respectively($p < 0.01$).

The percentage of caseating granulomatous inflammation or caseous necrosis were 27.7%(10 of 36 cases), 53.8%(42 of 78 cases), 43.8%(7 of 16 cases) and 27.7%(10 of 36 cases) in tissue taken by bronchoscopy biopsy, surgical biopsy, CT-guided biopsy and echo-guided biopsy, respectively ($p = 0.0147$).

The TB culture positive rate of caseating granulomatous inflammation or caseous necrosis were 40.6%(28 of 69 cases) in all methods of lung biopsy, 47.9%(35 of 73 cases) in non-caseating granulomatous inflammation or other pathological description cases, and 62.5%(15 of 24 cases) in cases described as mycobacterial infection in the pathology report($p=0.175$).

Conclusion: Compared to tissue from surgical biopsy, CT-guided biopsy and echo-guided biopsy, we found the tissue from bronchoscopy biopsy had higher TB culture positive rate in patients with pulmonary tuberculosis.

Comparing tissues from caseating granulomatous inflammation or caseous necrosis, non-caseating granulomatous inflammation or other pathological description, and cases described as mycobacterial infection in the pathology report, we found the tissues of different types of pathological description do not have significant different TB culture positive rate in patients with pulmonary tuberculosis.

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