2022

台灣胸腔暨重症加護醫學會年會

暨第18屆第3次會員大會

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

2022 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

Dec. 10-11

高雄萬豪酒店8F

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[6-7]

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

1. Ortega HG et al. N engl J Med 2014; 371:1198-1207. **2.** Chupp GL et al. Lancet Respir Med 2017; 5:390-400. **3.** Albers FC et al. Durability of clinical response following long-term treatment with mepolizumab in patients with severe eosinophilic asthma: the COLUMBA study. Poster presented at ATS 2018. **4.** GSK Data on file: Overview of Exacerbation Rates: MEA115666 (COLIMBA) and MEA112997 (DREAM). (DNG#:2018N374408_0). **5.** Ortega HG et al. Lancet Respir Med 2016; 4:549-556. **6.** Bel EH et al. N Engl J Med 2014; 371:1189-1197. **7.** Lugogo N et al. Clin Ther 2016; 38:2058-2070. **8.** Taiwan Nucala Full PI, TW03

9. Taiwan Nucala solution for injection Full PI, TW01

舒肺樂凍晶注射劑簡易仿單

衛部菌疫輸字第001015號　號衛部菌疫輸字第001144號

•許可證字號：衛部菌疫輸字第001015號 •英文產品名稱：NUCALA Powder for Solution for Injection •活性成份學名：Mepolizumab •適應症或用途：•表現型為嗜伊紅性白血球的嚴重氣喘且控制不良(severe refractory eosinophilic asthma)之6歲以上病人之附加維持治療。指已使用高劑量吸入性皮質類固醇及另一種控制藥物(controller)，例如長效beta2 致效劑(long-acting beta2 agonists)仍控制不良的嚴重嗜伊紅性白血球氣喘。•治療嗜伊紅性肉芽腫併多發性血管炎[eosinophilic granulomatosis with polyangiitis (EGPA)]之成人病人。 •劑量與用法：•Nucala僅供皮下(SC)注射使用。嚴重氣喘：•12 歲以上之青少年及成人的NUCALA 建議劑量為每4 週一次於上臂、大腿或腹部皮下注射100 毫克。•6 歲至11 歲之兒童的NUCALA 建議劑量為每4 週一次於上臂、大腿或腹部皮下注射40毫克。嗜伊紅性肉芽腫併多發性血管炎•NUCALA 的成人建議劑量為每4 週一次以皮下注射300 毫克，以每次100 毫克之注射量分3 次注射於上臂、大腿或腹部。•若想施打於相同部位，建議各 100 毫克注射量之施打位置需至少間隔 5 公分(約 2 英吋)。 •禁忌症：•Nucala不可用於曾對mepolizumab或配方中之賦形劑產生過敏反應的病人。•Nucala 不可使用於緩解急性支氣管痙攣或氣喘重積狀態(status asthmaticus)。•Nucala 不可使用於治療急性氣喘惡化(exacerbations) •警語及注意事項：• 過敏反應• 急性氣喘症狀或惡化性疾病• 伺機性感染：帶狀皰疹• 降低皮質類固醇的劑量• 寄生蟲(蠕蟲)感染 •不良反應：• 過敏反應• 伺機性感染：帶狀皰疹•頭痛•注射部位反應•背痛•疲倦•流行性感冒•尿道感染•上腹痛•搔癢•濕疹•肌肉痙攣 •不良事件通報程序：若有不良事件可通報至葛蘭素史克藥廠; 通報電話: (02) 23126836, 通報網址: oax40892@gsk.com •公司名稱：荷商葛蘭素史克藥廠(股)台灣分公司 •公司地址：台北市忠孝西路一段66號24樓 •(製明)：詳細處方資訊備索 •參考仿單版本編號：TW03 (USPI201909) 發佈日期：2019 年12 月

舒肺樂注射劑100 毫克/毫升簡易仿單

•許可證字號：衛部菌疫輸字第001015號 •英文產品名稱：NUCALA Solution for Injection 100mg/mL •活性成份學名：Mepolizumab •適應症或用途：嚴重氣喘之維持治療：表現型為嗜伊紅性白血球的嚴重氣喘且控制不良(severe refractory eosinophilic asthma)之12歲以上病人之附加維持治療。2. 嗜伊紅性肉芽腫併多發性血管炎：治療嗜伊紅性肉芽腫併多發性血管炎(eosinophilic granulomatosis with polyangiitis (EGPA))之成人病人。 •劑量與用法：NUCALA僅供皮下(SC)注射使用。嚴重氣喘：12 歲以上之青少年及成人的NUCALA 建議劑量為每4週一次於上臂、大腿或腹部皮下注射100毫克。嗜伊紅性肉芽腫併多發性血管炎：NUCALA的成人建議劑量為每4週一次以皮下注射300毫克，以每次100毫克之注射量分3次注射於上臂、大腿或腹部。 •禁忌症：NUCALA不可用於曾對mepolizumab或配方中之賦形劑產生過敏反應的病人。 •警語及注意事項：• 過敏反應 • • 急性氣喘症狀或惡化性疾病 • • 伺機性感染：帶狀皰疹 • • 降低皮質類固醇的劑量 • • 寄生蟲(蠕蟲)感染 •不良反應：• 過敏反應：曾有在投予NUCALA之後發生過敏反應(如全身性過敏反應、血管性水腫、支氣管痙攣、低血壓、蕁麻疹、皮疹)的報告。這些反應通常都是在投藥後數小時內發生，但有些病例會延遲發生(即數日後才發生)。• 伺機性感染：帶狀皰疹•肌肉痙攣 •不良事件通報程序：若有不良事件可通報至葛蘭素史克藥廠; 通報電話: (02) 23126836, 通報網址: oax40892@gsk.com •公司名稱：荷商葛蘭素史克藥廠(股)台灣分公司 •公司地址：台北市忠孝西路一段66號24樓 •(製明)：詳細處方資訊備索 •參考仿單版本編號：TW01 (USPI201909)

北市衛藥廣字第110090001號

PM-TW-MPL-ADVT-210001
Date of preparation: 2021.09.07

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08:00	**Registration**					
08:40 - 09:20	Allergic rhinitis, CRSwNPs and asthma: Pathophysiological relationship and implication for treatment. Speaker: **Prof. Oscar Palomares Gracia** Moderator: **鍾飲文** 院長 (Inn-Wen Chong, M.D., Ph.D.)	ILD in Taiwan : From NICEFIT to NICEFIT-ON Speaker: **鄭世隆** 教授 Moderator: **林孟志** 教授	台灣胸腔外科醫學會 Is Segmentectomy a Rewarding, Function-Preserving Surgery for Small-sized Non-small Cell Lung Cancer? Based Upon The Results of JCOG 0802 Trial Speaker: **Dr. Hisao Asamura** Moderator: **周世華** 主任、**趙盈凱** 主任	Implementing therapeutic drug monitoring in TB treatment Speaker: **李枝新** 主任 Moderator: **黃伊文** 教授	Oral Appliance Therapy for OSA: State of the Art Speaker: **Prof. Peter Cistulli** Moderator: **陳寧宏** 教授 (Ning-Hung Chen, M.D., Ph.D.)	
09:20 - 10:00	Maximizing inhaled therapy in asthma – the role of single inhaler triple combinations Speaker: **Prof. Richard Van Zyl Smit** Moderator: **彭殿王** 教授 (Diahn-Warng Perng, M.D., Ph.D.)	An update on hypersensitivity pneumonitis Speaker: **郭炳宏** 教授 Moderator: **林慶雄** 副院長	台灣胸腔外科醫學會 09:20-09:40 Perioperative Mortality and Morbidity after Sublobar vs Lobar Resection for Clinical Stage IA NSCLC 2 cm or Less in size Speaker: **Dr. Nasser Altorki** Moderator: **陳晉興** 理事長、**徐中平** 教授 09:40-10:00 Panel discussion	Recent advances in LTBI regimen Speaker: **黃虹綾** 醫師 Moderator: **曹昌堯** 教授	Obstructive Sleep Apnea Endotypes Speaker: **Prof. Wellman** Moderator: **杭良文** 教授 (Liang-Wen Hang, M.D., Ph.D.)	Young Investigator Moderator: **李毓芹** 院長 **林孟志** 教授
10:00 - 10:30	**Coffee break**					
10:30 - 11:10	Turning a Challenge into an Opportunity: Delivering High Value Care for COPD in a Real-World Setting Speaker: **林慶雄** 副院長 Moderator: **余忠仁** 院長 **鄭世隆** 教授	The implications of Taiwanese Researches in ILD Speaker: **柯信國** 主任 Moderator: **彭殿王** 教授	台灣胸腔外科醫學會 10:00-10:20 Neoadjuvant Durvalumab With or Without SBRT for Early Stage Lung Cancer Speaker: **Dr. Nasser Altorki** Moderator: **陳晉興** 理事長、**徐中平** 教授 10:20-11:00 Emerging role of immunotherapy in treatment with resected NSCLC Speaker: **Dr. Sung Yong Lee** Moderator: **許瀚水** 教授、**鄭清源** 院長 11:00-11:20 Panel discussion	Thoracic Oncology、Intervention Bronchoscopy、Diagnosis **Oral Presentation** Moderator: **王金洲** 教授 **夏德椿** 副教授 **何肇基** 教授	Airway Disease、Sleep Medicine、Interstitial Lung Disease、Other **Oral Presentation** Moderator: **陳寧宏** 教授 **黃明賢** 副院長 **黃崇旂** 教授	Respiratory Tract Infections、Critical Care Medicine、Tuberculosis **Oral Presentation** Moderator: **曹昌堯** 教授 **吳杰亮** 副院長 **陽光耀** 教授
11:10 - 11:50	The evolving concept of clinical remission in severe asthma, where are we now? Speaker: **Prof. Flavia Hoyte** Moderator: **徐武輝** 副院長 (Wu-Huei Hsu, M.D.)	Management of post-COVID-19 ILD/IPF in Japan - What is the impact of the COVID-19 pandemic on the practice of interstitial lung disease? Speaker: **小倉高志** 教授 Moderator: **王鶴健** 理事長 (Hao-Chien Wang, M.D., Ph.D.)	台灣胸腔外科醫學會 11:20-11:40 The role of immunotherapy in the perioperative period in early stage NSCLC patients Speaker: **邱昭華** 副院長 Moderator: **黃文傑** 主任、**黃建勝** 醫師 11:40-12:00 Prevention and management of TKI induced skin toxicities. Speaker: **盧俊瑋** 醫師 Moderator: **吳怡成** 主任、**林巧峯** 副教授			
12:00 - 13:10		Airway Disease 友華生技醫藥股份有限公司 Diagnosing COPD and Asthma by Machine Learning Algorithm Speaker: **黃建文** 主任秘書 Moderator: **王鶴健** 理事長 Evidences and Clinical Benefits of Extrafine Triple Combination Treating Asthmatic Patients Speaker: **莊立邦** 主任 Moderator: **鄭世隆** 主任	Airway Disease 臺灣阿斯特捷利康股份有限公司 Insights from GINA & SABINA: Treatment strategy to minimize asthma potential risk factors Speaker: **潘奕宏** 醫師 Moderator: **余忠仁** 院長 Insights from real world clinical experience: Addressing the unmet needs of COPD patients Speaker: **林聖皓** 主任 Moderator: **林慶雄** 副院長	Airway Disease 荷商葛蘭素史克藥廠股份有限公司台灣分公司 From evidence to clinical benefit: What does the latest GOLD guideline tell us? Speaker: **陳家弘** 醫師 Moderator: **林恕民** 主任	PHTN、Airway Disease 暉致醫藥股份有限公司 Insights of 2022 ESC/ERS Guidelines for the diagnosis and treatment of pulmonary hypertension Speaker: **郭炳宏** 教授 Moderator: **徐紹勛** 主任 One airway one disease: Allergy Rhinitis and its impacts on Asthma Speaker: **蘇茂昌** 醫師 Moderator: **林孟志** 教授	Respiratory Tract Infections 太景生物科技股份有限公司 The efficacy and safety of Nemonoxacin in the treatment of community-acquired pneumonia Speaker: **鄭世隆** 主任 Moderator: **高國晉** 教授 Nemonoxacin for CAP Concerns beyond Clinical Efficacy and Safety Speaker: **薛博仁** 副院長 Moderator: **徐武輝** 副院長
13:30 - 14:30	**會員大會，頒發專科醫師證書，頒發胸腔指導醫師證書 (萬享宴會廳 A)**					
14:40 - 15:20		Trend of molecular diagnostic techniques and novel antibiotic agent in HAP/VAP management Speaker: **Prof. George Dimopoulos** Moderator: **王鶴健** 理事長 (Hao-Chien Wang, M.D., Ph.D.) **高國晉** 教授 (Kuo-Chin Kao, M.D., Ph.D.)	台灣胸腔外科醫學會 14:40-15:00 Proton therapy for lung cancer Speaker: **王俊傑** 部主任 Moderator: **謝明儒** 主任、**黃敘愷** 副院長 15:00-15:20 Thoracic Stereotactic Ablative Radiotherapy for Lung Cancer Speaker: **許峯銘** 醫師 Moderator: **方信元** 主任、**吳玉琮** 副院長	Optimizing the diagnostic algorithm for CPA in Taiwan: what are the unresolved issues? Speaker: **阮聖元** 醫師 Moderator: **鍾飲文** 院長	What we know and don't know about smoking cessation Speaker: **蘇一峰** 醫師 Moderator: **許超群** 教授	2022 ESC/ERS CTEPH Guidelines updates and implications to clinical practice Speaker: **Prof. Marion Delcroix** Moderator: **陳晉興** 副院長 (Jin-Shing Chen, M.D., Ph.D.) **徐紹勛** 教授 (Hsao-Hsun Hsu, M.D., Ph.D.)
15:20 - 15:50	**Coffee break**					
15:50 - 16:30		Asthma in the world: What are we learning from ISAAC and the Global Asthma Network (GAN)? Speaker: **Prof. Emeritus Innes Asher** Moderator: **楊泮池** 院士 (Pan-Chyr Yang, M.D., Ph.D.) **李岡遠** 副院長 (Kang-Yun Lee, M.D., Ph.D.)	台灣胸腔外科醫學會 15:20-16:00 Adjuvant and neoadjuvant therapy for NSCLC Speaker: **楊志新** 院長 Moderator: **王鶴健** 理事長、**陳晉興** 理事長 16:00-16:40 Is There a Role for Surgery in Stage III NSCLC in The Era of the PACIFIC Trial, Using Concurrent Chemoradiotherapy Followed by Maintenance Durvalumab? Speaker: **Dr. Miklos Pless** Moderator: **林孟暐** 醫師、**徐博奎** 醫師	Understanding the burden of NTM-LD in Taiwan: what kinds of research are still lacking? Speaker: **黃偉彰** 醫師 Moderator: **林恒毅** 院長	Occupational cancer: From asbestos exposure to malignant mesothelioma Speaker: **王金洲** 教授 Moderator: **黃明賢** 副院長	2022 ESC/ERS PAH Guidelines updates and implications to clinical practice Speaker: **Prof. Marius M. Hoeper** Moderator: **徐紹勛** 教授 (Hsao-Hsun Hsu, M.D., Ph.D.)
16:40 - 18:00		Airway Disease 荷商葛蘭素史克藥廠股份有限公司台灣分公司 Effectiveness and Safety of Mepolizumab for Severe Eosinophilic Asthma in Real-World Study Speaker: **曾敬閔** 醫師 Moderator: **郭炳宏** 教授	Thoracic Oncology 台灣必治妥施貴寶股份有限公司 台灣小野藥品工業股份有限公司 Combination Therapy With Immune Checkpoint Inhibitors in NSCLC: subgroup-analysis of brain metastases Speaker: **蕭世欣** 主任 Moderator: **洪仁宇** 副院長 Real world outcome of dual IO in patients with metastatic NSCLC Speaker: **孟繁俊** 醫師 Moderator: **何肇基** 教授	Thoracic Oncology、Airway Disease 台灣百靈佳殷格翰 (股) 公司 Conquer the complexity and challenge of EGFRm+ NSCLC: Recent Evidences in Routine Clinical Practice Populations Speaker: **楊志仁** 主任 Moderator: **鍾飲文** 院長 The role of COPD management today: Made-to-measure or one-size-fits-all? Speaker: **潘奕宏** 醫師 Moderator: **杭良文** 主任	Respiratory Tract Infections 輝瑞大藥廠股份有限公司 Pneumococcal Vaccines: clinical evidence of efficacy and recommendation Speaker: **傅彬貴** 主任 Moderator: **古世基** 主任	Thoracic Oncology 嬌生股份有限公司 Integrating amivantamab into the treatment of EGFR exon 20 insertion mutations Speaker: **蔡俊明** 教授 Moderator: **施金元** 教授 Clinical management of infusion reactions to systemic anticancer therapy Speaker: **林彥廷** 醫師 Moderator: **施金元** 教授
18:30 - 20:00	**大會晚宴 - 頒發胸腔醫學雜誌優秀論文獎、頒發 Young Investigator Award、頒發口頭報告、海報展示優秀論文獎以及年輕醫師研究潛力獎 (萬享宴會廳 A)**					

12 / 11 (Sun) 請點選議程各欄前往連結頁面

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07:20 08:30		Interstitial Lung Disease 台灣百靈佳殷格翰（股）公司 What's new in the management of IPF Speaker: 陳彥甫 醫師 Moderator: 鄭世隆 主任 Management of Pulmonary Fibrosis: What Now? Speaker: Prof. Martin Kolb Moderator: 王鶴健 理事長 (Hao-Chien Wang, M.D., Ph.D.)				
08:00	Registration					
08:40 09:20	Perspectives of Anti-viral Therapy and Vaccination Strategy for COVID-19 Speaker: 盛望徽 教授 Moderator: 高國晉 教授	The Impact of Covid-19 on Lung Cancer Patients Care Speaker: 陳冠宇 醫師 Moderator: 何肇基 教授	台灣胸腔外科醫學會 How to enhance the efficacy of EGFR TKI in advanced NSCLC harbored susceptible EGFR mutation Speaker: 楊志仁 主任 Moderator: 賴吾為 教授 湯恩魁 主任		Application of PDT for the treatment of malignant pleural effusion Speaker: 王洪武 教授 (Hong-Wu Wang, M.D., Ph.D.) Moderator: 涂智彥 教授 (Chih-Yen Tu, M.D., Ph.D.)	台灣胸腔及心臟血管外科學會 08:40-09:00 The current status of stage 3A non-small cell lung cancer therapy: Taiwan cancer registration data Speaker: 王秉彥 主任 Moderator: 夏君毅 主任、鄭清源 院長 09:00-09:20 Evolving Treatment Paradigms for Stage III NSCLC Speaker: 蔡鎮良 主任 Moderator: 禚靖 副院長、徐博奎 教授
09:20 10:00	新冠肺炎的中西醫整合治療：理論與實證基礎 Speaker: 黃澤宏 主任 Moderator: 陽光耀 教授	Emerging Role for Antibody-Drug Conjugates in NSCLC Speaker: 林建中 教授 Moderator: 陳育民 教授	台灣胸腔外科醫學會 Clinical consideration and management of atezolizumab as adjuvant therapy in resectable NSCLC Speaker: Dr. Jay M. Lee Moderator: 許瀚水 教授 莊政諺 主任	08:30 參賽隊伍開始報到 09:20-11:10 TSTCCM 胸重年會 擂台賽 2022	EBUS-TBNA for lung cancer staging: diagnostic & prognostic impact Speaker: Prof. Bin Hwangbo Moderator: 何肇基 教授 (Chao-Chi Ho, M.D., Ph.D.)	台灣胸腔及心臟血管外科學會 09:20-10:00 Robotic Bronchoscopy for Peripheral Pulmonary Lesions (BENEFIT study) Speaker: Dr. Alexander Chen Moderator: 曾堯麟 理事長、李章銘 主任、方信元 副院長
10:00 10:30	Coffee break				Coffee break	
10:30 11:10	Management of severe and critical COVID-19 pneumonia and outcomes of critically ill patients during the first wave outbreak of Taiwan in 2021 Speaker: 呂紹煒 醫師 Moderator: 黃崇旂 教授	TKIs use in operable mutations (+) lung cancer: neo-adjuvant or adjuvant Speaker: 蔡俊明 教授 Moderator: 施金元 教授	台灣胸腔外科醫學會 Pave the Way to Cure: Current Status of IO in Early Stage NSCLC Speaker: 李岡遠 副院長 Moderator: 郭光泰 主任 王秉彥 主任		10:50-11:50 A Journey Beyond Speaker: 吳文碩 醫師 Moderator: 鍾飲文 院長 Studying abroad and industry experience: career exploration of a pulmonologist Speaker: 黃萬均 醫師 Moderator: 蔡明儒 醫師	台灣胸腔及心臟血管外科學會 10:30-10:50 Minimally Invasive Repair for Pectus Excavatum: Seventeen-year Experience Speaker: 程建博 醫師 Moderator: 黃文傑 主任、趙盈凱 主任 10:50-11:10 Personal experience in Minimally Invasive Repair of Pectus Excavatum (MIRPE; Nuss procedure) Speaker: 朱志純 醫師 Moderator: 莊政諺 主任、黃敍愷 副院長
11:10 11:50	The diagnosis, treatment and outcome of Long COVID syndrome Speaker: 張厚台 主任 Moderator: 林恒毅 院長	New Classes of Immunotherapies in Lung Cancer – Emerging Options and Models Speaker: Dr. Darren Lim Moderator: 賴俊良 副院長 (Chun-Liang Lai, M.D., Ph.D.)	台灣胸腔外科醫學會 Pathological Changes of Lung Cancer after EGFR-TKI Therapy Speaker: 謝明書 主任 Moderator: 黃培銘 副教授 呂宏益 主任			台灣胸腔及心臟血管外科學會 11:10-11:30 AI image study：Lung Cancer Speaker: 林孟暐 醫師 Moderator: 吳玉琮 副院長、馮瑤 主任 11:30-11:50 AI imaging study of anterior mediastinal tumors Speaker: 張超群 醫師 Moderator: 湯恩魁 主任、郭光泰 主任
12:00 13:10		Thoracic Oncology 美商默沙東藥廠股份有限公司台灣分公司 Deep dive into the evidence of immunotherapy: Year review of the updated data from pembrolizumab Speaker: 楊景堯 醫師 Moderator: 張基晟 副校長	Critical Care Medicine 香港商吉立亞醫藥有限公司台灣分公司 Treatment role of Remdesivir to management of COVID-19 Speaker: 胡漢忠 醫師 Moderator: 高國晉 教授		Airway Disease 荷商葛蘭素史克藥廠股份有限公司台灣分公司 The role of triple therapy in asthma management: Who & When Speaker: 潘奕宏 醫師 Moderator: 彭殿王 教授	Thoracic Oncology 因美納台灣生物科技股份有限公司 Next-generation Sequencing in Advanced Non-small Cell Lung Cancer: Evidences from Illumina TSO500 Speaker: 林彥廷 醫師 Moderator: 施金元 教授

☐ 兩天皆行駛，其它時間僅12/10(六)行駛

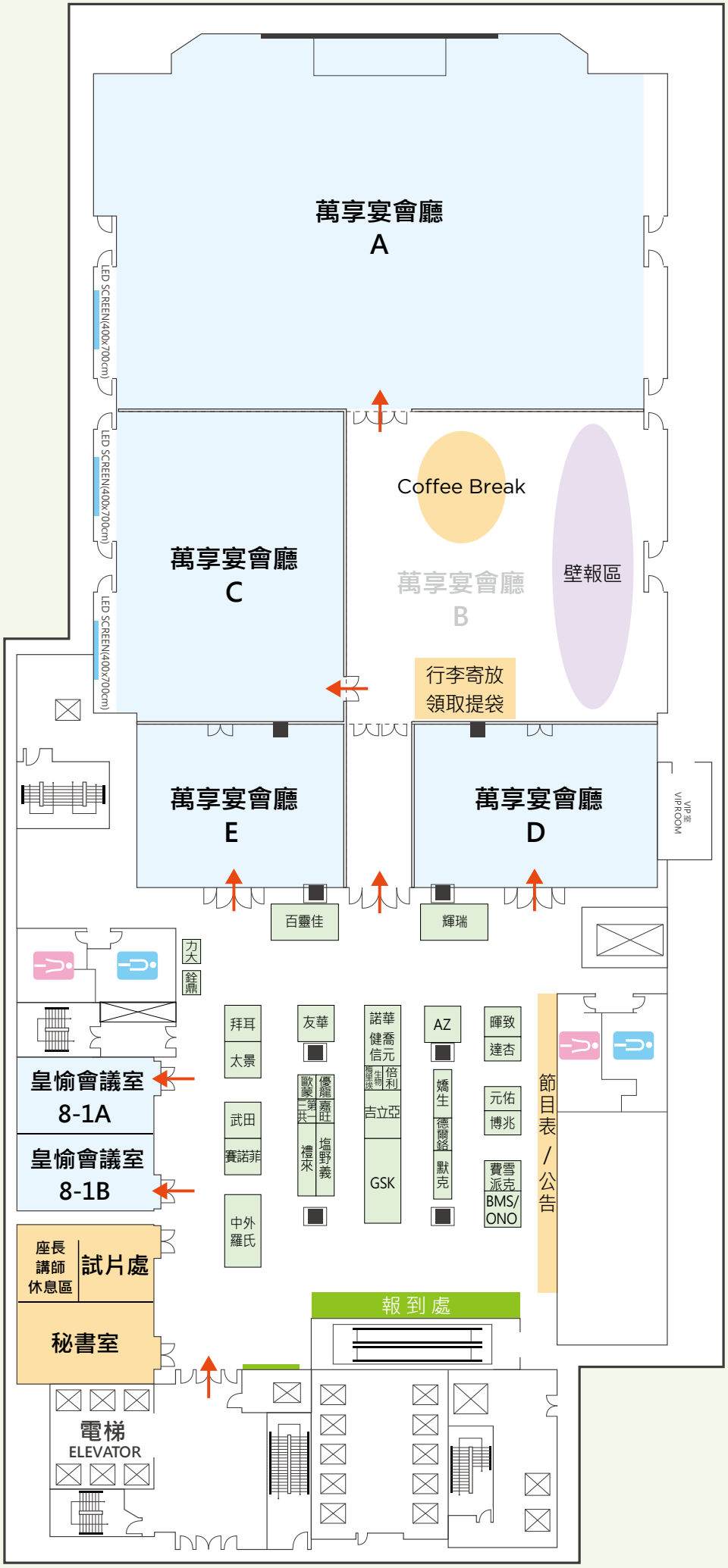
大會接駁車

高鐵左營站 發車時間	8:00	8:30	9:00	9:30	10:00	10:30	11:00
	11:30	12:00	12:40	13:10	13:40	14:10	14:40
	15:10	15:40	16:10	16:40	17:10	17:40	18:10
萬豪酒店 發車時間	8:30	9:00	9:30	10:00	10:30	11:00	11:30
	12:00	12:30	13:10	13:40	14:10	14:40	15:10
	15:40	16:10	16:40	17:10	17:40		

12/10晚宴 **20:00~20:30 萬豪酒店往高鐵左營站，滿車出發，共兩台**

會場平面圖

高雄萬豪酒店八樓



演講摘要

請點選各會議室前往連結頁面

萬享宴會廳 A

請點選各時段議程前往連結頁面

12 / 10

08:40-09:20 Allergic rhinitis, CRSwNPs and asthma: Pathophysiological relationship and implication for treatment / **Prof. Oscar Palomares Gracia** / P.7

09:20-10:00 Maximizing inhaled therapy in asthma – the role of single inhaler triple combinations / **Prof. Richard Van Zyl Smit** / P.8

10:30-11:10 Turning a Challenge into an Opportunity: Delivering High Value Care for COPD in a Real-World Setting / **林慶雄 副院長** / P.8

11:10-11:50 The evolving concept of clinical remission in severe asthma, where are we now? / **Prof. Flavia Hoyte** / P.9

12 / 11

08:40-09:20 Perspectives of Anti-viral Therapy and Vaccination Strategy for COVID-19 / **盛望徽 教授** / P.9

09:20-10:00 新冠肺炎的中西醫整合治療：理論與實證基礎 / **黃澤宏 主任** / P.10

10:30-11:10 Management of severe and critical COVID-19 pneumonia and outcomes of critically ill patients during the first wave outbreak of Taiwan in 2021 / **呂紹煒 醫師** / P.12

11:10-11:50 The diagnosis, treatment and outcome of Long COVID syndrome / **張厚台 主任** / P.13

Allergic rhinitis, CRSwNPs and asthma: Pathophysiological relationship and implication for treatment.

Oscar Palomares Gracia, M.D., Ph.D.

Profesor Titular, Dpt. BBM, School of Chemistry, in UCM

Compelling experimental evidence indicates that the upper and lower respiratory passages constitute a continuum, thus forming a single unified airway. Although this idea is not new, the better understanding of the molecular mechanisms underlying different diseases affecting the respiratory tract such as allergic rhinitis (AR), allergic asthma (AA) or chronic rhinosinusitis with nasal polyps (CRSwNP) has significantly contributed to reinforce this concept over the last years. The mechanisms underlying AR, AA and CRSwNP are complex and heterogeneous, but they share common altered pathways that might be interconnected in some patients. We will discuss the last findings related to the different endotypes underlying type 2-mediated and non-type 2 mediated pathways in the context of AR, AA and CRSwNP with special focus on the role played by IgE in such diseases. We will review how IgE contribute to the immediate clinical symptoms and to chronic eosinophilia by acting on dendritic cells (DCs) and promoting allergen-specific memory Th2 cells activation. We will also discuss on the different contributions to allergic chronic inflammation by type 2 innate lymphoid cells (ILC2s) and how IgE interplays with different non hematopoietic cells such as epithelial cells or smooth muscle cells in the airways. In addition, recent findings indicate that IgE can also play an important role in the pathophysiology of CRSwNP, rhinitis and asthma by novel mechanisms that are different to those involved in the classical allergic allergic inflammation. Finally, we will focus on the role of anti-igE treatments in the restoration of the capacity of pDCs to generate functional regulatory T (Treg) cells and the potential clinical implications in the context of AR, AA and CRSwNP. The better understanding of the molecular pathways underlying these chronic inflammatory airway diseases might well contribute to improve the management and treatment of patients as well as to the development of novel therapeutic strategies.

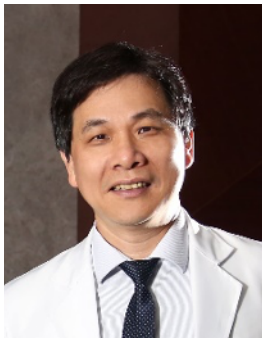
Maximizing inhaled therapy in asthma – the role of single inhaler triple combinations

Richard Van Zyl Smit, M.D., Ph.D.

Professor in Respiratory Medicine, University of Cape Town
Consultant Pulmonologist and Deputy Head of Division of Pulmonology, Groote Schuur Hospital

In 2020/2021, three major pharmaceutical companies released data on a single inhaler triple combination (LABA/LAMA/ICS) for Asthma. The GINA 2022 guidelines have been updated to include the use of a LAMA in Gina Step 4 and 5. This presentation will discuss the role of a LAMA in asthma, how the GINA guidelines have changed over the past 6 years and the data from the asthma studies incorporating a LAMA. The benefits of a single inhaler rather than separate inhalers, the positioning of a LAMA in asthma care and some challenges to clinical practice will be discussed.

Turning a Challenge into an Opportunity: Delivering High Value Care for COPD in a Real-World Setting



林慶雄

Ching-Hsiung Lin, MD, PhD

Vice Superintendent, Changhua Christian Hospital
Attending doctor of Division of Chest Medicine, Changhua Christian Hospital
The Associate Professor Certification issued by the Department of Education of Taiwan

The burden of chronic obstructive pulmonary disease (COPD) continues to grow worldwide. In Taiwan, COPD also imposes a substantial burden on patients and the healthcare system.

Although progress has been made in the development of diagnostics, therapeutics, and care guidelines, there are several challenges that have yet to be addressed, including underdiagnosis o f COPD, inadequate treatments, poor coordination of healthcare systems, and lack of innovation in management. During this talk, the challenges and the revolutionary change in COPD diagnosis and management in Taiwan will be discussed, which focus on the rec ent advances in identifying 'at risk' patients and providing high value care for COPD in real world settings. First, we will summarize the challenge of COPD

diagnosis and care in past. Second, we will focus on the revolution of COPD early detection and dis ease management in current. In addition, we will discuss the innovations in the field of COPD management during this session.

The evolving concept of clinical remission in severe asthma, where are we now?

Flavia Cecilia Lega Hoyte, M.D.

Associate Professor, National Jewish Health
Associate Professor, University of Colorado Denver
Department of Medicine
Division of Allergy and Clinical Immunology

Clinical Remission in Severe Asthma is an important evolving concept as a treatment goal in severe asthma. The symposia provides an up to date summary by leading experts, Dr. Flavia Hoyte, an Allergists at National Jewish Health and one of the author of remission paper. She will discuss with Taiwan respiratory experts on the definitions, why it is important for patients and physicians, and how the concept continues to evolve as it gains traction in the medical community.

Perspectives of Anti-viral Therapy and Vaccination Strategy for COVID-19

盛望徽

Wang-Huei Sheng, M.D., Ph.D.

Attending Physician, Division of Infectious Disease, Department of Internal Medicine, National Taiwan University Hospital
Director, Department of Medical Education, National Taiwan University Hospital
Chair, Department of Internal Medicine, College of Medicine, National Taiwan University

The threat of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection continues to have major impacts on social, economic and healthcare systems worldwide. Although the messenger RNA vaccination provide high efficacy against SARS-CoV-2,

breakthrough infection could be occurred. The emergence of the novel SARS-CoV-2 variants of concern were associated with consecutive epidemic of infections occurred. A novel B.1.1.529 (omicron) variant had already spread and became the dominant SARS-CoV-2 variant worldwide. In vitro investigation revealed that omicron variant carry more than 30 mutations in the spike protein. Observational cohorts indicate that omicron spreads faster and might escape the natural or vaccine-induced protective immunity more readily than previous variants, results in increasing cases of reinfection or breakthrough infections in persons who had been vaccinated. Vaccination is still a major measure to prevent infection. Following a worldwide resurgence of B.1.617.2 (delta) variants, the Taiwan government recommend a booster dose of COVID-19 vaccine against SARS-CoV-2 to reduce the risk of infection and adverse outcomes of SARS-CoV-2 from several SARS-CoV-2 variants. The protection of vaccination decreased over time and a reduction in vaccine effectiveness against emerging SARS-CoV-2 variant, such as omicron, had been found.

新冠肺炎的中西醫整合治療：理論與實證基礎

黃澤宏

Tse-Hung Huang, M.D. ,Ph.D.

Director, Department of Traditional Chinese Medicine, Linkou Chang Gung Memorial Hospital
Adjunct Associate Professor, School of Traditional Chinese Medicine, Chang Gung University

Since ancient times, the pandemic has been widespread, and before the introduction of Western medicine, traditional Chinese medicine was used to treat it. Traditional Chinese medicine conforms to nature, and individualized treatment according to people, events, and local conditions has long been a part of ordinary people's lives, and even formed a culture, including the rich connotation of health preservation. But from the perspective of modern medicine, Chinese medicine is similar to the witch doctors in the West in the Middle Ages, and its fundamental theoretical basis is unscientific.

Under Taiwan's unique national health insurance framework, there are two medical specialties in parallel, Chinese and Western, and a unique integration model of Chinese and Western medicine has been developed to treat COVID-19. Our team uses the integrated care of traditional Chinese and Western medicine to conduct treatment and clinical observation of COVID-19 cases in the negative pressure isolation ward of Chang Gung Memorial Hospital, giving full play to the advantages of integrated Chinese and Western medicine, but it also highlights the dilemma between medical research and the characteristics of traditional Chinese medicine treatment, which still needs to be further

improved Innovation and breakthrough.
COVID-19 causes severe impairment of lung function and dysregulation of the immune system in patients. Recently, there is no effective therapy available. An effective host immune response, including both innate and adaptive immunity against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is essential to combat the viral infection. However, SARS-CoV-2 infection causes an overproduction of pro-inflammatory cytokines, resulting in a "cytokine storm," and acute respiratory distress syndrome (ARDS) eventually. Meanwhile,
we previously reported that let-7a and miR-148b could target the SARS-CoV-2 genome at various regions via prediction of sequence alignment. Additionally, the increasing miR-146a level was reported to inhibit the pro-inflammatory cytokines. Therefore, we set up a drug screening platform for COVID-19 to examine whether old drugs can reverse COVID-19 unique signatures compared to other respiratory viruses (MERS-CoV and SARS-CoV). Gene Set Enrichment Analysis (GSEA) suggested that YQ1, an Astragalus-based traditional formula, can reverse the SARS-CoV-2 infection signatures and inhibit cytokine storm, thereby inhibiting ARDS. Empirically, YQ1 could polarize THP-1-derived macrophages toward the M1 phenotype, which contributes to the antiviral activity. Moreover, YQ1 increased the expression levels of NRF2, xCT, glutathione, and decreased the LPS-induced IL-6 release from macrophages, which was different from which induced by lipopolysaccharide (LPS) + IFN-γ. Biochemical investigations demonstrated that YQ1 could turn on the expression of let-7a, miR-148b, and miR-146a and suppress the secretion of LPS-induced IL-6 from differentiated THP-1 cells. YQ1 showed its effectiveness in treating bleomycin-induced ongoing ARDS and preventing ARDS progression in a rat model. Improvement in arterial blood oxygen saturation, respiratory frequency, lung morphology, and increased plasma let-7a level was observed during YQ1 treatment. Taken together, the ability of YQ1 to immunomodulate the innate immune cell-macrophages and suppress the cytokine storm illuminates the potential of YQ1 as a potential herbal medicine for the early prevention of viral infections and ARDS treatment.

Management of severe and critical COVID-19 pneumonia and outcomes of critically ill patients during the first wave outbreak of Taiwan in 2021

呂紹煒
Shaw-Wei Leu, M.D.
Attending Physician, Department of Thoracic Medicine, Chang Gung Memorial Hospital

COVID-19 pneumonia has become a global pandemic since December 2019. Till present, the cumulative number of infected cases has exceeded 600 million, of which more than 6 million people have died, with a case fatality rate of about 1%. According to the statement of the World Health Organization, the SARS-CoV-2 virus has evolved into a variety of mutations, among which the Variants of Concern include alpha, beta, delta, omicron and their subvariants. Lower disease severity of SARS-CoV-2 infection (and also higher transmissibility) had been observed with the evolution of virus; effects of vaccination could also contribute to the lowering of disease severity. However, mortality rate up to 10-20% or even higher had been reported in patients with COVID-19 once they became critically ill. Factors affecting the outcomes of critically ill patients with COVID-19 may include the status of vaccination, host comorbidities, characteristics of virus variants, and intensive care management. Clinical classification of COVID-19 severity is divided into mild, moderate, severe, and critical disease according to whether there is radiologic evidence of pneumonia, hypoxemia and requirement of oxygen support, or requirement of invasive mechanical ventilation or other life support treatment. COVID-19-specific medications for severe and critical patients includes glucocorticoids, mainly dexamethasone; immunomodulators, such as the anti-IL-6 receptor antibody Tocilizumab and JAK inhibitor Baricitinab; the antiviral Remdesivir; and prophylactic anticoagulation with heparin. Respiratory support includes oxygen therapy with conventional low-flow devices or high-flow nasal cannula, noninvasive ventilation, awake prone positioning while using oxygen or NIV support, and invasive mechanical ventilation. For patients with severe ARDS caused by COVID-19, extracorporeal membranous oxygenation or lung transplant should be evaluated for benefits and risks when indicated. Here we will review the updated evidence of COVID-19 treatment for severe and critical patients, as well as the outcomes of critically ill patients during Taiwan's first pandemic in 2021.

The diagnosis, treatment and outcome of Long COVID syndrome

張厚台

Hou-Tai Chang, M.D., Ph.D.

Chief, Medical Intensive Unit, Far Eastern Memorial Hospital
Attending Physician, Division of Chest Medicine, Department of Internal Medicine, Far Eastern Memorial Hospital
Assistant Professor, Department of Industrial Engineering and Management, Yuan Ze University

Current estimates suggest that tens of millions, and perhaps more, have contracted long COVID, and about 15% of those diagnosed with the condition have experienced symptoms for at least 12 months. The common symptoms of long COVID include fatigue, shortness of breath, and cognitive dysfunction, and generally have an impact on everyday functioning. Symptoms might be new onset after initial recovery from an acute COVID-19 episode or persist from the initial illness. Symptoms might also fluctuate or relapse over time. For example, brain fog making straightforward tasks almost impossible. Literature review showed the prevalence of long COVID was 30-87% after COVID patient' s discharge. The long COVID syndrome can affect anyone, but according to the latest data from WHO and the Institute for Health Metrics and Evaluation (IHME) women are twice as likely as men to have contracted the condition and those hospitalised with severe COVID are more likely to develop the condition. It' s added a significant burden to health workers and the health system overall, which is still dealing with additional waves of infection and the knock-on backlog of essential medical services that have been severely disrupted. It is indicated to perform holistic assessment, use shared decision making to discuss and agree with the person (and their family or carers, if appropriate) what support and rehabilitation they need and how this will be provided.

萬享宴會廳 C

請點選各時段議程前往連結頁面

12 / 10

08:40-09:20 ILD in Taiwan: From NICEFIT to NICEFIT-ON / **鄭世隆 教授** / P.15

09:20-10:00 An update on hypersensitivity pneumonitis / **郭炳宏 教授** / P.16

10:30-11:10 The implications of Taiwanese Researches in ILD / **柯信國 主任** / P.17

11:10-11:50 Management of post-COVID-19 ILD/IPF in Japan - What is the impact of the COVID-19 pandemic on the practice of interstitial lung disease? / **小倉高志 教授** / P.17

12:00-13:10 Diagnosing COPD and Asthma by Machine Learning Algorithm / **黃建文 主任秘書** / P.18 (Satellite Symposium_友華生技醫藥股份有限公司贊助)

Evidences and Clinical Benefits of Extrafine Triple Combination Treating Asthmatic / **莊立邦 主任** / P.19 (Satellite Symposium_友華生技醫藥股份有限公司贊助)

14:40-15:20 Trend of molecular diagnostic techniques and novel antibiotic agent in HAP/VAP management / **Prof. George Dimopoulos** / P.19

15:50-16:30 Asthma in the world: What are we learning from ISAAC and the Global Asthma Network (GAN)? / **Prof. Emeritus Innes Asher** / P.20

16:40-18:00 Effectiveness and Safety of Mepolizumab for Severe Eosinophilic Asthma in Real-World Study / **曾敬閔 醫師** / P.21 (Satellite Symposium_荷商葛蘭素史克藥廠股份有限公司台灣分公司贊助)

12 / 11

07:20-08:30 What's new in the management of IPF / **陳彥甫 醫師** / P.21 (Satellite Symposium_台灣百靈佳殷格翰(股)公司贊助)

Management of Pulmonary Fibrosis: What Now? / **Prof. Martin Kolb** / P.22 (Satellite Symposium_台灣百靈佳殷格翰(股)公司贊助)

08:40-09:20 The Impact of Covid-19 on Lung Cancer Patients Care / **陳冠宇 醫師** / P.23

09:20-10:00 Emerging Role for Antibody-Drug Conjugates in NSCLC / **林建中 教授** / P.24

10:30-11:10 TKIs use in operable mutations (+) lung cancer: neo-adjuvant or adjuvant / **蔡俊明 教授** / P.25

11:10-11:50 New Classes of Immunotherapies in Lung Cancer – Emerging Options and Models / **Dr. Darren Lim** / P.25

12:00-13:10 Deep dive into the evidence of immunotherapy: Year review of the updated data from pembrolizumab / **楊景堯 醫師** / P.26 (Satellite Symposium_美商默沙東藥廠股份有限公司台灣分公司贊助)

ILD in Taiwan : From NICEFIT to NICEFIT-ON

鄭世隆

Shih-Lung Cheng, M.D., Ph.D.

Chief, The Center of Evidence-Based Medicine, Far Eastern Memorial Hospital
Chief, Department of Chest Medicine, Internal Medicine, Far Eastern Memorial Hospital

Patients with fibrotic interstitial lung disease (ILD) exhibit heterogeneous disease courses, with idiopathic pulmonary (IPF) being the prototypic subtype. The current data on the characteristics, course, and treatment outcomes of the disease are limited, underscoring the need for longitudinal registries in studying the condition. Therefore, we sought to determine the clinical characteristics, comorbidities impact, and safety profile for IPF patients in NICEFIT study and further for SSc-ILD (systemic sclerosis-associated interstitial lung disease) and PF-ILD (Chronic fibrosing Interstitial Lung Diseases with a progressive phenotype) patients to its extension trial, NICEFIT-ON study.

The NICEFIT study was a non-interventional, prospective study of the data of IPF patients treated through routine clinical practice at 10 expert medical centers in Taiwan from 2017 to 2020. The actual enrolment period for the study was 0.5 year, and each patient was followed for 2 years. The NICEFIT-ON study, for the enrolments of IPF, Ssc-ILD and PF-ILD patients at 27 expert hospitals in Taiwan from 2020 to the current follow-up period. Data collection was started at the initial screening assessment at baseline, 1 month and subsequent 3-monthly intervals. Each patient based on their medical records and was continued prospectively thereafter for those patients deemed eligible for inclusion.

NICEFIT study, a total of 101 IPF patients (mean age 74.6 years, 83.2% men, 55.5% current or ex-smokers, FVC 73.3% predicted) were recruited from August 2017 through February 2018 and followed these enrolled patients from 2018 to 2020. Treated patients (n=88), received the antifibrotics nintedanib or pirfenidone; compared to the untreated group (n=13). The 2-year assessment revealed over-all preserved lung functionality in the treated patients, with insignificant changes from baseline for percent predicted forced vital capacity or FVC (±1.7%), indicating stabilized lung function in treated patients. Further no new safety concerns were noted with nintedanib treatment in Taiwanese population. The first interim report for the demographic data of NICEFIT-ON study, from January 2021 through November 2021, IPF patients(n=71) showed 81.9% predict. FVC, Ssc-ILD patients (n=7) with 68% predicted FVC and PF-ILD patients (n=13) with 80.3% predicted FVC, respectively.

The patients enrolled in the first IPF registry in Taiwan showed characteristics similar to those in other published registries. Antifibrotic therapy stabilized lung function parameters in patients with IPF without increasing mortality, while preserving quality of life. Further, no new safety concerns were indicated for either drug in the Taiwanese population. Moreover,

the rate of lung function decline was higher in untreated patients than those with treated groups. Compared to the NICEFIT study, IPF cohort in NICEFIT-ON study showed higher lung function and quality of life, indicating earlier treatment initiation in Taiwan. The SSc-ILD cohort has the worst baseline clinical characteristics regarding lung function and quality of life, indicating early diagnosis and disease intervention is still the major challenge in clinical practice. The PF-ILD patients still experienced a worsening life quality despite having high lung function values, suggesting early treatment is necessary to prevent irreversible decline. In conclusion, early diagnosis, comorbidity intervention and prompt anti-fibrotic agent treatment will change the unpredictable nature course for IPF, SSc-ILD and PF-ILD patients.

An update on hypersensitivity pneumonitis

郭炳宏

Ping-Hung Kuo, M.D., Ph.D.

Department of Internal Medicine, National Taiwan University Hospital

Hypersensitivity Pneumonitis (HP) is a common immune-mediated interstitial lung disease (ILD) induced by repeated exposure to environmental antigens in susceptible individuals. The most commonly known forms are bird fancier's disease and farmer's lung. However, the antigens involved are widely diverse, and the list of causes of HP is frequently expanding. HP seems to be under-diagnosed owing to its highly heterogeneous presentation in both the non-fibrotic and fibrotic subtypes and could represent up to 15% of all ILDs encountered in clinical practice. In case of confirmed exposure, the diagnosis could be considered with high confidence if the high-resolution computed tomography (HRCT) shows a typical HP pattern associated with a lymphocytosis over 30% in the bronchoalveolar lavage (BAL). In all other situations, the patients should undergo further investigations and additional histopathological sampling should be considered and submitted to a multidisciplinary team discussion. After diagnosis, antigenic eviction is the rule whenever possible. Corticosteroid treatment is the first-line medical treatment for severe forms and aims to prevent the development of fibrosis. Anti-fibrotic therapy is now an option for patients with progressive ILD and failure of immunomodulatory/immunosuppressive therapies.

The implications of Taiwanese Researches in ILD

柯信國

Bruce Hsin-Kuo Ko, M.D.PhD.

Attending physician, Taipei Veterans General Hospital
Associate Professor, Medical School, National Yang Ming Chiao Tung University

Idiopathic pulmonary fibrosis (IPF) is one of the interstitial lung diseases (ILD) and is a progressive, lethal fibrotic lung disease. Although the exact pathophysiological mechanisms underlying IPF and ILD remain largely unknown. Significant progress has been made in our understanding of the pathogenesis of ILD in last decade. Several factors being involved in the pathogenesis of IPF and ILD include genetic factors, environmental factors, aging, epigenetic reprogramming, epithelial cells damage, vascular endothelial cell injury, stem cell dysfunction and exhaustion, growth factors, extracellular matrix deposition, and matrix stiffness and scaffolding. In this lecture, I will review the current literature, specifically focusing on Taiwanese researches, to explore the novel mechanism and treatment according to the injury levels of alveolar epithelial cells, macrophages, fibroblast/myofibroblast, and mesenchymal signs. The Taiwanese epidemiological studis are also reviewed to explore the disease burden of IPF and ILD in Taiwan.

Management of post-COVID-19 ILD/IPF in Japan - What is the impact of the COVID-19 pandemic on the practice of interstitial lung disease ?

Takashi Ogura 小倉高志

Executive Director of Kanagawa Cardiovascular and Respiratory Center
The Director of Center of Interstitial Lung Disease

Pneumonia caused by SARS-CoV-2 is similar to idiopathic interstitial pneumonia (IIP) as OP, NSIP, or AIP and IP-CVD. In addition, SARS-CoV-2 might provide clues to the pathogenesis of IIP or IP-CVD. The large amount of data derived from studies on COVID-19 could assist in understanding the pathogenesis of IIP or IP-CVD and developing new therapeutic strategies. This talk will focus on the following topic.

①Before the outbreak of the Omicron strain, the severe prognosis of those who did contract COVID-19 was reported, making prevention extremely important. COVID-19 is thought to induce acute exacerbations, and there have been reports of ILD cases in which COVID-19 triggered acute exacerbations. A large scale survey for the impact of interstitial lung disease on the prognosis of COVID-19 patients have been conducted using the national database in Japan (K Miyashita, H Hozumi, ...T Suda. The 2nd Japanese Research Society for Diffuse Interstitial Lung Disease. 2022.)

②The similarities between rapidly progressive ILD and severe COVID-19 pneumonia and anti-MDA5 antibody-positive ILD have been pointed out in terms of related cytokines such as IL-6, IL-10, IL-18, IFN-γ, TNF-α, and ferritin, an indicator of macrophage activation, as well as in chest imaging findings.

③Acute exacerbations due to COVID-19 vaccination in patients with interstitial lung disease (ILD) have been reported. We investigated the incidence of exacerbations of ILD and respiratory symptoms due to the mRNA COVID-19 vaccination in 545 patients with ILD attending our hospital retrospectively. Of the 545 patients, 17 (3.1%) patients were aware of the exacerbation of respiratory symptoms, and four (0.7%) patients developed an acute ILD exacerbation after vaccination. Eventually, all patients exhibited improvement with immunosuppressive treatment and were discharged. COVID-19 vaccination for patients with ILD should be noted for developing acute exacerbations of ILD with low incidence, although manageable with early diagnosis and treatment (Sakayori M,...Ogura T. Incidence of acute exacerbation in patients with interstitial lung disease after COVID-19 vaccination. J Infect Chemother. 2022 Sep 13:S1341-321X(22)00265-3. doi: 10.1016/j.jiac.2022.09.006).

Satellite Symposium_友華生技醫藥股份有限公司贊助

Diagnosing COPD and Asthma by Machine Learning Algorithm

黃建文

Chien-Wen Huang, M.D., Ph.D.

亞洲大學附屬醫院 主任秘書

近年來肺部小呼吸道的疾病(Small Airway Dysfunction, SAD)受到國際間重視，針對SAD目前的診斷方式有許多種，目前較新的診斷方式是使用Impulse Oscillometry (IOS)來檢測小呼吸道的疾病，亞大黃建文醫師與中臺科大產學合作，透由Machine learning來協助臨床醫師進行IOS對氣喘及COPD的鑑別診斷，本次演講讓大家對於SAD的診斷有更多的了解。

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Evidences and Clinical Benefits of Extrafine Triple Combination Treating Asthmatic Patients

莊立邦

Li-Pang Chuang, M.D., Ph.D.

林口長庚醫院 睡眠中心 主任
林口長庚醫院 第三內科加護病房 主任
林口長庚醫院 胸腔內科 副教授級主治醫師

近年來三合一的吸入劑不斷的發展，Trimbow®這個吸入型藥物除了在治療慢性阻塞肺病之外，今年也在台灣取得氣喘適應症，為目前唯一核准氣喘適應症的三合一pMDI吸入劑。此次演講將針對目前Trimbow®在氣喘治療的臨床試驗進行闡述，從LAMA在氣喘治療上的角色到三合一吸入劑對於氣喘治療的療效，讓大家更了解三合一吸入劑在氣喘病人治療上的優勢。

Trend of molecular diagnostic techniques and novel antibiotic agent in HAP/VAP management

George Dimopoulos, M.D., Ph.D.

Professor, Critical Care Medicine, Department of Critical Care, University Hospital "ATTIKON"

The spread of multidrug-resistant, extensively drug-resistant and pan-drug-resistant pathogens is causing an unprecedented public health crisis. Unfortunately, multidrug-resistant (MDR) Gram-negative bacteria are increasingly encountered globally, and current guidelines for empirical antibiotic coverage may not adequately treat these bacteria. This expansion of resistance, coupled with traditional culturing techniques requiring 2-4 days for bacterial identification promote the necessity of fast diagnosis using the newer molecular techniques.

The limited current therapeutic options led to the revival of two 'old' antibiotics – colistin and fosfomycin – for which a better understanding of their pharmacokinetics in the critically ill patient and in specific body compartments is required. Tigecycline's use in clinical practice for non-approved indication based on its in vitro activity against problematic pathogens requires caution and probably higher doses. Furthermore, all three

antibiotics should be used as part of combination regimens in order to prevent resistance and optimize outcomes. The development of new antibacterials namely combinations of avibactam, ceftolozane/tazobactam and plazomicin, seems promising; however, they will only partially address current mechanisms of resistance.

Asthma in the world: What are we learning from ISAAC and the Global Asthma Network (GAN)?

Innes Asher, M.D., Ph.D.

FRACP ONZM, Global Asthma Network, Department of Paediatrics: Child and Youth Health, Faculty of Medical and Health Sciences, The University of Auckland, New Zealand.

This talk will cover:

- Asthma as a noncommunicable disease (NCD)
- The methodology for measuring asthma prevalence around the world to make comparisons
- The International Study of Asthma and Allergies in Childhood (ISAAC) and GAN findings
- Access to affordable quality-assured essential asthma medicines

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Satellite Symposium_荷商葛蘭素史克藥廠股份有限公司台灣分公司贊助

Effectiveness and Safety of Mepolizumab for Severe Eosinophilic Asthma in Real-World Study

曾敬閔

Ching-Min Tseng, M.D.

振興醫院內科部胸腔內科主治醫師
國立陽明大學醫學系內科學科講師

Efficacy of mepolizumab, an anti-interleukin-5 monoclonal antibody, was demonstrated in randomised controlled trials; data on its real-world impact in routine clinical practice are starting to emerge. We assessed the effectiveness and safety of mepolizumab prescribed for patients in the real world. Patients with severe asthma may also require maintenance oral corticosteroids (mOCS) for disease control as well as systemic corticosteroid (SCS) bursts for clinically significant exacerbations. However, mOCS and SCS use are associated with adverse effects, which increases patient disease burden. These data demonstrate that the effectiveness of mepolizumab is consistent with clinical trial results under real-world settings, with significant reductions in exacerbations and daily maintenance OCS dose.

Satellite Symposium_台灣百靈佳殷格翰(股)公司贊助

What's new in the management of IPF

陳彥甫

Yen-Fu Chen, M.D., Ph.D.

Director of Department of Outpatient, National Taiwan University Hospital Yun-Lin Branch, Yun-Lin, Taiwan

This year, ERS 2022 conference has been returning to an in-person format after two years on a virtual platform. Each year, thousands of respiratory medicine professionals gather to present and learn about groundbreaking advancements in the field at this great annual respiratory event. Due to the restriction from COVID contingence, I accessed the meeting via the virtual platform. Although I am not on-site in person, I still learned a lot. With my greatest honor and greatest humbleness, I would like to share my learning with all. I will try my best to address the topic "What's new in the management of IPF?" in my presentation and hope it will be useful for your clinical practice reference.

First, I would like to share the NICEFIT study that is the first long-term, real-world study in Taiwan providing efficacy and safety outcomes for IPF under routine management. Data on 101 patients with IPF were collected over 2 years (2018-2020) from medical centers in Taiwan at baseline, 1 month, and subsequent 3-month intervals. Treated patients (n = 88) received the antifibrotics nintedanib or pirfenidone, compared with the untreated group (n = 13). The presence of respiratory comorbidities significantly increased the risk of both AE and death (with or without AE) over the full study duration. Furthermore, the decline of predicted FVC significantly increased with the risk of acute exacerbations (AE) in the second year. Overall, antifibrotic therapy stabilized lung function parameters in patients with IPF over 2 years of study without increasing mortality, while preserving quality of life, and no new safety issues.
Second, I will share the information on new pipelines and novel treatments of IPF. We can see there are several pipelines ongoing. The most attractive pipeline is BI1015550, a phosphodiesterase 4 inhibitor (PDE4 inhibitor). In its phase 2 result, BI 1015550 is novel PDE4 inhibitor showing a preferential enzymatic inhibitor of PED4B. According to the just-published result, BI1015550 has a differentiated target profile from approved PDE4 inhibitors and works synergistically with nintedanib. A post hoc analysis of a phase II trial in patients with IPF suggests an additive effect of BI 1015550 and nintedanib. FDA has granted BI1015550 as the breakthrough therapy designation for IPF. In my presentation, I will demonstrate details of the BI 1015550 study design and its results. I would also take some time to address the effect of anti-fibrotic treatment in prolonging survival and acute exacerbation.

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Management of Pulmonary Fibrosis: What Now?

Martin Rainer Josef Kolb, M.D., Ph.D.
Professor of Department of Medicine and Department for Pathology and Molecular Medicine, McMaster University

This year, ERS 2022 conference has been returning to an in-person format after two years on a virtual platform. The annual event that brings together the world's respiratory experts to showcase all the latest advances in respiratory medicine and science. With my greatest honor and greatest humbleness, I would like to share my learning from the conference with you. I will try my best to address the topic'' Management of Pulmonary Fibrosis: What Now?'' in my presentation and hope it will be useful for your clinical practice reference.
First, I would like to share the updates on 2022 ATS/ERS/JRS/ALAT's clinical practice guideline PPF (Progressive Pulmonary Fibrosis) in adults. The key summary for the update of PPF is to give the definition and recommendation for PPF. The guideline

adopts the new term “progressive pulmonary fibrosis (PPF)”, which is more acceptable for clinicians, instead of using the established term progressive fibrosing ILD. The key summary for PPF is addressed as” PPF was defined as at least two of three criteria (worsening symptoms, radiological progression, and physiological progression) occurring within the past year with no alternative explanation in a patient with an ILD other than IPF. The guideline also gives a conditional recommendation for nintedanib as a treatment for PPF and suggests additional research into pirfenidone based on their clinical evidence.

Second, I would like to share my learning about key updates in current management IPF/PF-ILD/PPF. Nintedanib and pirfenidone are the recommended medicine to treat IPF. For other progressive fibrosing ILD, nintedanib has more comprehensive clinical evidence to support its role in PF-ILD/PPF. Thus, the new guideline 2022 only recommended nintedanib to treat IPF and PPF. For pirfenidone, it seems no more new clinical evidence to support its usage in ILD. Besides antifibrotics therapy, there are some remarkable findings in non-pharmacological therapy. In this session, I will present the key updated clinical evidence of pharmacological and non-pharmacologic therapies.

Finally, I will share my experiences about the timing of when to initiate antifibrotic therapies and combined therapies with immunosuppressants (anti-fibrotic treatment and immunosuppressants) in PPF/CTD-ILD patients. A clear mandate exists for better treatment strategies that may be informed by understanding the progressive fibrosing phenotype and the role of antifibrotics in its treatment. When immunosuppressive treatment is efficacious in inflammatory ILDs, it is continued. When an inflammatory ILD has progressive fibrosis despite immunosuppression, the question is whether to escalate immunosuppressive therapy or to start treatment with an antifibrotic drug such as nintedanib. Treatment decisions should consider the time from disease onset. Whether immunosuppression should continue when antifibrotic therapy is introduced also remains unclear. There must be more evidence to confirm.

The Impact of Covid-19 on Lung Cancer Patients Care

陳冠宇

Kuan-Yu Chen, M.D., Ph.D.

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Associate Professor, Department of Internal Medicine, College of Medicine, National Taiwan University

Globally, more than 600 million cases of COVID-19 and about 6.5 million deaths have been reported (Available online: https://coronavirus.jhu.edu/map.html, accessed on 9 Sep 2022).

Patients with non-small cell lung cancer (NSCLC) aging > 60 years old are at high risk to have COVID-19. In USA, a longer and more severe course of COVID-19 was found in lung cancer patients compared with the general population. Lung cancer patients are likely to have pulmonary complications from COVID-19 (such as admission to the intensive care unit for invasive ventilation) with poor prognosis. May studies reported delay in diagnosis for lung cancer patients. The treatments for certain patients should considered as high priority, including surgery for newly diagnosed stage II invasive NSCLC patients with disease-related symptoms, patients with T2N0, resectable T3/T4 and/or N-1/N2, adjuvant chemotherapy for T3/4 or N2 disease, neoadjuvant chemotherapy for NSCLC stage II young and fit patients and stage III diseases, concomitant chemo-radiotherapy for small cell lung cancer or unresectable stage III NSCLC. For patients with metastatic diseases, first-line treatment to improve quality of life, second lines and beyond in symptomatic patients should also considered as high priority. Vaccination is highly recommended in lung cancer patients. However, vaccines might be less effective in lung cancer patients than in healthy controls. Lung cancer patients who were actively treated with immune-check point inhibitors would be vaccinated without an increased immune-related adverse events; However, the vaccine immunogenicity was lower compared with that in general populations. A longer follow-up would be necessary for shedding more light on the effects of the COVID-19 pandemic on lung cancer patients.

Emerging Role for Antibody-Drug Conjugates in NSCLC

林建中

Chien-Chung Lin, M.D., Ph.D.

Attending Physician, Department of Internal Medicine, National Cheng Kung University Hospital
Professor, Department of Internal Medicine, College of Medicine, National Cheng Kung University

The basic concept of the design of antibody-drug conjugates (ADCs) is to deliver a highly potent cytotoxic drug to effectively kill tumor cells in a "targeted" manner. The promising results from several clinical trials over the last few decades have led to the approval by FDA for the treatment of hematologic malignancies and breast cancer. On August 11, 2022, the FDA gave accelerated approval to trastuzumab deruxtecan for adults with NSCLC harboring HER2 mutation. As we have more EGFR-mutant NSCLC patients with acquired resistance to Osimertinib, other ADCs targeting HER3 and MET may be the promising treatment agents. And other ADCs such as targeting TROP2 holds a particular advantage since TROP2 is highly expressed in both squamous and non-squamous NSCLC. Here we will discuss the structure and mechanism of action of ADCs in general and provide an overview of clinical trials of ADCs in NSCLC.

TKIs use in operable mutations (+) lung cancer: neo-adjuvant or adjuvant

蔡俊明

Chun-Ming Tsai, M.D.

Consultant physician of Cathay General Hospital
Consultant Professor, Department of Oncology, Taipei Veterans General Hospital

Neoadjuvant or adjuvant chemotherapy is recommended for patients with resectable NSCLC at high risk of recurrence; however, 5 year OS gain is only 5%. Resectable NSCLC treated with neoadjuvant chemo shows an association between pCR and survival (HR, 0.49; 95% CI, 0.42-0.57) , however, the rates of pCR were low (median, 4%; range, 0-16%). Immunotherapy agents as monotherapy or in combination with chemo have recently shown encouraging outcomes in the adjuvant (DFS and OS) and the neoadjuvant (pCR, EFS, and OS) settings. The roles of neoadjuvant and adjuvant EGFR-TKI targeted therapies for patients with EGFR-mutant NSCLC have not been clarified, and might be clinically beneficial in highly selected cases.

New Classes of Immunotherapies in Lung Cancer – Emerging Options and Models

Dr. Darren Wan-Teck Lim

Senior Consultant, Division of Medical Oncology, National Cancer Centre Singapore
Associate Professor, Duke-NUS Medical School

Lung cancer remains a major cause of morbidity and mortality globally. However, in the last decade, checkpoint inhibitors as a class of immunotherapy have made significant changes to how we manage our patients. Moving forward into this decade, advances in other classes of immunotherapy namely antibody-drug conjugates and bispecific antibodies are likely to change therapy paradigms further. In addition, improved understanding of the tumor microenvironment and development of specific antibodies to target the immune milieu is likely to further enhance outcomes in this space. Cell therapy for solid tumors remains challenging but emerging animal models to better interrogate the tumor-immune cell interface provide a window to study how to integrate this into our toolbox for lung cancer.

Satellite Symposium_美商默沙東藥廠股份有限公司台灣分公司贊助

Deep dive into the evidence of immunotherapy: Year review of the updated data from pembrolizumab

楊景堯

Ching-Yao Yang, M.D., Ph.D.

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Until the advent of immunotherapy, first-line treatment of patients with advanced squamous, and non-squamous non-small cell lung cancer (NSCLC) without an EGFR/ALK alteration, was carboplatin and paclitaxel or nab-paclitaxel chemotherapy, and platinum-based chemotherapy, with addition of bevacizumab as an option in select patients. The introduction of pembrolizumab, an anti-programmed death-1 (PD-1) monoclonal antibody, has altered the treatment paradigm for patients with NSCLC. Pembrolizumab has shown efficacy in first-line therapy of advanced/metastatic NSCLC both when administered as monotherapy in patients with programmed death-ligand 1 (PD-L1) tumor proportion score (TPS)>= 50% and >= 1% and when administered in combination with chemotherapy regardless of tumor PD-L1 expression.

The phase III KEYNOTE-189 and KEYNOTE-407 study, with the 5-year follow-up result, have been updated in ESMO 2022. For KEYNOTE-189, among 616 pts randomized (pembro + pem-platinum, n = 410; pbo + pem-platinum, n = 206), median OS was 22.0 months vs 10.6 months with pembro + pem-platinum vs pbo + pem-platinum ,and 5-y OS rates were 19.4% vs 11.3%, respectively. Median PFS was 9.0 months vs 4.9 months. Among pts with ≥1 dose of assigned treatment, grade 3-5 AEs occurred in 295/405 (72.8%) vs 136/202 (67.3%) of pts. Among 57 pts who completed 35 cycles of pembro, ORR was 86.0% ; 3-y OS rate after completion of 35 cycles of pembro was 71.9%. For KEYNOTE407, pts were randomized to pembro + chemo (n = 278) or placebo + chemo (n = 281). Median OS in the ITT population was 17.2 months for the pembro + chemo group and 11.6 months for the placebo + chemo group. Respective 5-y OS rates were 18.4% and 9.7%. Grade 3-5 AEs occurred in 74.8% and 70.0% of pts in the pembro + chemo and placebo + chemo groups, respectively. Among 55 pts who completed 35 cycles of pembro, ORR was 90.9%, and 3-y OS rate after completion of 35 cycles (~5 y after randomization) was 69.5%. Both the result of KEYNOTE-189 and KEYNOTE 407 support pembro + chemotherapy as a standard of care for metastatic non-squamous without sensitizing EGFR/ALK alterations and metastatic squamous NSCLC.

萬享宴會廳 D

請點選各時段議程前往連結頁面

12 / 10

08:40-09:20 Is segmentectomy a rewarding, function-preserving surgery for small-sized non-small cell lung cancer? Based upon the results of JCOG 0802 trial / **Dr. Hisao Asamura** / P.29

09:20-10:00 Perioperative mortality and morbidity after sublobar vs lobar resection for clinical stage IA NSCLC 2 cm or less in size / **Dr. Nasser Altorki** / P.30

10:00-10:20 Neoadjuvant durvalumab with or without SBRT for early stage lung cancer / **Dr. Nasser Altorki** / P.31

10:20-11:20 Emerging role of immunotherapy in treatment with resectable NSCLC / **Dr. Sung Yong Lee** / P.31

11:20-11:40 The role of immunotherapy in the perioperative period in early stage NSCLC patients / **邱昭華 副院長** / P.32

11:40-12:00 Prevention and management of TKI induced skin toxicities / **盧俊瑋 醫師** / P.33

12:00-13:10 Insights from GINA & SABINA: Treatment strategy to minimize asthma potential risk factors / **潘奕宏 醫師** / P.34 (Satellite Symposium_臺灣阿斯特捷利康股份有限公司贊助)

Insights from real world clinical experience: Addressing the unmet needs of COPD patients / **林聖皓 主任** / P.34 (Satellite Symposium_臺灣阿斯特捷利康股份有限公司贊助)

14:40-15:00 Proton therapy for lung cancer / **王俊傑 部主任** / P.35

15:00-15:20 Thoracic Stereotactic Ablative Radiotherapy for Lung Cancer / **許峯銘 醫師** / P.35

15:20-16:00 Adjuvant and neoadjuvant therapy for NSCLC / **楊志新 院長** / P.36

16:00-16:40 Is There a Role for Surgery in Stage III NSCLC in The Era of the PACIFIC Trial, Using Concurrent Chemoradiotherapy Followed by Maintenance Durvalumab? / **Dr. Miklos Pless** / P.37

16:40-18:00 Combination Therapy With Immune Checkpoint Inhibitors in NSCLC: subgroup-analysis of brain metastases / **蕭世欣 主任** / P.38 (Satellite Symposium_台灣必治妥施貴寶股份有限公司/台灣小野藥品工業股份有限公司共同贊助)

Real world outcome of dual IO in patients with metastatic NSCLC / **孟繁俊醫師** / P.39 (Satellite Symposium_台灣必治妥施貴寶股份有限公司/台灣小野藥品工業股份有限公司共同贊助)

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08:40-09:20 How to enhance the efficacy of EGFR TKI in advanced NSCLC harbored susceptible EGFR mutation. / **楊志仁 主任** / **P.40**

09:20-10:00 Clinical consideration and management of atezolizumab as adjuvant therapy in resectable NSCLC / **Dr. Jay M. Lee** / **P.41**

10:30-11:10 Pave the Way to Cure: Current Status of IO in Early-Stage NSCLC / **李岡遠 副院長** / **P.42**

11:10-11:50 Pathological Changes of Lung Cancer after EGFR-TKI Therapy / **謝明書 主任** / **P.43**

12:00-13:10 Treatment role of Remdesivir to management of COVID-19 / **胡漢忠 醫師** / **P.44** (Satellite symposium_香港商吉利亞醫藥有限公司台灣分公司贊助)

Is Segmentectomy a Rewarding, Function-Preserving Surgery for Small-sized Non-small Cell Lung Cancer? Based Upon The Results of JCOG 0802 Trial

Hisao Asamura, M.D., Ph.D

Professor of Surgery, Chief of Thoracic Surgery, Keio University School of Medicine

The evolution of lung cancer surgery has been well described, featuring several epochs–making surgical successes and important clinical trials. These included the first successful pneumonectomy by Dr. Graham at the Barnes Hospital in St. Louis, the concept of "radical pneumonectomy" and "radical lobectomy" by Dr. Cahan at the Memorial Hospital in New York, and the randomized, phase III study comparing the surgical outcome of lobectomy and sublobar resections by North American Lung Cancer Study Group. Through these studies and experiences, the standard mode of parenchymal pulmonary resection for lung cancer has been evolved from "pneumonectomy" to "lobectomy with lymph node sampling/dissection". Although the following retrospective studies have suggested at least the equivalent outcome after sublobar resection, there has been no definitive demonstration of non-inferiority of sublobar resections in terms of survival and recurrence of lesser resections. Therefore, the present gold standard for the parenchymal pulmonary resection for lung cancer still remains "lobectomy with lymph node sampling/dissection".

However, very recently, the results of two important randomized trials have become available, which compared the lobectomy and segmentectomy (wedge resection) in a non-inferiority setting. The scenario that the JCOG 0802 trial was trying to prove was "The survival after segmentectomy was not inferior to that after lobectomy and the postoperative respiratory function after segmentectomy was significantly better than that after lobectomy". In this non-inferiority trial, these two sentences need to be shown at the same time. In brief, I will show you the results of JCOG trial. Among four factors such as FEV1.0 at 12 months, operative time, prolonged air leakage, and local tumor recurrence rate, none was better for segmentectomy. Regarding the postoperative respiratory function, the followings were shown: The survival (OS) was significantly better for SEG than LOB (log-rank, p=0.0235). However, the total recurrence was more common for SEG (12.1%) than LOB (7.9%), and local recurrence was also more common for SEG (10.5%) than LOB (5.4%). Looking at the cause of death, lung cancer death was equal for SEG (4.7%) and LOB (5.1%). Despite this, the deaths from other cancers were more common for LOB (5.6%) than SEG (2.2%), which might have been responsible for the better survival for SEG. We might need 5 more years to draw the prognostic conclusions. As a scientific experimental viewpoint, it could be concluded that segmentectomy should be respected as standard because of the premises before trial in case the survival after segmentectomy is significantly

better than lobectomy despite the results of the other secondary endpoints.
There might be lots of controversy against this. Not worthy fact is that the minimal difference in the postoperative FEV1.0 between segmentectomy and lobectomy. It was far below our expectations, and it causes a doubt about the efficacy of the segmentectomy as a function preserving surgery. The debate might continue.

Perioperative mortality and morbidity after sublobar vs lobar resection for clinical stage IA NSCLC 2 cm or less in size

Nasser Altorki M.D.

Vice Chairman Cardiothoracic Surgery
Chief, Division of Thoracic Surgery
David B Skinner Professor in Thoracic Surgery
Program Leader; Experimental Therapeutics Program, Meyer Cancer Center of Weill Cornell Medicine

CALGB/Alliance 140503 is a multicentre, international, non-inferiority, phase 3 trial in patients with peripheral non-small-cell lung cancer clinically staged as T1aN0. Patients were recruited from 69 academic and community-based institutions in Australia, Canada, and the USA. Patients were randomly assigned intraoperatively to either lobar or sublobar resection. The primary endpoint of the trial is disease-free survival; here, we report a post-hoc, exploratory, comparative analysis of perioperative mortality and morbidity associated with lobar and sublobar resection. Perioperative mortality was defined as death from any cause within 30 days and 90 days of surgical intervention and was calculated for all randomised patients. Morbidity was graded using Common Terminology Criteria for Adverse Events version 4.0. 697 patients were randomly allocated to either lobar resection (n=357) or sublobar resection (n=340; 59% wedge resection). Six (0·9%) patients died by 30 days, four (1·1%) after lobar resection and two (0·6%) after sublobar resection; by 90 days, ten (1·4%) patients had died, six (1·7%) after lobar resection and four (1·2%) after sublobar resection (difference at 30 days, 0·5%, 95% CI -1·1 to 2·3; difference at 90 days, 0·5%, 95% CI -1·5 to 2·6). An adverse event of any grade occurred in 193 (54%) of 355 patients after lobar resection and 172 (51%) of 337 patients after sublobar resection. Adverse events of grade 3 or worse occurred in 54 (15%) patients assigned lobar resection and in 48 (14%) patients assigned sublobar resection. No differences between surgical approaches were noted in cardiac or pulmonary complications. Grade 3 haemorrhage (requiring transfusion) occurred in six (2%) patients assigned lobar resection and eight (2%) patients assigned sublobar resection. Prolonged air leak occurred in nine (3%) patients after lobar resection and two (1%) patients after sublobar resection.

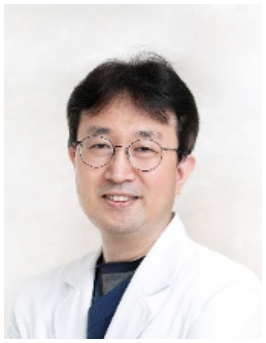
Neoadjuvant durvalumab with or without SBRT for early stage lung cancer

Nasser Altorki M.D.

Vice Chairman Cardiothoracic Surgery
Chief, Division of Thoracic Surgery
David B Skinner Professor in Thoracic Surgery
Program Leader; Experimental Therapeutics Program, Meyer Cancer Center of Weill Cornell Medicine

Radiotherapy enhances immune response through multiple proposed mechanisms, including induction of immunogenic cell death with release of neoantigens, upregulation of MHC complex and enhanced antigen presentation, activation of dendritic cells and enhanced antigen cross presentation, modulation of checkpoint expression and increasing T cell infiltration into the tumor14. We recently reported the primary results of a randomized phase II trial comparing neoadjuvant durvalumab alone with neoadjuvant durvalumab plus stereotactic radiotherapy in patients with early-stage NSCLC. Following surgical resection, major pathological response, the primary endpoint of the trial, was observed in two of 26 resected patients (7.6%) in the monotherapy group and 16 of 26 resected patients (61.5%) in the dual therapy group. To our knowledge this was the first neoadjuvant trial in early stage NSCLC testing the hypothesis that a strategy of SBRT delivered as three fractions of 8 Gy to the primary tumor can be safely delivered as a potent immunomodulator of the tumor microenvironment to enhance the anti-tumor immune response associated with ICB.

Emerging role of immunotherapy in treatment with resectable NSCLC



Sung Yong Lee, M.D., Ph.D.

Professor, Division of Respiratory and Allergic Medicine, Korea University Guro Hospital

Since immune checkpoint inhibitors (ICIs) were introduced to advanced non-small cell lung cancer (NSCLC) in the 2010s, the importance of immunotherapy has become more important than ever, bringing a new paradigm shift in NSCLC treatment. Recently, such a new therapeutic strategy has been focused on peri-operative treatments. There has been a remarkable development in the field of non-metastatic lung cancer treatment with recent trials showing benefit from perioperative immunotherapy. Among them, two important

clinical studies on adjuvant treatment were recently published. The two notable trials come from the phase III IMpower010 study, which demonstrated a significant DFS benefit in patients with completely resected stage IB-IIIA NSCLC who received atezolizumab vs best supportive care after adjuvant chemotherapy, and the phase III PEARLS/KEYNOTE-091 trial, which showed significant DFS improvement with pembrolizumab vs placebo following complete resection in patients with stage IB-IIIA NSCLC and a PD-L1 tumor proportion score ≥50%. Compared with neoadjuvant treatment, adjuvant treatment may not delay surgery, but it is possible that the tumor may be rendered unresectable after the chemotherapy course. The side effects of chemotherapy can be a problem because the patient needs to receive adjuvant chemotherapy in a state where the general condition is not good after surgery. Additionally, it is a disadvantage that the period of clinical trial design is relatively long because there is no suitable surrogate marker. Although the paradigm of adjuvant treatment has recently changed, unmet needs exist for the following matters. 1) Duration of adjuvant treatment (1year in atezolizumab is enough?), 2) Which patients are the best candidates for adjuvant treatment? (the roles of ctDNA), 3) Can progression-free survival (DFS) outcomes translate into overall survival (OS) benefits?
Recently, neoadjuvant immunotherapy in operable NLSCL patients has shown promising results. In particular, through the Checkmate 816 study and NADIM II, neoadjuvant ICI plus chemotherapy combinations showed prolongation of DFS and a pathologic major and complete response. These perioperative immunotherapies are expected to significantly improve overall survival in early-stage NSCLC patients.
Through this lecture, I would like to share the advantages of perioperative therapy of ICIs, and the clinical efficacy of neoadjuvant immunotherapy experienced at Guro Hospital.

The role of immunotherapy in the perioperative period in early stage NSCLC patients

邱昭華

Chao-Hua Chiu, M.D.

Vice Superintendent, Taipei Cancer Center
Attending Physician, Division of Pulmonary Medicine, Taipei Medical University Hospital

Surgery is the major curative therapy for lung cancer; however, historically, about half of them will recur after "complete" resection. Distant metastasis is the major cause of treatment failure and mortality. Preoperative (neoadjuvant) and postoperative (adjuvant) therapies are developed to eradicate micrometastasis and hopefully improve overall

survival. There are other potential benefits of neoadjuvant therapy such as increased resectability and organ preservation. Recently, checkpoint inhibitor immunotherapy, either in the neoadjuvant setting and adjuvant setting, has demonstrated a remarkable survival advantage over standard of care. Unlike chemotherapy and targeted therapy which directly attack cancer cells, checkpoint inhibitor immunotherapy exerts its anti-tumor effect through the rejuvenation of the exhausted T cells. As a result, there should be additional considerations for the application of checkpoint inhibitor immunotherapy in the perioperative stage. Although large randomized phase III trials have demonstrated the benefits over standard treatment, there is yet no evidence suggesting one strategy is better than the other. The theoretical advantages and disadvantages of neoadjuvant and adjuvant immunotherapy will be discussed.

Prevention and management of TKI induced skin toxicities

盧俊瑋

Chun-Wei Lu, M.D.

Assistant Professor, Department of Dermatology, Chang Gung Memorial Hospital, Linkou
Consultant of Taiwan Severe Cutaneous Drug Reaction Association

Target therapy, especially epidermal growth factor receptor-tyrosine kinase inhibitors (EGFR-TKIs), play an indispensable role in the treatment of patients with lung adenocarcinoma in Taiwan. Although the number of targeted drugs is increasing, the multiple pustular rash and severe diarrhea caused by EGFR-TKI are still unsolved problems that must be addressed clinically. Currently, there is no appropriate preventive method to avoid the above-mentioned side effects, and only symptomatic treatment or even suspension of EGFR-TKI use can be performed after symptoms appear. Such an approach not only reduces the compliance with the use of EGFR-TKIs, but even further leads to drug resistance in cancer cells and leads to cancer progression.

Abstract
In this talk, we will share our studies of the possible mechanisms of different skin toxicities of different of TKIs. The current clinical management for those symptoms and the possible methods for prevent those side effects.

Satellite Symposium_臺灣阿斯特捷利康股份有限公司贊助

Insights from GINA & SABINA: Treatment strategy to minimize asthma potential risk factors

潘奕宏

Yi-Hung Pan, M.D.

安泰醫療財團法人安泰醫院 主治醫師

近期SABA的使用風險有更多的實證，包含GINA 2022、SABINA和MARVEL都看到SABA過度使用的問題，會中將針對氣喘的即時抗發炎療效與台灣的臨床給付更新，探討如何將文獻數據中看到對氣喘病人的效益，轉化為台灣臨床上可行的處方策略。

Satellite Symposium_臺灣阿斯特捷利康股份有限公司贊助

Insights from real world clinical experience: Addressing the unmet needs of COPD patients

林聖皓

Sheng-Hao Lin, M.D., Ph.D.

彰化基督教醫院內科部 副主任
彰化基督教醫院胸腔內科 主任
彰化基督教醫院臨床試驗中心 副主任
彰化基督教醫院健檢暨健康管理科 主任

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，以最新科學實證與臨床案例分享，提供臨床醫師另一個不同的選擇，以期能幫助臨床治療之決策。

Proton therapy for lung cancer

王俊傑

Chun-Chieh Wang, M.D., Ph.D

Vice Director of Proton Center, CGMH, Linkou
Physician/Associate Professor

Proton therapy is the one of the most advanced radiation therapy. In 2015, Linkou Chang Gung Memorial Hospital (CGMH) launched the first proton therapy center in Taiwan. There are more than 3,900 patients treated by proton therapy here till now. Liver tumor, head and neck cancer (including NPC), and breast cancer rank the top three patient groups treated at Linkou CGMH. Around 7% of the proton patients had lung cancer. In this short speech, we will introduce the progression of our proton therapy center and share some aspects of our treatment experience in lung cancer.

Thoracic Stereotactic Ablative Radiotherapy for Lung Cancer

許峯銘

Feng-Ming Hsu, M.D., Ph.D

Attending Physician, Division of Radiation Oncology, Department of Oncology, National Taiwan University Hospital
Assistant Professor, Graduate Institute of Oncology, College of Medicine, National Taiwan University

With the advent of radiotherapy techniques, including respiratory control, treatment planning, and image-guided delivery, stereotactic ablative radiotherapy (SABR) has become the validated alternative local therapy to thoracic surgery for lung cancer. In NTUH, more than 100 patients with inoperable, early-stage non-small cell lung cancer were treated with multi-fraction SABR to primary lung tumor and achieved excellent local control. Disseminated failure remains a challenge. Of note, the tumor PD-L1 status seems to be significantly associated with the risk of recurrence. Pre-treatment assessment using the age-adjusted comorbidity index predicts survival but does not preclude any subgroup of patients who will not benefit from SABR. We further developed multi-fraction SABR for recurrent/progressive regional or distant lymphadenopathy and demonstrated that SABR to the involved lymphadenopathy provides high local control with minimal toxicities and acceptable risk of regional failure. SABR may also be applied as a local boost modality for

locally advanced lung cancer after definitive chemoradiotherapy. At last, we revealed that single fraction SABR (aka stereotactic radiosurgery) could achieve good clinical outcomes for oligo-metastatic or oligo-progressive lung nodules. In conclusion, the use of thoracic SABR shall play an important role in the management of all stages of lung cancer.

Adjuvant and neoadjuvant therapy for NSCLC

楊志新

James Chih-Hsin Yang, M.D., Ph.D

Superintendent, National Taiwan University Cancer Center
Director, Cancer Research Center, College of Medicine, National Taiwan University

Dr Yang's research focuses on lung cancer treatment and the mechanism of resistance of chemotherapy, targeted therapy and immunotherapy. Dr Yang is a leader in lung cancer new drug development. He and other Asian investigators have established EGFR TKI as the front-line treatment for lung cancer patients with EGFR mutation (IPASS study). He is also the principal investigator of several studies that led to the global approval of the 2nd-generation irreversible EGFR TKI, afatinib, and contributed to the development of 3rd-generation EGFR TKI, osimertinib. His studies were focused on various approach to improve the treatment outcome of EGFR mutation positive patients. He contributed and established the standards for the treatment of uncommon EGFR mutations patients and leptomeningeal metastasis patients. His clinical research included EGFR TKI combination with chemotherapy, targeted therapies and immunotherapy. He has published more than 300 papers in peer-reviewed journals such as New England Journal of Medicine, Lancet Oncology, Journal of Clinical Oncology, Lancet Respiratory Medicine, Cancer Discovery and Journal of Thoracic Oncology etc. He served more than 15 years as associate editor of Journal of Thoracic Oncology. He received many awards such as the 2nd Kobayashi Foundation Cancer Research Award from the Asian Clinical Oncology Society in 2012, the distinguished research award of the Taiwan National Science Council 2012-2015, the TECO award for biotechnology in 2015, distinguished research award of the Ministry of Science and Technology, Taiwan, from 2016-2018 and Academic Award from Taiwan Ministry of Education in 2018; Outstanding Scholar Award, Foundation For the Advancement of Outstanding Scholarship 2019 Aug -2021 Jan. Chair Professor Award, Taiwan Ministry of Education, 2021 Feb to 2024 Jan and Chair Professor of National Taiwan University in 2021. 2022 Distinguished Research Award of Phi-Tau-Phi Foundation. He is also the highly cited researcher of 2019, 2020, 2021 in Clinical Medicine category awarded by Clarivate Analytics

(Web of Science Group). He is the recipient of 2022 IASLC (International Association for the Study of Lung Cancer) Sr. Paul A. Bunn Scientific Award. He gave more than 300 speech in international conferences, including many oral presentations of study reports in ASCO, ESMO and World Conference on Lung Cancer.

Is there a role for surgery in stage III NSCLC in the era of the PACIFIC trial, using concurrent chemoradiotherapy followed by maintenance durvalumab?

Miklos Pless, Prof. Dr. med

Chief of Hematology & Medical Oncology and Head of Tumor Center

The treatment of locally advanced, i.e. stage III Non-small Cell Lung Cancer (NSCLC), has been a topic of intense research in the past years. However, overall results were disappointing. In inoperable stage III NSCLC concurrent chemoradiotherapy (CRT) established itself as the standard of care, but neither additional induction chemotherapy, nor consolidation chemotherapy or higher radiotherapy doses improved the results. As for operable stage III NSCLC, both adjuvant and neoadjuvant chemotherapy provide an overall survival (OS) benefit of 5% over surgery alone. However, several randomized trials failed to show an advantage of using surgery with chemotherapy versus CRT, and trimodal strategies were not superior to bimodal approaches. Five-year OS results reached 40% at best.

The publication of the first overall survival data of the Pacific trial in 2018 changed the field dramatically. In this study for inoperable locally advanced NSCLC, durvalumab maintenance was added after definitive CRT. The five years results were recently published and show an outstanding OS rate of 43%. Importantly, they also apply for stage IIIA/N2 NSCLC with an excellent 2-year OS of 68%. It is thus a valid question whether the Pacific regimen should be the new and only standard of care, even for operable, locally advanced NSCLC?

In this presentation we will review and discuss the PACIFIC data and put them in perspective with recent surgical trials in operable stage III NSCLC, applying immunotherapy as adjuvant treatment, such as the IMpower 010 and the PEARLS trials, or in the neoadjuvant setting, e.g. the CM816, NADIM II or SAKK 16/14 studies. While there is no direct comparison between definitive CRT plus immunotherapy versus a surgical approach including immunotherapy, the preliminary results with surgery seem quite promising and indicate that surgery may still be of great value in the treatment of locally advanced NSCLC.

Satellite Symposium_台灣必治妥施貴寶股份有限公司/台灣小野藥品工業股份有限公司共同贊助

Combination Therapy With Immune Checkpoint Inhibitors in NSCLC: subgroup-analysis of brain metastases

蕭世欣

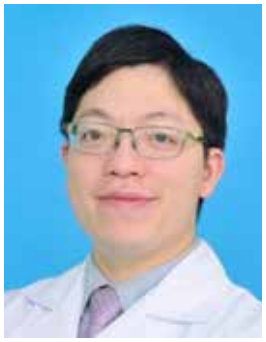
Shih-Hsin Hsiao, M.D., Ph.D.

Director of Division of Pulmonary Medicine, Department of Internal Medicine, Taipie Medical University Hospital
Assistant professor of College of Medicine, Taipie Medical University Hospital
Chairperson of Cancer Center, Taipei Medical University Hospital
Attending physician, of Division of Pulmonary Medicine, Department of Internal Medicine, Taipei Medical University Hospital

As we know, 30% of advanced non-small cell lung cancer (NSCLC) patients had brain metastases (BM) at time of cancer diagnosis and the overall prevalence rate may increase to 60% in selective patient group. NSCLC patients with BM are associated with poor prognosis, therefore, how to treat this subpopulation is a crucial topic. Recently, phase 3 randomized clinical trials have demonstrated that check-point inhibitor immunotherapy can improve overall survival of advanced NSCLC patients, including those with BM. In this session we will focus on the therapeutic strategies of NSCLC patients with BM. In the randomized phase 3 CheckMate 9LA trial, adding 2 cycles of chemotherapy to first line nivolumab plus ipilimumab did not only provide survival benefit but also intracranial response in patients with advanced NSCLC compared to chemotherapy regardless of PD-L1 expression level. Furthermore, in 2022 ESMO, we also observed first-line nivolumab + ipilimumab + chemotherapy contributed significant improvement in advanced NSCLC patients with PD-L1 < 1%. This outcome showed consistent results with previous reports in all randomized patients. We believe there will be more exploratory studies to provide further treatments in NSCLC patients with brain metastases in the future.

Satellite Symposium_台灣必治妥施貴寶股份有限公司/台灣小野藥品工業股份有限公司共同贊助

Real world outcome of dual IO in patients with metastatic NSCLC



孟繁俊

Fan-Chun Meng, M.D.

Attending physician, the division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, and Department of Emergency, Tri-Service General Hospital

Dual IO base regimen has been listed in guideline as category I recommendation. Five-year follow up in CheckMate227 provides evidence dual-IO regimen can bring durable response benefit to patients whether PD-L1 expression is positive or negative compared to chemotherapy. In another dual-IO base regimen, 9LA, dual-IO combine two cycle chemo, shows greater response in first six months compared to chemotherapy also with the benefit in durability. In 2022 ESMO update of 9LA, it showed regardless of the type of cancer cells, tumor shrinkage lasted longer in patients who responded to Nivo +Ipi +chemo vs chemo (2 times in NSQ compared to chemo; 7 times in SQ compared to chemo). Moreover, 9LA shows survival benefit in patients with brain metastases, especially in PD-L1<1. To sum up, dual IO regimens provide patients long-term survival benefit with less chemo adverse effect, and longer response with the benefit of the MOA between dual-IO.

How to enhance the efficacy of EGFR TKI in advanced NSCLC harbored susceptible EGFR mutation

楊志仁

Chih-Jen Yang, M.D, Ph.D.

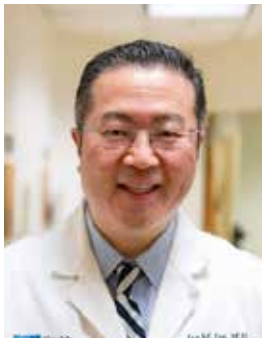
Chair, Lung cancer team, Lung Cancer, Kaohsiung Medical University Hospital
Professor, Faculty of Medicine, College of Medicine, Kaohsiung Medical University

More than 50% of patients with lung cancer are diagnosed at the advanced-stage, and the 5-year survival rate for metastatic NSCLC is below 10%. Epidermal growth factor receptor (EGFR) is one of the members of ErbB/HER transmembrane receptor family, and the EGFR mutation facilitating cellular regulation, proliferation, apoptosis, and angiogenesis. The incidence of EGFR mutation in NSCLC is around 50% in Asian. The development of EGFR tyrosine kinase inhibitors (TKIs) in the 2000s resulted in dramatic improvements in both the response rate (RR) and progression-free survival (PFS) over traditional chemotherapy for late-stage NSCLC patients who harbor susceptible EGFR mutations, and EGFR-TKIs have become the standard of care for these patients. For NSCLC patients harboring EGFR mutation, TKIs have shown favorable benefits for RR and PFS. However, the median PFS was around 10-14 months. How to enhance the clinical efficacy of EGFR TKI is an urgent issue.

Several treatment strategies were developed to enhance the clinical efficacy of EGFR TKI. First, combination of erlotinib with bevacizumab (antiangiogenic agent) demonstrated significantly longer PFS than EGFR-TKI treatment alone in JO25567 and NEJ026. Ramucirumab, a fully human IgG1 monoclonal antibody against VEGF receptors (VEGFRs), also demonstrated significantly longer PFS than erlotinib alone in the RELAY trial. Second, combination of chemotherapy and EGFR TKI showed a longer PFS than who received EGFR TKI alone but failed to show a longer overall survival in NEJ009. Third, a combination of EGFR TKI, platinum doublet chemotherapy and immunotherapy also provided clinical efficacy in a subgroup analysis in IM150.

Recently, many studies have examined whether local consolidative therapy (LCT), including curative surgical intervention and definitive radiotherapy for the primary tumor, improves advanced lung cancer outcomes.

Clinical consideration and management of atezolizumab as adjuvant therapy in resectable NSCLC



Jay M. Lee, M.D.

Surgical Director, Thoracic Oncology Program, Jonsson Comprehensive Cancer Center
Associate Professor of Surgery, David Geffen School of Medicine at UCLA

Lung cancer is the leading cause of cancer mortality worldwide accounting for early 1.8 million mortalities annually. Patients are frequently diagnosed with advanced stage disease. Even among patients diagnosed with earlier stage disease, recurrence following resection is common. There are two Food and Drug Administration (FDA) approved checkpoint inhibitor therapy (CIT) regimens in perioperative early stage lung cancer. Based on IMpower 010, adjuvant atezolizumab (PD-L1 inhibitor) for 1 year following complete resection and platinum doublet chemotherapy in patients with stage II-IIIA NSCLC whose tumors express PD-L1 in at least 1% of tumor cells showed a significant disease free survival (DFS) advantage compared to best supportive care (HR 0.66; 95% CI: 0.50 0.88; p=0.004). In contrast, based on CheckMate 816, neoadjuvant combination nivolumab and platinum doublet chemotherapy for 3 cycles in stage IB-IIIA NSCLC regardless of PD-L1 expression showed a significant event free survival (EFS) advantage compared to chemotherapy alone (HR 0.63; 95% CI: 0.43, 0.91; P=0.0052). In CheckMate 816, adjuvant CIT was not allowed. Based on these results, adjuvant atezolizumab following complete resection and chemotherapy or neoadjuvant nivolumab plus chemotherapy both received approval and clearly established the role of immunotherapy in early stage NSCLC. The current therapies for resectable NSCLC remain controversial. The most effective CIT regimen and timing of administration (neoadjuvant, adjuvant, or both) are unclear. The highly anticipated readout of the ongoing phase III perioperative combined chemotherapy plus ICI (neoadjuvant) and adjuvant ICI may provide insight.

Based on IMpower 010, atezolizumab is the first CIT to demonstrate a significant reduction in risk of disease recurrence or death in patients with PD-L1 TC ≥1% stage II-III resectable NSCLC when given after platinum-based chemotherapy and is now approved in several countries. IMpower010 met its primary endpoint, demonstrating a 34% reduction in risk of disease recurrence or death (DFS HR 0.66) in patients with resectable, PD-L1 positive (TC ≥1%), stage II-III NSCLC. The DFS benefit correlated with PD-L1 expression level, with the greatest magnitude of benefit in the PD-L1 TC ≥50% population with a 57% reduction in risk of disease recurrence or death for adjuvant atezolizumab over BSC (DFS HR 0.43). A clinical benefit was consistently observed across most clinically relevant subgroups in the PD-L1 TC ≥1%, stage II-III and PD-L1 TC ≥50%, stage II-III populations, including in both

histologies, stage II and III disease, and in patients with nodal involvement. In the PD-L1 TC ≥1%, stage II–III population, similar patterns of relapse were seen between the study arms, and time to relapse appeared to favor atezolizumab over BSC. Post-resection ctDNA analysis both patients with ctDNA+ or ctDNA– status whose tumours expressed PD-L1 (TC ≥1%) derived a DFS benefit. Absolute DFS benefit increased in ctDNA+ patients; however, insufficient evidence exists to make conclusions about the predictive nature of ctDNA at the post-operative time point. The safety profile for adjuvant atezolizumab was tolerable. In patients who underwent pneumonectomy or bilobectomy, adjuvant atezolizumab was well tolerated, and no new safety signals were identified.

Pave the Way to Cure: Current Status of IO in Early-Stage NSCLC

李岡遠

Kang-Yun Lee, M.D, Ph.D.

Professor of Internal Medicine, School of Medicine, College of Medicine and Dean of Officine of Research and Development, Taipei Medical University
Head of Asthma Assembly, the Asian Pacific Society of Respirology (APSR)

Although surgery offers the best chance of cure, the 5-year overall survival rates for early-stage non-small cell lung cancer (NSCLC) are unsatisfactory. The effect of perioperative chemotherapy, whatever adjuvant or neoadjuvant, was frustrating, which only marginally improved the 5-yeaer overall survival rates by 5%. Immune check point inhibitors (ICIs), particularly anti-PD-1/PD-L1 monoclonal antibodies as monotherapy or combined with chemotherapy, have proved their efficacy in metastatic and locally advanced NSCLC. The strength of ICIs is their durable response with potential of long-term survival. Recently, two phase III trials of perioperative ICI therapy have demonstrated encouraging outcomes. In an adjuvant setting after adjuvant chemotherapy, IMpower010 showed a disease-free survival (DFS) benefit with atezolizumab versus the control arm in patients with resected stage II–IIIA NSCLC. CheckMate 816 also demonstrated that neoadjuvant nivolumab plus chemotherapy resulted in significantly longer event-free survival. Remarkably, as high as 24.0% of pathological complete response rate indicates a potential of real cure of the disease. Questions regarding the sequence and the biomarkers of immunotherapy and chemotherapy in the perioperative setting remains. These questions and current advances from other related trials will be addressed in this talk.

Pathological Changes of Lung Cancer after EGFR-TKI Therapy

謝明書

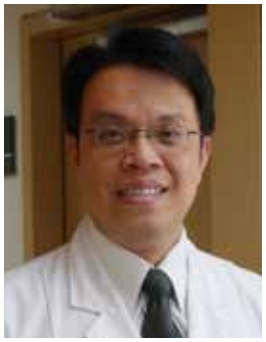
Min-Shu Hsieh, M.D, Ph.D.

Associate professor, Graduate Institute of Pathology, College of Medicine, National Taiwan University
Director, Department of Pathology, National Taiwan University Cancer Center, Taipei, Taiwan

More than half of patients with advanced lung adenocarcinoma in Taiwan harbor classic EGFR mutations. EGFR tyrosine kinase inhibitors (EGFR-TKIs) are standard first-line therapy for these patients. Nevertheless, most patients treated with first or second-generation EGFR-TKIs may develop progressive disease due to developed acquired resistance in tumor cells. Rebiopsy is important to identify the mechanism of acquired resistance. Acquired resistance can be categorized into EGFR-dependent pathway and EGFR-independent pathway which including bypass activation and histologic transformation. Despite next-generation sequencing is usually used to identify these molecular changes, histologic transformation can only be confirmed by pathological examination. Information of histologic changes accompanying acquired resistance is still limited. This session will introduce pathological findings of lung cancer after EGFR-TKI therapy, including histologic transformation and resected lung specimens after EGFR-TKI neoadjuvant treatment.

Satellite symposium_香港商吉利亞醫藥有限公司台灣分公司贊助

Treatment role of Remdesivir to management of COVID-19



胡漢忠

Han-Chung Hu, M.D.

林口長庚醫院胸腔科系肺感染暨免疫科 主任
林口長庚醫院呼吸治療科 主任
長庚大學呼吸治療學系專任助理教授

COVID-19 is an infectious disease caused by a novel β-coronavirus, belonging to the same subgenus as the Severe Acute Respiratory Syndrome (SARS) virus. Remdesivir, an investigational broad-spectrum antiviral agent has previously demonstrated in vitro activity against Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), and in vivo efficacy against other related coronaviruses in animal models. Its safety profile has been tested in a compassionate use setting for patients with COVID-19. The current therapeutic studies demonstrate clinical effectiveness of remdesivir in COVID-19 patients by shortening time to clinical recovery, and hospital stay. Remdesivir is expected to be active against the Omicron variant and its subvariants. In this speech, we critically analyze the current evidence of remdesivir against COVID-19 and dissect the aspects over its safety and efficacy.

萬享宴會廳 E

請點選各時段議程前往連結頁面

12 / 10

08:40-09:20 Implementing therapeutic drug monitoring in TB treatment / **李枝新 主任** / **P.46**

09:20-10:00 Recent advances in LTBI regimen / **黃虹綾 醫師** / **P.47**

12:00-13:10 From evidence to clinical benefit: What does the latest GOLD guideline tell us? / **陳家弘 醫師** / **P.48** (Satellite Symposium_荷商葛蘭素史克藥廠股份有限公司台灣分公司贊助)

14:40-15:20 Optimizing the diagnostic algorithm for CPA in Taiwan: what are the unresolved issues? / **阮聖元 醫師** / **P.48**

15:50-16:30 Understanding the burden of NTM-LD in Taiwan: what kinds of research are still lacking? / **黃偉彰 醫師** / **P.49**

16:40-18:00 Conquer the complexity and challenge of EGFRm+ NSCLC: Recent Evidences in Routine Clinical Practice Populations / **楊志仁 主任** / **P.50** (Satellite Symposium_台灣百靈佳殷格翰(股)公司贊助)

The role of COPD management today: Made-to-measure or one-size-fits-all? / **潘奕宏 醫師** / **P.51** (Satellite Symposium_台灣百靈佳殷格翰(股)公司贊助)

Implementing therapeutic drug monitoring in TB treatment

李枝新

Chih-Hsin Lee, M.D., Ph.D.

Chief, Tuberculosis Center, Taipei Municipal Wanfang Hospital
Associate Professor, Department of Internal Medicine, School of Medicine, College of Medicine, Taipei Medical University

Tuberculosis (TB) is one of the most widespread communicable diseases exposing a major threat to global health nowadays. Multidrug-resistant TB (MDR-TB), defined as TB caused by the Mycobacterium tuberculosis complex (Mtb) with resistance against both isoniazid and rifampicin, emerges due to the mismanagement of anti-TB treatment and continues to spread through person-to-person transmission. Rifampicin-resistant TB (RR-TB) and MDR-TB were estimated to account for about 4.7% of incident TB cases annually. The course of conventional MDR-TB/RR-TB treatment lasts for a long duration (at least 18 months or longer) using highly toxic second-line regimens. Active surveillance of adverse events during MDR-TB treatment consistently showed an exceeding high prevalence of adverse events ranging from 71.3%-90.7%. The treatment-associated adverse events are the main causes of patients withdrawing from anti-TB treatment. The bactericidal and sterilizing activities of the anti-TB agents were dose-dependent. New short-course regimens advocated by the World Health Organization (WHO) require higher doses of fluoroquinolones, linezolid, and isoniazid. Many of the treatment-associated adverse events were dose-dependent. However, there were wide variabilities between individuals in drug absorption, distribution, metabolism, and excretion. One-fit-all dose recommendation may not provide optimal drug exposure. To ensure adequate drug efficacy and to avoid toxicities of 2nd-line anti-TB agents, therapeutic drug monitoring (TDM) provide a practical solution to achieve the desired drug exposure for 2nd-line anti-TB agents. The data collected during the implementation of TDM are also useful to establish the population pharmacokinetics models for providing individualized dose recommendations.

Recent advances in LTBI regimen

黃虹綾

Hung-Ling Huang, M.D.

Attending Physician, Department of Internal Medicine,,Kaohsiung Municipal Ta-Tung Hospital
Assistant Professor, Department of Internal Medicine, Kaohsiung Medical University

The advanced treatment of latent tuberculosis infection (LTBI)

Treatment of latent TB infection (LTBI) has been regarded as an important part of End TB Strategies by World Health Organization. The treatment regimen for LTBI has evolved in recent decades, from the traditional 9-month isoniazid (9H) to the weekly high-dose isoniazid combined with rifapentine for 12 doses (3HP) to persuade a shorter course, safer and effective regimen. Compared with 9H, 3HP is the current popular short-course therapy with least drug doses for LTBI treatment, which provides a high completion rate up to 80% and less hepatotoxity. However, the 3HP regimen flaws into the higher risk of unpredictable systemic drug reactions (SDRs) than 9H regimen. There are two main phenotypes of SDR, one is flu-like syndrome manifested by fever, respiratory symptoms, and muscle aches. The other phenotype is severe systemic symptoms such as hypotension, urticaria, and bronchospasm. According to the previous studies, approximately 3-10% of 3HP users may experience SDR, and half among them terminated the treatment. We will review current studies to provide an overview of relevant predictors of 3HP related SDRs from aspects of individual characteristics, pharmacokinetics and genetics.

Low-dose isoniazid combined with rifapentine for 1month (1HP), a new short-course regimen for LTBI has been formally used in HIV patients, while the safety profiles in non-HIV subjects are still lacking. We will share the reports of current clinical trial launched in Taiwan since 2019 regarding the safety profiles, particularly the SDRs of 1HP and 3HP regimen in non-HIV population.

Satellite Symposium_荷商葛蘭素史克藥廠股份有限公司台灣分公司贊助

From evidence to clinical benefit: What does the latest GOLD guideline tell us?

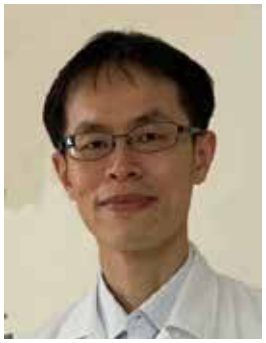
陳家弘

Chia-Hung Chen, M.D., Ph.D.

中國醫藥大學附設醫院內科部胸腔暨重症系 主治醫師

隨著老年化社會的到來及生活環境的變化，慢性阻塞性肺病是近年持續增加的慢性疾病，隨著藥物不斷的演進，現行慢性阻塞性肺病治療有許多不同的藥物選項以及不同類型的吸入裝置可供選擇，要如何在臨床照護更加積極地介入，並精準地透過最合適的藥物進行治療，讓病患可以在控制症狀的同時也降低未來發生急性惡化或是死亡率的風險，一直是都相當熱門的話題。2023 年COPD的治療指引也於11月進行更新，本演講將會透過最新版本的GOLD guideline 回顧過往發表的經典文獻並結合最新的治療建議及講者自身的臨床經驗，與聽眾進行交流，期待可以帶給病患更好的照護品質。

Optimizing the diagnostic algorithm for chronic pulmonary aspergillosis in Taiwan: what are the unresolved issues?



阮聖元

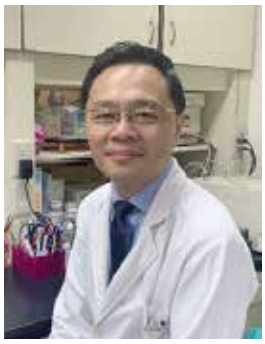
Sheng-Yuan Ruan, M.D., Ph.D.

Attending physician, Department of Internal Medicine, National Taiwan University Hospital

Aspergillus species are saprotrophic fungi commonly found in our environment that can cause a spectrum of pulmonary diseases, ranging from hypersensitivity reaction to invasive diseases. Aspergillus fumigatus is the most common Aspergillus species causing pulmonary diseases, followed by Aspergillus flavus, Aspergillus niger and Aspergillus terreus. However, geographic variation in species distribution has been reported. The clinical presentation of Aspergillus lung disease is determined by the interaction between fungi and hosts. Chronic pulmonary aspergillosis (CPA) is increasingly recognized as an important disease entity among the spectrum of Aspergillus lung disease. CPA typically affects patients with some form of underlying respiratory pathology, such as pulmonary TB, atypical mycobacterial infection, COPD and bronchiectasis. The European Respiratory Society (ERS) proposed

diagnostic criteria of CPA in 2016, which has been widely using to diagnose CPA in clinical practice. According to the ERS criteria, the diagnosis of CPA requires a combination of the following three criteria: characteristic symptoms and radiological findings, direct evidence of Aspergillus infection (microscopy or culture from biopsy) or an immunological response to Aspergillus and exclusion of alternative diagnoses. Furthermore, the disease will have to have been present for at least 3 months. Currently, Aspergillus-specific IgG is considered a key component in the diagnosis of CPA because of better sensitivity and reproducibility than galactomannan and precipitant antibody assays. However, manufacturers' cutoffs of Aspergillus-IgG level are usually based on findings from small-sized studies and unpublished data. Large-scale studies in well-defined patient cohorts are needed to determine optimal cut-off of Aspergillus-IgG for the diagnosis of CPA. In this talk, I will discuss the challenge and unresolved issues in the recent diagnostic approach of CPA.

Understanding the burden of NTM-LD in Taiwan: what kinds of research are still lacking?



黃偉彰

Wei-Chang Huang, M.D.

Attending Physician, Division Of Chest Medicine, Taichung Veterans General Hospital

Management of nontuberculous mycobacterial lung disease (NTM-LD) consists of a long-term multi-drug antibiotic regimen, yet many patients do not achieve culture conversion. Increased awareness of NTM-LD is needed as patients with this disease experience substantial burden and unmet treatment needs. This speech provides clinicians and regulatory and healthcare decision makers an overview of the clinical, economic, and humanistic burden of NTM-LD and the unmet treatment needs faced by patients and clinicians.

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Conquer the complexity and challenge of EGFRm+ NSCLC: Recent Evidences in Routine Clinical Practice Populations

楊志仁

Chih-Jen Yang, M.D., Ph.D.

高雄醫學大學 醫學院/醫學系/呼吸治療學系 教授
高雄醫學大學 醫學院/學士後醫學系 系主任
高雄醫學大學附設醫院 一般科 主任
高雄醫學大學附設醫院 胸腔內科 主治醫師

The treatment of Lung cancer thrived in recent years. From chemotherapy, target therapy to immuno-therapy. The survival and quality of life have improved dramatically thanks to progress of pharmaceutical technology and better understanding of lung cancer. For EGFR mutation positive NSCLC patients still remain some unmet needs. Such as patient with poor PS, elderly, and patient with brain metastasis. These patients weren't included in RCTs and need more RWE to support their treatment. Prof. Yang will give comprehensive talk about how to conquer the complexity and challenge of EGFR m+ NSCLC: Recent evidence in routine clinical practice populations.

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The role of COPD management today: Made-to-measure or one-size-fits-all?

潘奕宏

Yi-Hung Pan, M.D.

安泰醫療財團法人安泰醫院 主治醫師

Chronic obstructive pulmonary disease (COPD) is ranked as the 3rd leading cause of death worldwide and the 8th leading cause of death in Taiwan in 2020, which represents an enormous burden to healthcare system and society.

While recent studies provided new data that inhaled triple therapies could reduce all-cause mortality compared to dual therapies, it's worth considering who may benefit from treatment escalation. Large real-world evidence indicated only 6-23% of participants would be eligible for clinical trials of inhaled triple therapies in COPD. Majority of patients with COPD do not experience moderate to severe exacerbation in prior year. Clinical benefits of ICS treatment should be balanced against the potential risks. In a pooled analysis of over 6,000 patients showed no differences in survival between LAMA/LABA and LAMA/LABA/ICS in patients with moderate-to-very-severe COPD and a predominantly low risk of exacerbations, suggesting that the survival benefit of triple therapy seen in some recent studies may be specific to a high-risk population.

Dr. Pan will examine the importance of individual trajectories when making treatment decisions for patients with COPD and explore the latest guidelines and scientific evidence to find the perfect treatment fit for COPD patient.

皇愉會議室 8-1 A

請點選各時段議程前往連結頁面

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08:40-09:20 Oral Appliance Therapy for OSA: State of the Art / **Prof. Peter Cistulli** / **P.53**

09:20-10:00 Obstructive Sleep Apnea Endotypes / **Prof. Wellman** / **P.54**

12:00-13:10 Insights of 2022 ESC/ERS Guidelines for the diagnosis and treatment of pulmonary hypertension / **郭炳宏 教授** / **P.54** (Satellite Symposium_暉致醫藥股份有限公司贊助)

One airway one disease: Allergy Rhinitis and its impacts on Asthma / **蘇茂昌 醫師** / **P.55** (Satellite Symposium_暉致醫藥股份有限公司贊助)

14:40-15:20 What we know and don't know about smoking cessation / **蘇一峰 醫師** / **P.56**

15:50-16:30 Occupational cancer: From asbestos exposure to malignant mesothelioma / **王金洲 教授** / **P.56**

16:40-18:00 Pneumococcal Vaccines: clinical evidence of efficacy and recommendation / **傅彬貴 主任** / **P.57** (Satellite Symposium_輝瑞大藥廠股份有限公司贊助)

12 / 11

08:40-09:20 Application of PDT for the treatment of malignant pleural effusion / **王洪武 教授** / **P.58**

09:20-10:00 EBUS-TBNA for Lung cancer Staging: Diagnostic & Prognostic Impact / **Prof. Bin Hwangbo** / **P.59**

10:50-11:50 The Journey Beyond / **吳文碩 醫師** / **P.60**

Studying abroad and industry experience: career exploration of a pulmonologist / **黃萬均 醫師** / **P.60**

12:00-13:10 The role of triple therapy in asthma management: Who & When / **潘奕宏 醫師** / **P.61** (Satellite Symposium_荷商葛蘭素史克藥廠股份有限公司台灣分公司贊助)

Oral Appliance Therapy for OSA: State of the Art

Peter A. Cistulli, MD, PhD, MBA, FRACP, FAHM, ATSF

Charles Perkins Centre, Faculty of Medicine and Health, University of Sydney, Australia
Department of Respiratory and Sleep Medicine, Royal North Shore Hospital, Sydney, Australia

Oral appliance therapy has emerged as the leading alternative to continuous positive airway pressure (CPAP) for Obstructive Sleep Apnoea (OSA) treatment. There is a strong evidence base demonstrating oral appliance therapy improves OSA in the majority of patients, including some with more severe disease. This is associated with improvement in a range of outcomes, including snoring, sleep quality, daytime sleepiness, quality of life, psychomotor speed, simulated driving performance, and a range of cardiovascular measures. They are generally well tolerated, and patients often prefer oral appliances compared to CPAP treatment. Despite the superior efficacy of CPAP over oral appliance in terms of reduction in the apnoea-hypopnoea index, randomized controlled trials comparing the two indicate similar improvement in health outcomes such. This relates to greater treatment acceptance and adherence for oral appliance therapy. The evidence base strongly supports the use of oral appliance therapy in the management of OSA.

Obstructive Sleep Apnea Endotypes

David Andrew Wellman, M.D., Ph.D.

Director, Sleep Disordered Breathing Lab, Brigham and Women's Hospital
Associate Professor of Medicine, Harvard Medical School

Several physiologic factors contribute to the development of Obstructive Sleep Apnea (OSA). These include a collapsible pharyngeal airway, an oversensitive ventilatory control system, poor pharyngeal muscle responsiveness during sleep, and a low respiratory arousal threshold. This presentation will provide a description of each of these endotypes, as well as how they interact to produce OSA. Potential applications, such as pharmacotherapy, will also be discussed.

Satellite Symposium_暉致醫藥股份有限公司贊助

Insights of 2022 ESC/ERS Guidelines for the diagnosis and treatment of pulmonary hypertension

郭炳宏

Ping-Hung Kuo, M.D.

國立臺灣大學醫學院附設醫院內科部胸腔科 主治醫師

The clinical and translational research of pulmonary hypertension (PH) has been continuously deepened which has promoted the updating of PH related guidelines. On August 26, 2022，the European Society of Cardiology (ESC) and the Respiratory Society (ERS) jointly released the 2022 ESC/ERS Guidelines for the Diagnosis and Treatment of Pulmonary Hypertension.

A turning point in the field of pulmonary hypertension (PH) is the most recent publication of the new European Guidelines for the diagnosis and treatment of pulmonary hypertension. These Guidelines contain many important novelties, including new PH and pulmonary arterial hypertension (PAH) definitions, mainly related to the mean pulmonary arterial pressure (mPAP) and pulmonary vascular resistance (PVR) thresholds, which are now lowered to 20 mmHg and 2 Wood Units, respectively. Important changes are, in addition, introduced in many sections including risk stratification, diagnostic algorithm, screening, and treatment. An important issue is, among others, the reintroduction of exercise-induced PH.

Satellite Symposium_暉致醫藥股份有限公司贊助

One airway one disease: Allergy Rhinitis and its impacts on Asthma

蘇茂昌

Mao-Chang Su, M.D.

高雄長庚醫院胸腔內科主治醫師
高雄長庚醫院睡眠醫學中心主任

Allergic diseases are complex and can cluster in multi-morbidities, for example, allergic asthma and rhinitis in the same patient. These diseases are linked on several levels, often referred to as the "one airway one disease" concept. Evidence to support this link comes from epidemiological, pathophysiological, clinical, and socioeconomic studies.

To summary:

1. AR and asthma share anatomical and pathophysiological similarities.
2. Nasal and bronchial airways interact with each other Allergen provocation tests have provided evidence of naso-bronchial cross-talk.
3. Co-morbid AR is associated with:
   - More difficult to control asthma
   - Increased use of asthma medication and higher drug costs
   - Increased physician visits
   - Increased hospitalizations due to asthma
4. Patients with AR have a higher risk of developing asthma.
5. Greater control of AR symptoms results in better asthma control.

What we know and don't know about smoking cessation.

蘇一峰

Vincent Yi-Fong Su, M.D., Ph.D.

Division of Thoracic Medicine, Yangming Branch of Taipei City Hospital

Smoking cessation is specifically identified as a key service that can improve the prevention of avoidable illness. It is never too late to stop smoking. While the health benefits of quitting are greater for people who stop smoking at earlier ages, quitting at any age has health benefits. There is strong evidence that a range of pharmacologic and behavioral interventions, both individually and in combination, are effective in increasing smoking cessation in nonpregnant adults. In pregnancy, behavioral interventions are effective for smoking cessation, but data are limited on the use of pharmacotherapy for smoking cessation. Data on the effectiveness and safety of electronic cigarettes for smoking cessation among adults are also limited and results are inconsistent.

Occupational cancer: From asbestos exposure to malignant mesothelioma

王金洲

Chin-Chou Wang, M.D., MPH., Ph.D.

Deputy Chief, Division of Internal Medicine, Kaohsiung Chang Gung Hospital
Certified Professor, Ministry of Education

Asbestos is a group of natural minerals composed of heat-resistant fibers. Asbestos is a general term for a fibrous hydrated silicate natural ore, it can be divided into two categories: serpentine group and amphibole group. Due to differences in the process of crystallization into fibers, they have different structures and chemistries. Asbestos has been used in thousands of consumer products, for example, asbestos-cement products such as refractory asbestos textiles, water pipes, insulating boards, and various thermal insulation materials which were widely used in construction, electrical appliances, automobiles, household items, etc.

Asbestos is classified as a Class I human carcinogen by the International Agency for

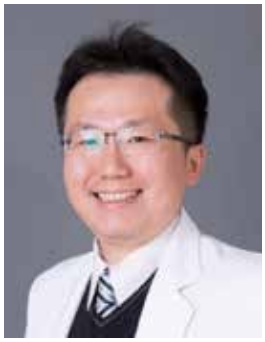
Research on Cancer (IARC). Dusty asbestos can have serious health effects, tiny asbestos fibers are scattered into the air and inhaled into the lungs of the human body. After an incubation period of 20 to 40 years, it can lead to mesothelioma, lung cancer and other cancers.

In view of the high carcinogenicity of asbestos, asbestos products were banned in EU countries in 2005, while in Japan and South Korea in 2006 and 2009 respectively; By the end of 2013, more than 50 countries in the world have completely banned mining and asbestos. Canada was originally a major producer of asbestos mines, and it also announced the closure of mines and a complete shutdown of production in 2012.

Diseases caused by asbestos mainly include malignant mesothelioma and asbestosis. Malignant mesothelioma is a malignant tumor of mesothelium that originates in the serosal lining of the pleura, pericardium or peritoneum; Asbestos lung disease refers to the diffuse interstitial fibrosis of the lungs caused by asbestos. Other asbestos-related diseases are: asbestos warts, pleural plaques, diffuse pleural thickening. As mentioned above, asbestos exposure may also increase the risk of lung, throat and digestive system cancers.

Satellite Symposium_輝瑞大藥廠股份有限公司贊助

Pneumococcal Vaccines: clinical evidence of efficacy and recommendation



傅彬貴

Pin-Kuei Fu, M.D., Ph.D.

Director of Division of Clinical Research, Department of Medical Research, Taichung Veterans General Hospital
Director of Integrated Care Center of Interstitial Lung Disease, Taichung Veterans General Hospital
Attending Physician, Department of Chest Medicine, Taichung Veterans General Hospital
Associate Professor of College of Life Sciences, National Chung Hsing University

肺炎鏈球菌是造成小孩及年長者呼吸道感染之重要病原菌之一，在成年人的感染及社區型肺炎的傳播也時有所見，長久以來在世界各地有許多受肺炎鏈球菌感染後所造成的重大疾病。肺炎鏈球菌會藉由空氣傳播經呼吸道侵入人體造成感染，在溫帶及亞熱帶地區的國家，適合肺炎鏈球菌的生長及擴散，其侵入人體後會造成許多侵襲性疾病，尤其較易侵入免疫系統較弱之兒童及 65 歲以上老人如：菌血症、敗血症、腦膜炎及呼吸道疾病如：肺炎、中耳炎、鼻竇炎等之侵襲性疾病。在美國每年肺炎鏈球菌造成約有 50,000 例菌血症、500,000 例肺炎及 3,000 例腦膜炎病例，其中約有 40,000 人因肺炎鏈球菌感染而死亡。台灣位處溫帶及亞熱帶地區，人口又多集中於都市區域活動，人與人的接觸頻繁，非常適合肺炎鏈球菌的生長。肺炎鏈球菌沒有季節性，5歲以下幼童及65歲以上老人為兩大高罹病率族群，其

他不分年齡的高危險群包括免疫功能不全、慢性心肺疾病、腎功能衰竭、糖尿病、肝硬化、癌症等患者，都建議施打疫苗，健康成人也可接種提高身體防護力。疫苗一年四季都可以施打，成人可施打的肺炎鏈球菌疫苗有兩種，一是23價肺炎鏈球菌多醣體疫苗（PPV23），一是13價結合型肺炎鏈球菌疫苗（PCV13），本次演講將會與聽眾分享肺炎鏈球菌疫苗目前的臨床實證以及國際與台灣預防接種的推薦更新。

Application of PDT for the treatment of malignant pleural effusion.

王洪武

Wang Hongwu, M.D., Ph.D.

Center of Respiratory Diseases, Dongzhimen Hospital, Beijing University of Chinese Medicine

Photodynamic therapy (PDT) is an ancient and modern technology. It has been widely used for the treatment of malignant tumors in China, especially in malignant central airway diseases. However, at present, the data of clinical evidence based medicine for PDT applied in malignant pleural effusion(MLE) is very limited, and derives mainly from case report or series of case studies in the world which lack consensus on clinical diagnosis and treatment. PDT is the combination of drugs and devices which kill tumors and other pathologically proliferating tissues through local selective photosensitization of the lesions. After the photosensitizer is injected into the bloodstream, it has a high affinity with the tumor tissue and will form a relatively high accumulation in the tumor tissue. At this time, light of a suitable wavelength is irradiated to the lesion, and the energy of the photosensitizer absorbs the photon transitions to the excited state. The excited photosensitizer transfers energy to oxygen, producing some radical oxygen species (ROS), which are the main killers of target damage, acting through both free radicals and singlet oxygen, causing tumor cell apoptosis or death. PDT can also induce anti-tumor immune effects, enhance the anti-tumor effect of various immune cells of the body, and cause local inflammatory reactions, activate various immune molecules such as chemotactic cytokines and activated complement, thereby effectively removing tumor cells and inhibiting tumor recurrence. Malignant pleural effusion is a common and important complication of primary or secondary malignancy which may at times be difficult to diagnose or treat. Improvements in quality of life for appropriate patients with this rare yet incurable cancer may be obtained with less drastic lung-sparing surgical procedures along with intraoperative use of PDT. Very encouraging survival results have been obtained with the combination of surgery and PDT, which requires the well-orchestrated collaborative effort

of an extensive team of professionals, from thoracic surgeons and radiation oncologists to basic science researchers. When considering PDT in the thoracic cavity for treatment of malignant, localized tumors such as those observed in malignant pleural mesothelioma (MPM), changes in light dose caused by the cavity geometry should be accounted for in order to improve treatment efficacy. Cavity-like geometries demonstrate what is known as the "integrating sphere effect" where multiple light scattering off the cavity walls induces an overall increase in light dose in the cavity. We have some experiences with combination of PDT and chemotherapy to deal with the dyspnea in patients of MPM. Further research and clinical trials are needed to demonstrate any synergistic modalities.

EBUS-TBNA for Lung cancer Staging: Diagnostic & Prognostic Impact

Bin Hwangbo, M.D., Ph.D.

Head, Division of Pulmonology, National Cancer Center, Korea
Specialist, Division of Pulmonology, National Cancer Center, Korea

Endobronchial ultrasound guided transbronchial needle aspiration (EBUS-TBNA) was first introduced in 2003. Since then, it has changed mediastinal staging process of lung cancer markedly. EBUS-TBNA enables ultrasound-guided real-time sampling of mediastinal and hilar lymph node (LN)s close to the trachea and large bronchi. According to the metaanalysis by the American College of Chest Physicians in 2013, the pooled sensitivity of EBUS-TBNA for mediastinal staging was 89%, which was similar with that of video-assisted mediastinoscopy (89%). Currently, EBUS-TBNA has largely replaced cervical mediastinoscopy in invasive mediastinal staging. Endoscopic ultrasound with bronchoscope-guided fine needle aspiration (EUS-B-FNA), which was introduced in 2009 in lung cancer staging, is a technique that uses an EBUS-TBNA bronchoscope in the esophagus. EUS-B-FNA can cover LNs inaccessible or difficult to assess by EBUS-TBNA, such as station 5, 8 and 9. Adding EUS-B-FNA to EBUS-TBNA improves sensitivity by 3-7% in mediastinal staging.

Clinical N (cN) stage determined by EBUS-TBNA (□EUS-B-FNA) is correlated with the prognosis of non-small cell lung cancer (NSCLC) patients. According to a recent study by our group, 5-year survival significantly differed according to cN stage diagnosed by EBUS-TBNA in NSCLC. Current guidelines suggest additional surgical staging, such as staging via mediastinoscopy, in cN0-1 cases by EBUS-TBNA where there is a high clinical suspicion of LN metastasis. However, in our study, false-negative EBUS-TBNA cases had favorable survival which was similar to that of pN1 patients, which may provide a rationale for performing surgery after negative EBUS-TBNA results. This result may be related with the

low metastatic burden in false-negative EBUS-TBNA cases. High diagnostic values of EBUS-TBNA and good prognostic correlation of EBUS-TBNA results highlight the importance of EBUS-TBNA in NSCLC staging.

The Journey Beyond

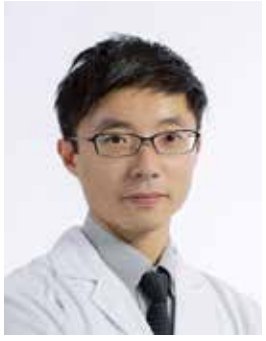
吳文碩

Wen-Shuo Wu, M.D.

Senior Director – Medical – Late Phase Clinical Development in Immunology/Dermatology, Eli Lilly and Company

Have you ever thought about what you would like to do after completing your training? If staying in the medical center is not an option, are there any other options you would like to explore? If you can do anything, what would it be? The presenter will share his personal journey in the pharmaceutical industry. After completing his specialist training as a pulmonologist in one of the largest medical centers in Taiwan, he joined the pharmaceutical company as a clinical research physician in Taiwan. He worked in a therapeutic area he was not familiar with and launched several products in indications across dermatology, rheumatology and neurology. Recently, he relocated to the USA to lead the late phase clinical development team and obtained a first-in-disease indication approval in several countries including US, EU and Japan.

Studying abroad and industry experience: career exploration of a pulmonologist



黃萬均

Wan-Chun Huang, M.D., M.P.H., DTMH, Ph.D.

Vaccine Medical Advisor, GSK Taiwan

Most pulmonologists in Taiwan work in the hospital. Are there other career opportunities for pulmonologists? In this talk I would like to share the value of pulmonologists, what I learned when I studied in UK and Australia, and my experience in pharmaceutical industry.

Satellite Symposium_荷商葛蘭素史克藥廠股份有限公司台灣分公司贊助

The role of triple therapy in asthma management: Who & When

潘奕宏

Yi-Hung Pan, M.D.

安泰醫療財團法人安泰醫院 主治醫師

氣喘是常見而且可能進程為嚴重的慢性呼吸道疾病，大幅增加病人及家庭社會的負擔。氣喘病患過度依賴急救藥物，而未常規使用含規律型吸入性類固醇藥物作為氣喘治療，可能使病患呼吸道持續在慢性發炎反應的狀態，久而久之造成氣道塑化，進一步加劇氣喘發作及惡化的風險。

現行氣喘治療主流藥物為ICS/LABA類型的吸入型藥物，但隨著近年幾篇臨床研究結果的進展，LAMA這類型的支氣管擴張劑在氣喘病患治療上的角色逐漸清楚，GINA 全球哮喘防治創議指引中，也持續不斷的更新LAMA相關的治療建議，但究竟哪些病患或是哪些臨床指標可以做為氣喘病人精準治療的依據?又在什麼時機點應該使用ICS/LABA/LAMA的吸入型藥物，以期讓病患得到更好的氣喘控制？希望可以透由這次的演講跟各位先進及同好一起探討！

皇愉會議室 8-1 B

請點選各時段議程前往連結頁面

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12:00-13:10 The efficacy and safety of Nemonoxacin in the treatment of community-acquired pneumonia / **鄭世隆 主任** / **P.63** (Satellite Symposium_太景生物科技股份有限公司贊助)

Nemonoxacin for CAP Concerns beyond Clinical Efficacy and Safety / **薛博仁 副院長** / **P.64** (Satellite Symposium_太景生物科技股份有限公司贊助)

14:40-15:20 2022 ESC/ERS CTEPH Guidelines updates and implications to clinical practice / **Prof. Marion Delcroix** / **P.65**

15:50-16:30 2022 ESC/ERS PAH Guidelines updates and implications to clinical practice / **Prof. Marius M. Hoeper** / **P.66**

16:40-18:00 Integrating amivantamab into the treatment of EGFR exon 20 insertion mutations / **蔡俊明 教授** / **P.67** (Satellite Symposium_嬌生股份有限公司贊助)

Clinical management of infusion reactions to systemic anticancer therapy / **林彥廷 醫師** / **P.67** (Satellite Symposium_嬌生股份有限公司贊助)

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08:40-09:00 The current status of stage 3A non-small cell lung cancer therapy: Taiwan cancer registration data / **王秉彥 主任** / **P.68**

09:00-09:20 Evolving Treatment Paradigms for Stage III NSCLC / **蔡鎮良 主任** / **P.69**

09:20-10:00 Robotic Bronchoscopy for Peripheral Pulmonary Lesions (BENEFIT study) / **Dr. Alexander Chen** / **P.69**

10:30-10:50 Minimally Invasive Repair for Pectus Excavatum: Seventeen-year Experience / **程建博 醫師** / **P.70**

10:50-11:10 Personal experience in Minimally Invasive Repair of Pectus Excavatum (MIRPE; Nuss procedure) / **朱志純 醫師** / **P.71**

11:10-11:30 AI image study：Lung Cancer / **林孟暐 醫師** / **P.71**

11:30-11:50 AI imaging study of anterior mediastinal tumors / **張超群 醫師** / **P.72**

12:00-13:10 Next-generation Sequencing in Advanced Non-small Cell Lung Cancer: Evidences from Illumina TSO500 / **林彥廷 醫師** / **P.73** (Satellite Symposium_因美納台灣生物科技股份有限公司贊助)

Satellite Symposium_太景生物科技股份有限公司贊助

The efficacy and safety of Nemonoxacin in the treatment of community-acquired pneumonia

鄭世隆

Shih-Lung Cheng, M.D., Ph.D.

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Nemonoxacin is a recently developed novel quinolone. In contrast to other quinolones, Nemonoxacin is a nonfluorinated C-8 methoxy quinolone which targets DNA gyrase and topoisomerase IV. Many in vitro studies have demonstrated its great antibacterial activity. Nemonoxacin also displays good in vitro activity against some antibiotic-resistant pathogens such as methicillin-resistant Staphylococcus aureus, penicillin-resistant Streptococcus pneumoniae, and ertapenem-non-susceptible Enterobacteriaceae. All of these findings suggest that Nemonoxacin may play a role in the treatment of community-acquired pneumonia (CAP). Nemonoxacin exhibits poor activity against Mycobacterium tuberculosis (tuberculosis [TB]), including both multidrug-resistant (MDR) TB and non-MDR-TB. Thus, unlike levofloxacin and moxifloxacin, which are active against TB, Nemonoxacin may bring an additional benefit in the clinical setting of CAP as its use would not mask or delay the diagnosis of TB.

Several findings from this meta-analysis based on three RCTs showed that Nemonoxacin has a clinical efficacy like levofloxacin in the treatment of adult patients with CAP. First, the clinical cure rate of Nemonoxacin in treating CAP was as good as levofloxacin. Second, the microbiologic response rate of Nemonoxacin was like levofloxacin. Third, subgroup analysis of different pathogens, including Streptococcus pneumoniae, Haemophilus spp., Staphylococcus aureus, and atypical pathogens, showed no significant differences in the clinical efficacy of these two drugs in the treatment of CAP. All these findings are supported by in vitro and in vivo studies showing that the activity of Nemonoxacin is comparable to levofloxacin. Therefore, based on the findings of these analyses, it is suggested that Nemonoxacin can play an important role in the treatment of CAP.

Satellite Symposium_太景生物科技股份有限公司贊助

Nemonoxacin for CAP Concerns beyond Clinical Efficacy and Safety

薛博仁

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台灣大學 兼任教授

- **Quinolone for CAP**
  - Unmet medical need
- **Nemonoxacin**
  - PK/PD
  - MIC distribution
  - PD breakpoints
  - Clinical breakpoints (CBP) vs. epidemiological cut-off value (ECV)

2022 ESC/ERS CTEPH Guidelines updates and implications to clinical practice

Marion Delcroix, M.D, Ph.D,

Dept of Pneumology Gasthuisberg University Hospital

Marion Delcroix, MD, PhD, graduated from the Free University of Brussels, where she specialized in respiratory medicine. She is currently Professor of Medicine and of Respiratory Physiology at the Universities of Leuven and Kortrijk, Belgium. She is Head of the Pulmonary Hypertension (PH) Program, in charge of the Respiratory High Care Unit, and Chair of the Council for Rare Diseases of the University Hospitals of Leuven. She has been involved in the routine care of over 2000 patients with PH and has participated in main pivotal trials for the treatment of pulmonary arterial hypertension (PAH). Marion Delcroix was a task force member at the 3rd to 6th World Symposia on PH, a nucleus member of the Working Group on Pulmonary Circulation & RV Function of the European Society of Cardiology (ESC) and is a founding member and chair of the International CTEPH Association (ICA). She has over 200 publications, with research interests focusing on pulmonary circulation and gas exchange, cardiac imaging, and the role of inflammation in the pathogenesis of PAH and CTEPH. She has been associate editor of the European Respiratory Journal (ERJ) and is currently deputy editor of the Journal of Heart and Lung Transplantation (JHLT). Lastly, she was involved as core member for PH in the European Reference Network (ERN)-lung, as Assembly Head for Pulmonary Vascular Diseases of the European Respiratory Society (ERS), as co-chair of PHAROS ERS Clinical Research Collaboration, and as scientific board member of the World Symposia on Pulmonary Hypertension Association (WSPH). She is a fellow of the ESC and of the ERS, and co-chair of the ESC/ERS 2022 PH guidelines.

2022 ESC/ERS PAH Guidelines updates and implications to clinical practice

Marius M. Hoeper, MD

Hannover Medical School, Hannover, Germany

Marius M. Hoeper, MD, is deputy director of the Department of Respiratory Medicine at Hannover Medical School, Hannover Germany, where he is also in charge of the pulmonary hypertension (PH) program and senior attending physician at the intensive care unit. As clinician scientist, he has published more than 400 papers in these areas. Professor Hoeper was a task force member/chair at the 3rd, 4th, 5th and 6th World Symposia on PH. He was also an author and Section Editor of the 2009 European PH Guidelines and is the senior author of the 2015 European PH Guidelines. In 2014, Professor Hoeper received the distinguished Lifetime Achievement in Pulmonary Arterial Hypertension Award from the European Respiratory Society, and in 2016, he received the Oskar award for Medicine. In 2018 and 2019, Clarivate Analytics listed Professor Hoeper as Highly Cited Researcher.

Prof Hoeper acts as regular reviewer for several major journals including the New England Journal of Medicine and Lancet. He has a 15-year experience as Associate Editor of the European Respiratory Journal. In addition, he is editorial board member of Circulation and the American Journal of Respiratory and Critical Care Medicine, Section Editor for the Journal of the American College of Cardiology, and advisory board member of Lancet Respiratory Medicine.

Satellite Symposium_嬌生股份有限公司贊助

Integrating amivantamab into the treatment of EGFR exon 20 insertion mutations.

蔡俊明

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Clinical management of infusion reactions to systemic anticancer therapy

林彥廷

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General abstract

Currently, there are two challenges in the treatment of exon 20 insertions mutation: First is underdiagnosis and the other is lack of treatment options as compared with Del19 or L858R mutations. Exon 19 and Exon 21 (L858R) can be sufficiently identified by traditional real-time polymerase reactions (PCR). Unlike Exon 19 and Exon 21, the 3rd most common EGFR mutation, Exon 20 insertion mutations, account for up to 4-12% of all mutations in EGFR mutations cannot be fully captured by PCR (cobas®).) Consequently, next-generation sequencing (NGS) will need to adopt in company with PCR to identify all exon 20 insertions variants so that corresponding treatments can be accurately given.

Exon 20 insertion is the third most common EGFR mutations occurred in adenocarcinoma Non-small-cell lung cancer (NSCLC) patients. These types of abnormality are known for bad treatment outcome when treated with 1st or 2nd generation tyrosine kinase inhibitors (TKIs) due to its resistance mechanisms. Amivantamab, the EGFR-MET bispecific antibody binds to each receptor's extracellular domain and therefore bypassing resistance at the TKI binding site.

The pivotal study, CHRYSALIS, is a phase I, open-label, dose-escalation, and dose-expansion study, investigating the efficacy and safety profile of amivantamab for patients with exon 20 insertion. In this session, we will briefly go through the original result of CHTYSALIS in terms of response rate, PFS and OS as well as recent clinical updates for not only amivantamab but also for other developing treatment options as well.

Finally, although the transient infusion-related reaction (IRR) associated with amivantamab treatment occurs mainly in the beginning of treatment, proper pre- and post-medication are required for the control of IRR. In this session we will also run through the management of IRR to ensure optimal treatment experience and outcome for our patients.

The current status of stage 3A non-small cell lung cancer therapy: Taiwan cancer registration data

王秉彥

Bing-Yen Wang, M.D., Ph.D

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Lung cancer is the leading cause of cancer-related deaths throughout the world1 and specifically in Taiwan. Long-term survival of patients with lung cancer is still poor because in most patients are diagnosed at an advanced stages. However, the therapeutic methods for clinical stage IIIA lung cancer remain controversial and differ among centers, regions, and continents. For decades, this issue has been discussed, but no specific therapy has been accepted widely.

Therapeutic methods for cT1–3N2 lung cancer are determined through a multidisciplinary team discussion, including a board-certified thoracic surgeon, who evaluates whether the tumor is operable. If the tumor is inoperable, the current, widely accepted treatment is concurrent chemoradiotherapy (CCRT) followed by durvalumab. If the tumor is operable, then multimodal therapies may be used, including operation (OP) plus adjuvant chemotherapy (C/T) with or without radiotherapy (RT), and neoadjuvant C/T or chemoradiotherapy (CRT) plus OP plus adjuvant C/T with or without RT.

We obtained data from the Taiwan Society of Cancer Registry (TSCR). This study searched data from the TSCR between 2010 and 2018. We identifed patients who were diagnosed with lung cancer by the diagnostic codes C34.0, C34.1, C34.2, C34.3, C34.8, and C34.9. We identify the patients with clinical IIIA and analyzed the current treatment status in Taiwan. Furthermore, date and cause of death were confrmed with Taiwan death certifcates. Survival curves were plotted by the Kaplan–Meier method, and the diference in survival was calculated by the log-rank test. Univariate and multivariate analysis were also performed to identify the prognostic factors.

Evolving Treatment Paradigms for Stage III NSCLC

蔡鎮良
Tsai Chen-Liang Ph.D.
Attending Physician/Director of Internal Medicine Intensive Care Center, Tri-Service General Hospital
Associate Professor, Department of Medicine, National Defense Medical College

Stage III NSCLC continues to have a variety of treatment options. There are different options for treatment, such as adjuvant chemotherapy followed by surgery or concurrent radiotherapy (CRT), adjuvant CRT followed by surgery, adjuvant immune checkpoint inhibitors (ICI), adjuvant chemotherapy followed by surgery, adjuvant ICI and surgery, etc. Can we personalize care for these patients and enhance their outcomes? The sequencing of therapy and the definition of molecular subgroups beyond conventional clinical variables continue to be contentious issues. When should immunotherapy be used (neoadjuvant, adjuvant, or both)? Is radiation used as a neoadjuvant treatment for resectable NSCLC? and How do we decide which medical option is best for our patients? I'll review the most recent development in locally advanced NSCLC.

Robotic Bronchoscopy for Peripheral Pulmonary Lesions (BENEFIT study)

ALEXANDER C. CHEN, MD.
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Recently, robotic bronchoscopy has been developed to potentially improve the diagnostic yield for peripheral lung lesions. This presentation will review the different phases of robotic bronchoscopy technology development, starting with concept design and value proposition, moving to pre-clinical studies, and concluding with a review of the first prospective, multi-center feasibility study in humans.

Minimally Invasive Repair for Pectus Excavatum: Seventeen-year Experience

程建博

Yeung-Leung Cheng, M.D, Ph.D.

Director, Department of Surgery, Taipei Tzu Chi Hospital
Ph.D., Institute of Medical Sciences, National Defense Medical College, Taiwan

Background:
Pectus excavatum is the most frequent congenital chest wall deformity. The minimally invasive repair of pectus excavatum, introduced by Nuss and his colleagues in 1998, has been widely developed and used in the past decades. We reviewed our experience with the modified Nuss procedure for the repair of pectus excavatum patients.

Materials and Methods:
From June 2005 to August 2022, 1,309 patients with pectus excavatum were corrected surgically, and 855 patients with bar removal were also enrolled. The clinical characteristics, surgical data, and post-operative results were analyzed.

Results:
The patients with a mean age of 23.8 years (range 6-53 years). Most patients were males (1,148; 87.7%). The mean Haller index in computerized tomography of the chest was 3.9 (range 2.9 – 50.2). At primary operation, 1,296 patients were corrected by the modified Nuss procedure and 2 were corrected by a hybrid approach (resection of cartilages and the modified Nuss procedure). Eleven patients underwent the modified Nuss procedure for correction of recurrence after the previous Ravitch procedure. The surgical complication rate was 5.8 %, without mortality, cardiac perforation, or major bleeding. Bar displacement with recurrence receiving reoperation occurred in twelve patients. The mean sternovetebral distance was significantly improved after repair (9.6±1.6 cm vs 6.5±1.7 cm, $p<0.05$). The bars in patients after 2-4 years of correction were all removed successfully, but one patient had massive bleeding (tear of the right IMA) needing sternotomy to control bleeding. There were no deaths after bar removal.

Conclusions:
The minimally invasive surgery for repair of pectus excavatum is safe and has early reliable results. Some modifications may be required in patients with a deep concave or less compliant chest wall. Further data regarding long-term results is required.

Personal experience in Minimally Invasive Repair of Pectus Excavatum (MIRPE; Nuss procedure)

朱志純

Chih-chun Chu, MD

Taipei City Center General Hospital

Nuss procedure for pectus excavatum was invented by a pediatric surgeon, Dr. Donald Nuss, in 1987. It was introduced to Taiwan around 2004. From June 2005 to Aaugust 2022, 1860 Nuss procedure, including 1793 primary and 67 redo cases, were performed by me. Patient' s age ranges from 1 to 56 years old.
This presentation will discuss the problems and what I have learned in dealing with different conditions of treating patients with pectus excavatum.

AI image study：Lung Cancer

林孟暐

Mong-Wei Lin, MD, PhD

Division of Thoracic Surgery, Department of Surgery, National Taiwan University Hospital, Taipei, Taiwan

In recent years, the application of artificial intelligence technology in computed-tomography (CT) images, through computer-aided diagnosis system, showed the potential in personalized treatment decision making in thoracic oncology. Most previous studies have focused on analyzing radiomic features in tumors to differentiate benign or malignancy in indeterminate lung nodules, and showed the accuracy and feasibility of prediction model creation based on image analysis. Our group used CT-based radiomic analysis in the prediction of several important pathological features in early-stage lung cancer, including adenocarcinoma subtypes, visceral pleural invasion, and the presence of spread through air space, and published a series of studies in high-impact SCI journals. Our results may help thoracic surgeons for patient selection and surgical planning.

AI imaging study of anterior mediastinal tumors

張超群

Chang, Chao-Chun, M.D.

Special skill: Thoracic surgery
Educational background: The degree of Medical College, National Cheng Kung University

Anterior mediastinal tumors (AMT) are rare. In the previous large imaging studies, the prevalence of AMTs ranged from 0.73% to 0.9%. The most common AMTs in the adult population are thymoma, teratoma, thyroid goiter, and lymphoma. Treatments for AMTs can be divided into two categories: direct surgical resection and chemotherapy. Direct surgical resection without core needle biopsy should be provided for noninvasive thymic epithelial tumor (TET), teratoma, cyst, and goiter. On the contrary, chemotherapy should be provided for lymphoma, malignant germ cell tumor, or unresectable invasive TET. Previously, clinicians predict tumor types based on clinical information and medical imaging, and then an initial workup (surgical resection or core biopsy) was provided. Our retrospective study in NCKUH from 2010 to 2020 showed that there were 14% of patients underwent unnecessary core biopsy or operation (including thoracoscopic surgery or sternotomy) during initial workup. Recently, there were growing research on artificial intelligence in medical imaging and clinical decision-making. Today, I am going to review prior studies and share our research about applying artificial intelligence to AMTs.

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Next-generation Sequencing in Advanced Non-small Cell Lung Cancer: Evidences from Illumina TSO500

林彥廷

Yen-Ting Lin, M.D.

Visiting Physician, Department of Medicine, National Taiwan University Cancer Center
Adjunct Visiting Physician, Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, National Taiwan University Hospital
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In the era of precision medicine, there have been dozens of targeted agents available against different driver mutations in different cancers. NCCN guideline 2022 recommends to test EGFR, ALK, KRAS, ROS1, BRAF, NTRK1/2/3, METex14 skipping and RET in patients with fresh advanced non-small cell lung cancer (NSCLC). Testing for EGFR T790M in patients experiencing first- or second-generation EGFR tyrosine kinase inhibitors (TKI) resistance is a category 1 recommendation, since osimertinib overcomes secondary T790M mutation. Besides EGFR T790M, there are emerging evidences suggest other potentially targetable EGFR TKI resistance mechanisms may exist, such as MET amplification, BRAF V600E mutation, RET fusion, ERBB2 amplification, etc.. In first- or second-generation ALK TKI resistant lung cancers, compound ALK kinase domain mutations may confer resistance to the third-generation ALK TKI lorlatinib. Not only to detect but to monitor lung cancer's important genetic alterations may influence patient's outcome.

Next-generation sequencing provides clinicians chances to detect and to monitor potentially targetable genetic alterations in lung cancer. illumina TruSight Oncology 500 (TSO500) enables in-house comprehensive genomic profiling from tissue and liquid biopsy. Implement assays in-house offer chances to keep the full data and specimens in-house, to build up your own database, to re-analyze and to improve data interpretation. In this section, I would like to review the evidences from illumina TSO500.

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Ref: 1: Beigel JH, Tomashek KM, Dodd LE, et al. Remdesivir for the Treatment of Covid-19 - Final Report. N Engl J Med. 2020; 383(19):1813-1826. doi:10.1056/NEJMoa2007764 2.VEKLURY®台灣仿單

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1. 適應症與用途 適用於治療嚴重急性呼吸道症候群冠狀病毒2(SAR-CoV-2)病毒檢測結果爲陽性之下列成人與兒童病人(12歲以上且體重至少40公斤)的新型冠狀病毒疾病(COVID-19，嚴重特殊傳染性肺炎) :(1)必須住院，或(2)發病七天內，罹患輕至中度COVID-19且有惡化成重度COVID-19(包括住院或死亡)之高風險。COVID-19重症風險因子請參考完整版仿單之臨床試驗段落。**2. 用法用量 2.1 用法用量概述** 只有在醫療照護人員可立即取得治療嚴重輸注反應或過敏反應(如過敏性反應[anapyhlaxis])之藥物，且於必要時能夠啟動緊急醫療系統(emergency medical system; EMS)的情況下，才可投予VEKLURY。用於治療成人與兒童病人(12歲以上且體重至少40公斤)的COVID-19時，僅可以靜脈輸注的方式投予VEKLURY。切勿透過任何其他途徑給藥。**2.2 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。**2.3 成人及12歲以上且體重至少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)。(1)在症狀性COVID-19確診之後，應儘快開始VEKLURY的療程。對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，建議的總治療時間爲10天。(2)對不須使用侵入性機械呼吸器及/或葉克膜/ECMO的住院病人，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。(3)對罹患輕至中度COVID-19且有惡化成重度COVID-19 (包括住院或死亡) 之高風險病人，須於出現症狀後的7天內開始VEKLURY的療程，建議的總治療時間爲3天。(4)必須先稀釋再靜脈輸注給藥。**2.4 腎功能不全** 不建議用於eGFR低於30毫升/分鐘的病人。**2.5 製備與投藥** (1)僅可使用無菌注射用水調製VEKLURY凍晶乾燥注射劑。調製後的VEKLURY凍晶乾燥注射劑(含有100毫克/20毫升的remdesivir溶液) 必須進一步稀釋於100毫升或250毫升的0.9%氯化鈉輸注袋中。(2)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。應在可以治療嚴重過敏反應(如過敏性反應[anaphylaxis])的條件下投藥。在臨床適合的情況下，在輸注過程中應監視病人的反應，並應於輸注完成後觀察病人至少一小時，確認是否出現過敏的徵兆和症狀(詳細藥品調製、稀釋與投藥指示請參閱完整版仿單。) **2.6 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. 劑型與含量規格** VEKLURY凍晶乾燥注射劑100毫克/瓶爲無菌、不含防腐劑、白色至灰白色至黃色的凍晶乾燥粉末，盛裝於調製用的單劑小瓶中。 **4. 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。 **5. 警語及注意事項 5.1 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。在臨床適合的情況下，在輸注過程中應監視病人的反應，並應於輸注完成後觀察病人至少一小時，確認是否過敏反應的徵兆和症狀。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。**5.2 轉胺酶升高的風險增加** (1) 如果ALT濃度升高超過正常值上限的10倍，應考慮停用VEKLURY。(2) 如果ALT升高且伴有肝臟發炎的徵兆或症狀，應停用VEKLURY。 **5.3 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。 **6. 不良反應** (1)過敏，包括輸注相關反應與過敏性反應。(2)轉胺酶升高的風險增加 **7. 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。**8. 特定族群之使用 8.1 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。只有在潛在效益超越潛在風險的情況下，才可對孕婦或可能懷孕的婦女投予remdesivir。**8.2 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。**8.4 兒童之使用** 對12歲以上且體重至少40公斤的兒童病人治療COVID-19的安全性及有效性已經確立。VEKLURY用於12歲以下或體重低於40公斤之兒童病人的安全性及有效性尚未確立。 **8.5 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。**8.6 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)。**8.7 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。**12. 臨床藥理學 12.1 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。**12.2 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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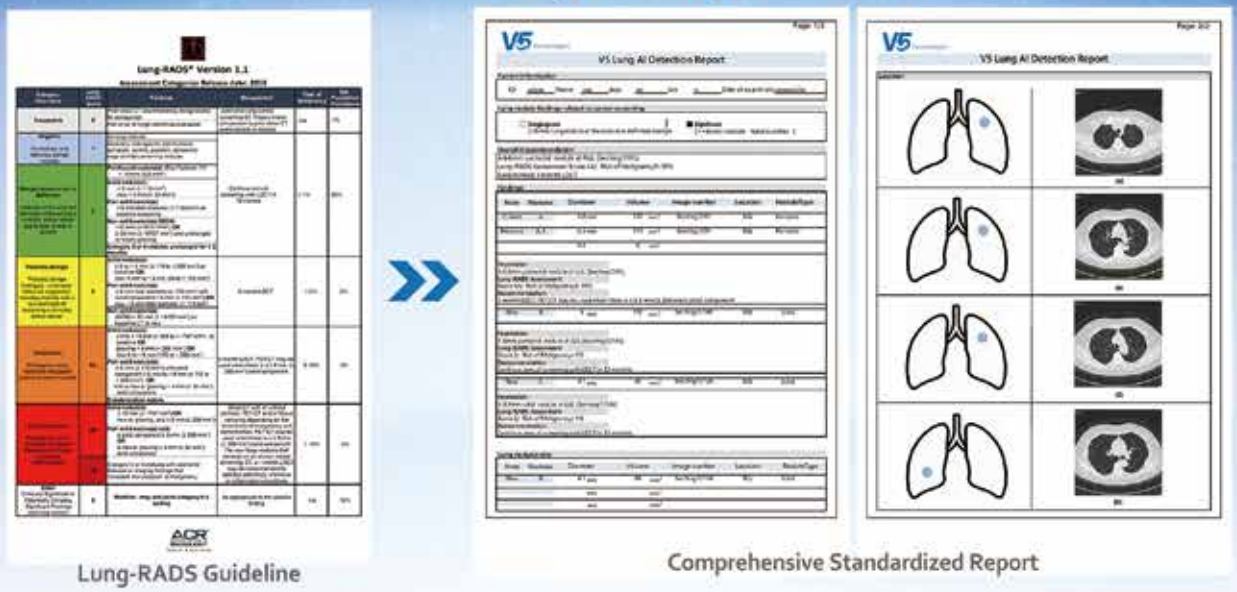

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適應症或用途：治療2歲以上的兒童、青少年與成人的過敏性鼻炎。**劑量與用法**：艾敏釋(Avamys)鼻噴劑僅供鼻腔內途徑使用。第一次使用，需先搖勻，並直立握著，對空按壓至少6次直到均勻霧氣噴出。每次使用前均須搖勻。為獲得充分的治療效果，建議定時用藥。成人及12歲以上青少年：建議起始劑量為110微克(mcg)一天一次，當達到最佳治療效果且症狀得到控制時，將劑量減低至55微克一天一次。2至11歲兒童：建議起始劑量為55微克一天一次，若未出現有效的反應，可給予110微克一天一次。當症狀得到適當控制，建議將劑量減至55微克一天一次。**(藥物)交互作用**：與CYP3A抑制劑的交互作用。Fluticasone furoate會透過細胞色素P450 3A4所媒介的廣泛首渡代謝作用快速廓清。當fluticasone furoate與強效CYP3A抑制劑包括含有cobicistat之產品併用時，應預先警告預期會有全身性副作用增加的風險。不建議與ritonavir併用，因為可能會有導致fluticasone furoate之全身暴露量升高的風險。**懷孕與授乳**：懷孕授乳-目前並無足夠的在人類懷孕期間使用fluticasone furoate的資料。只有在對母親的效益超越胎兒或兒童可能面臨之風險的情況下，才可於懷孕授乳期間使用fluticasone furoate。**不良反應**：在fluticasone furoate治療期間，最常見的不良反應通報為鼻出血、鼻潰瘍和頭痛。最嚴重的不良反應為罕見通報的過敏反應，包括過敏性反應(每1000位病人少於1例)。其他不明不良反應包含：短暫性眼部變化、生長遲滯，中度或嚴重肝功能不全的病人，應謹慎使用艾敏釋鼻噴劑。

REFERENCE：**1**.Vasar M, Houle PA, Douglass JA, et al. Fluticasone furoate nasal spray: Effective monotherapy for symptoms of perennial allergic rhinitis in adults/adolescents. Allergy Asthma Proc 2008;29(3):313-321. **2**.參考仿單版本編號：GDS11/IPI10.

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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

Ting-Han Chen, M.D. 陳鼎翰醫師 中國醫藥大學附設醫院胸腔暨重症系

Value of Aspergillus Galactomannan Antigen Assay from Endobronchial Ultrasonography-guided Bronchial Washing Fluid for Diagnosis of Invasive Pulmonary Aspergillosis

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ABSTRACT

Introduction: Invasive pulmonary aspergillosis (IPA) is a frequent and increasingly common cause of morbidity and mortality in immunocompromised patients. To improve the outcome of these often fatal infections, early diagnosis of IPA is of utmost importance. The primary aim of this study was to establish the value of the Aspergillus galactomannan (GM) antigen assay from endobronchial ultrasonography (EBUS)-guided bronchial washing (BW) fluid for the diagnosis of IPA.

Methods: The diagnostic yields of EBUS for patients with suspected IPA between December 2012 and December 2017 were retrospectively analyzed.

Results: A total of 106 patients with suspected IPA were enrolled in the study. The mean age was 52.9±17.1 years and the most common underlying disease was hematological malignancy (n=36, 34%). Among these patients, 29 were diagnosed as having proven aspergillosis and 6 as having probable IPA infection. At a cut-off index value of 0.5, GM detection in BW fluid had a sensitivity of 97.14% and specificity of 78.57%. The positive predictive value (PPV) and negative predictive value (NPV) were 69.39% and 98.21%. Applying a cut-off index of 1.0, as is proposed for adults, resulted in a sensitivity, specificity, PPV and NPV, respectively, of 96.97%, 95.89%, 91.43% and 98.59%.

Conclusion: The Aspergillus GM antigen assay from EBUS-guided BW fluid is a useful diagnostic tool for pulmonary aspergillosis. It offered a high sensitivity, specificity, PPV and NPV at a cut-off index value of 1.0. This technique can be particularly helpful in avoiding delayed treatment for immunocompromised patients who are suspected of having pulmonary aspergillosis. ***(Thorac Med 2021; 36: 225-235)***

Key words: invasive pulmonary aspergillosis (IPA), endobronchial ultrasonography (EBUS), bronchial washing (BW), galactomannan (GM)

【胸腔醫學雜誌】優秀論文獎第二名

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Clinical Application of High-Flow Nasal Cannula Oxygen Therapy for Patients with Blunt Chest Injury: A Prospective Study

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ABSTRACT

Introduction: Blunt chest injury (BCI) is associated with a high risk of mortality. Highflow nasal cannula (HFNC) oxygen therapy can be used to reduce the risk of respiratory failure due to hypoxemia, and can significantly reduce the need for intubation compared with general oxygen therapy and the use of a non-invasive positive pressure breathing apparatus. However, it is not widely known whether HFNC can be used in trauma-related hypoxemia.

Methods: We performed a cross-sectional study of patients with BCI but without hypercapnia, and compared HFNC therapy with standard oxygen therapy (control group). The primary outcome was the ratio of the proportion of patients intubated in each group; secondary outcomes included mortality in the intensive care unit (ICU), duration of hospital and ICU stay, and other complications.

Results: A total of 74 patients fulfilled the BCI criteria and were divided into the HFNC and control groups, with 24 and 50 patients, respectively. Findings revealed a lower respiratory failure rate requiring intubation in the HFNC group (4.2% vs. 10%, p=0.657). A trend toward a shorter length of ICU and hospital stay in the HFNC group was noted, as well as lower incidence of pneumonia (25% vs. 40%, p=0.206). Hemodynamic changes in the control group revealed an increased heart rate and respiratory rate 48 hours later, and an increased respiratory rate after 72 hours.

Conclusion: This is the first study in Taiwan to investigate initial HFNC use in patients with BCI. Usage of HFNC for 48 hours exhibited beneficial hemodynamic changes with a lower respiratory and heart rate, and a trend toward a lower rate of intubation, less pneumonia risk, a shorter hospital and ICU stay, and a lower 30-day mortality rate. ***(Thorac Med 2022; 37: 13-20)***

Key Blunt chest injury, chest trauma, high-flow nasal cannula, respiratory failure, ventilation

【胸腔醫學雜誌】優秀論文獎第三名

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Clinical Features and Outcomes of Patients with Interstitial Pneumonia with Autoimmune Features and Acute Respiratory Failure

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ABSTRACT

Introduction: The clinical features and outcomes of patients with interstitial pneumonia with autoimmune features (IPAF) who developed acute respiratory failure (ARF) are not well understood. We aimed to analyze IPAF patients who developed ARF and compare them with patients with connective tissue disease-related interstitial lung disease (CTD-ILD).

Methods: This was a retrospective, observational study conducted in a 24-bed intensive care unit (ICU) of a tertiary medical center in Taiwan during a 3-year period. Patients admitted to the ICU with ARF requiring MV and who had a diagnosis of IPAF or CTD-ILD were included for analysis. Patient characteristics, including demographics, critical illness factors, management and outcome data, were recorded and analyzed.

Results: During the study period, a total of 13 patients with IPAF and 13 patients with CTD-ILD who developed ARF were admitted to the ICU. Overall, 28-day mortality was 50% for the enrolled subjects. Patients with IPAF had significantly lower 28-day mortality than those with CTD-ILD (23.1% vs 76.9%, p=0.006). The independent risk factor for 28-day mortality was a diagnosis of CTD-ILD.

Conclusion: High mortality rates were observed among both IPAF and CTD-ILD patients with ARF requiring MV. A diagnosis of IPAF seemed to have a better outcome than that of CTD-ILD ***(Thorac Med 2022; 37: 58-67)***

Key words: Key words: acute respiratory failure, intensive care unit, interstitial lung disease, interstitial pneumonia with autoimmune features, connective tissue disease, mechanical ventilation, mortality

Young Investigator Award

【Young Investigator Award】

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Recurrence of pericardial effusion after different procedure modalities in patients with non-small-cell lung cancer

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ABSTRACT

Background: Lung cancer with related pericardial effusion is not rare. Intervention is a crucial step for symptomatic effusion. It is unknown, however, whether the different invasive interventions for pericardial effusion result in different survival outcomes. This study analyzed the clinical characteristics and prognostic factors for patients with non-small-cell lung cancer (NSCLC) who have undergone different procedures.

Methods: From January 2006 to June 2018, we collected data from patients with NSCLC who have received invasive intervention for pericardial effusions. The patients were divided into three categories: simple pericardiocentesis, balloon pericardiotomy, and surgical pericardiectomy. Kaplan–Meier curve and log-rank test were used to analyze the pericardial effusion recurrence-free survival (RFS) and overall survival (OS).

Results: A total of 244 patients were enrolled. Adenocarcinoma (83.6%) was the major NSCLC subtype. Invasive intervention, including simple pericardiocentesis, balloon pericardiotomy, and surgical pericardiectomy, had been carried out on 52, 170, and 22 patients, respectively. The 1-year RFS rates in simple pericardiocentesis, balloon pericardiotomy, and surgical pericardiectomy were 19.2%, 31.2%, and 31.8%, respectively (P = 0.128), and the median RFS was 1.67, 5.03, and 8.32 months, respectively (P = 0.008). There was no significant difference in OS, however, with the median OS at 1.67, 6.43, and 8.32 months, respectively (P = 0.064). According to the multivariable analysis, the gravity in pericardial fluid analysis, receiving systemic therapy after pericardial effusion, and the time period from stage IV lung cancer to the presence of pericardial effusion were independent prognostic factors for pericardial effusion RFS and OS.

Conclusions: Patients who have undergone simple pericardiocentesis alone for the management of NSCLC-related pericardial effusion have lower 1-year RFS rates than those who have undergone balloon pericardiotomy and surgical pericardiectomy. Therefore, balloon pericardiotomy and surgical pericardiectomy should be carried out for patients with NSCLC-related pericardial effusion if tolerable.

【Young Investigator Award】

How-Yang Tseng MD 曾皓陽醫師 中國醫藥大學附設醫院

Using real-time visualization system for data-driven decision support to achieve lung protective strategy

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ABSTRACT

Background: Although lung protective strategy and adjunctive intervention are associated with improved survival in patients with acute respiratory distress syndrome (ARDS), the implementation of effective therapies remains low. This study aimed to evaluate whether the use of business intelligence (BI) for real-time data visualization is associated with an improvement in lung protective strategy and adjunctive therapy.

Methods: A retrospective observational cohort study was conducted on patients with ARDS admitted between September 2020 and June 2021 at two intensive care units (ICUs) of a tertiary referral hospital in Taiwan. BI was imported for data visualization and integration to assist in clinical decision in one of the ICUs. The primary outcomes were the implementation of low tidal volume ventilation (defined as tidal volume/predicted body weight ≤ 8 mL/kg) within 24 h from ARDS onset. The secondary outcomes included ICU and hospital mortality rates.

Results: Among the 1201 patients admitted to the ICUs during the study period, 148 (12.3%) fulfilled the ARDS criteria, with 86 patients in the BI-assisted group and 62 patients in the standard-of-care (SOC) group. Disease severity was similar between the two groups. The application of low tidal volume ventilation strategy was significantly improved in the BI-assisted group compared with that in the SOC group (79.1% vs. 61.3%, p = 0.018). Despite their ARDS and disease severity, the BI-assisted group tended to achieve low tidal volume ventilation. The ICU and hospital mortality were lower in the BI-assisted group.

Conclusions: The use of real-time visualization system for data-driven decision support was associated with significantly
improved compliance to low tidal volume ventilation strategy, which enhanced the outcomes of patients with ARDS in the ICU.

【Young Investigator Award】

Ch-Hsien Huang MD 黃繼賢醫師 桃園長庚紀念醫院

Afatinib treatment in a large real-world cohort of nonsmall cell lung cancer patients with common and uncommon epidermal growth factor receptor mutation

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ABSTRACT

The epidermal growth factor receptor tyrosine kinase inhibitor (EGFR-TKI) afatinib improves survival in nonsmall cell lung cancer (NSCLC) patients with EGFR mutation. We analysed the outcome between EGFR mutation subtypes in a large afatinib-treated cohort in which 516 EGFR-mutated NSCLC patients receiving afatinib as front-line treatment. EGFR uncommon mutations include exon 20 insertion, de novo T790M of high or low allele frequency (dT790MHAF/dT790MLAF), non-T790M compound mutation and others, where EGFR exon 20 insertion and dT790MHAF were defined as type-I and the rest as type-II uncommon mutation. Four hundred and sixty-one (89.3%) and 55 (10.7%) patients were common and uncommon mutation, respectively. Exon 20 insertion and dT790MHAF patients demonstrated a significantly shortened progression-free survival (PFS) (2.6 and 4.1 months) compared to EGFR common mutation, dT790MLAF and other uncommon mutation patients (15.1, 27.0 and 18.4 months; P = 3x10-8). Type-I uncommon mutation was an independent predictor of PFS (HR 4.46 [95% CI, 2.60-7.64]; P < .001) and OS (HR 2.56 [95% CI, 1.37-4.75]; P = .003). EGFR L858R patients demonstrated a significantly higher CNS progression (cause-specific HR, 3.16; 95% CI 1.24-8.08; P = .016), and type-I uncommon mutation patients exhibited a significantly higher systemic progression (cause-specific HR, 4.95; 95% CI 2.30-10.60; P =4.3x10-5). Tendencies of higher CNS and lower systemic progression were observed in type-II uncommon mutation patients. A PFS ≥ 12 months (OR 2.38 [95% CI, 1.18-4.89]; P = .016) and uncommon EGFR mutation (OR 0.08 [95% CI, 0.01-0.48]; P = .021) were independent predictors of secondary T790M. Afatinib-treated NSCLC patients presented an EGFR genotype-specific pattern of disease progression and outcome.

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

提前在東亞晚期非小細胞肺癌病人使用液態次世代基因檢測：一個前瞻性隨機分派研究

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Upfront Liquid Next-Generation Sequencing (NGS) in East-Asia Treatment-naïve Advanced Non-Small Cell Lung Cancer (NSCLC) Patients: A Prospective Randomized Study

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Background: NGS of plasma cell-free DNA (cfDNA) can identify driver and resistance mutations in patients with advanced NSCLC and may complement routine molecular evaluation. The clinical utility of liquid NGS at the start of tumor workup is unclear.

Methods:

This prospective randomized study enrolled patients with suspected advanced NSCLC by computed tomography. All eligible patients received blood collection for liquid NGS testing (Guardant360™; Guardant Health, Redwood City, CA) at their first clinic visit before pathological confirmation and subsequently underwent standard diagnostic work-up and routine tissue molecular testing. Patients were randomized to receive liquid NGS results at the physician's request after completion of standard work-up (Group A) or for all patients as soon as possible after confirmation of advanced NSCLC (Group B). The primary endpoint was time to start of systemic treatment; secondary endpoints included objective response rate (ORR) and progression-free survival (PFS).

Results: Of 180 patients enrolled, 87 were randomized to Group A and 93 to Group B. After excluding subjects with benign disease, other cancer types, and early stage NSCLC, there were 63 in Group A and 59 in Group B with advanced NSCLC. The prevalence of EGFR in the two groups, detected by any method, was similar (Group A: 36/63, 57.1%; Group B: 34/59, 56.6%). Other driver alterations were rare. The median time to treatment in Group A vs B was 33 vs 20 days ($p<0.0001$) and similar for patients receiving targeted therapies or chemo/immunotherapies. Among patients treated with targeted therapies, objective response rate (ORR) and progression-free survival (PFS) did not differ between groups. PFS for patients receiving immunotherapy was longer with immediate liquid NGS results. In the tissue-negative cases (n=42), liquid biopsy with NGS testing could identify 40.5% (17/42) patients with driver-mutation and could potentially benefit from targeted therapy.

Conclusion: Performing liquid NGS at the initial clinic visit for suspected advanced NSCLC shortens time to the start of treatment and may improve PFS in selected 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)

OA02

利用電子鼻裝置與氣相層析質譜儀針對患者吐氣分析進行不同呼吸疾病之區分:一個前瞻性的觀察性研究

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Exhaled breath analysis using a novel electronic nose device and gas chromatography mass spectrometry for different respiratory disease entities: a prospective observational study

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Purpose: Electronic noses (eNose) and gas chromatography mass spectrometry (GC-MS) are two important breath analysis approaches for differentiating between respiratory diseases. We evaluated the performance of a novel electronic nose, along with GC-MS, for different respiratory diseases.

Materials and Methods: From May 2019 to July 2022, patients with lung cancer, pneumonia, and structural lung diseases as well as healthy participants were recruited. Exhaled breath samples were collected for eNose (SEXTANT, Enosim Bio-Tech Co., Ltd., Hsinchu City, Taiwan) and GC-MS analysis. Breathprint features from eNose were analyzed using support vector machine model and leave-one-out cross-validation was performed.

Results: A total of 263 participants (including 95 lung cancer, 59 pneumonia, 71 structural lung disease, and 38 healthy participants) were included. Three-dimensional linear discriminant analysis (LDA) showed a clear distribution of breathprints. The overall accuracy of eNose for the four groups was 0.738 (194/263). The accuracy was 0.86 (61/71), 0.81 (77/95), 0.53 (31/59), and 0.66 (25/38) for structural lung disease, lung cancer, pneumonia, and control groups respectively. Pair-wise diagnostic performance comparison revealed excellent discriminant power (AUC:1-0.813) among the four groups. The best performance was between structural lung disease and healthy controls (AUC:1), followed by lung cancer and structural lung disease (AUC:0.958). Volatile organic compounds revealed a high individual occurrence rate of cyclohexanone and N,N-dimethylacetamide in pneumonic patients, ethyl acetate in structural lung disease, and 2,3,4-trimethylhexane in lung cancer patients.

Conclusions: Our study demonstrated that a novel eNose can differentiate different respiratory diseases and may be potential to serve as a point-of-care test. GC-MS also identified candidate VOC biomarkers for different diseases.

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

次世代基因定序揭示用 afatinib 治療的 EGFR 突變非小細胞肺癌中遺傳異質性和抗藥機制

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Next-generation sequencing reveals genetic heterogeneity and resistance mechanisms in EGFR-mutant non-small cell lung cancer treated with afatinib

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Objectives: Afatinib, an irreversible ErbB Family inhibitor, is widely used as first-line treatment for advanced lung adenocarcinoma with mutant epidermal growth factor receptor (EGFR). With the advancements in next-generation sequencing (NGS), comprehensive research into the clinical impact of co-occurring genetic mutations and the molecular mechanisms of acquired resistance is required for afatinib users.

Materials and Methods: From January 2010 to December 2019, we retrieved patients with advanced lung adenocarcinoma with EGFR mutations using afatinib as first-line treatment from National Taiwan University Hospital electric medical dataset, and we retrospectively collected pre- and post-afatinib treatment specimens from these patients for NGS testing by a 440-gene targeted panel. The clinical data and genomic information were combined for analysis until December 31, 2021.

Results: A total of 362 advanced *EGFR* mutant NSCLC patients were enrolled, and finally 73 tissues from 56 patients were successfully obtained as complete genetic reports (68.9% of 106 tissues) from the NGS test. Specimen acquisition method by bronchoscopic biopsy had the lowest success rate for NGS study ($p = 0.031$). Specimen tissue site from bone had high NGS failure rate (4 of 5 patients, 80%). From pre-afatinib specimens, the most frequent co-occurring alterations were *TP53*, *MUC16*, *USH2A*, *SYNE1*, *RECQL4,* and *FAT1*, and they were not correlated with PFS. Remarkably, SCLC transformation (4.9%), *EGFR* p.T790M (26.8%), *MET* amplification (9.8%), *ERBB2* mutation (2.4%), *KRAS* amplification (2.4%), *PTEN* mutation (2.4%), *EGFR* amplification (2.4%), *MDM2* amplification (4.9%), and cell cycle-regulated genes amplification (12.2%), were recognized as acquired resistance mechanisms in 41 post-afatinib treatment group. Patients with *EGFR* p.T790M ($p = 0.0304$) and *APC* alterations ($p = 0.0311$) from post-afatinib specimens had significantly longer OS, but *MET* amplification after afatinib failure was significantly associated with poor OS ($p = 0.0324$). The co-existence of *TP53* alterations from post-afatinib specimens was significantly associated with shorter post-progression survival (PPS) ($p = 0.0189$) and OS ($p = 0.0298$) than those without T*P53* mutations.

Conclusions: Our results show that the co-occurring alterations in advanced *EGFR* mutant lung adenocarcinoma did not influence the effectiveness of afatinib. *EGFR* p.T790M is not only the major resistance mechanism to afatinb but also related to favorable survival outcomes. *MET* amplification and *TP53* mutations were poor factor for OS.

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

台灣非小細胞肺癌病患血液腫瘤游離 DNA 次世代基因檢測之臨床表徵與預後分析

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The clinical characteristics and outcomes of NSCLC patients with genomic alterations detected by blood-based NGS ctDNA assay

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Purpose: The Blood First Assay Screening Trial (BFAST) (NCT03178552) is a prospective study screening for actionable genetic alterations using NGS of ctDNA among patients with treatment-naive advanced or metastatic NSCLC. We aimed to perform a more systematic investigation of genomic alterations in Asia/Taiwan NSCLC patients through the BFAST database at NTUH.

Materials and Methods: There was a total of 269 patients enrolled and receiving FoundationOne Liquid Companion Diagnostic (F1LCDx) assay at cancer diagnosis between Feb, 2019 and Mar, 2022 in NTUH. The concordance of tissue-based genetic testing in the real-life clinical setting and the blood-based NGS testing in the clinical trial were analyzed. The co-occurrence of genomic alterations detected with blood-based NGS ctDNA assay were also interpreted.

Results: A total of 206 patients (76.5%) detected driver mutations. Tissue-based genetic testing in the real-life clinical setting missed driver mutations in 67 (24.9%) patients with a sensitivity of 67.32%. Liquid NGS detected 38 (14%) patients with RET, KRAS, Met or ErbB2 mutations which were beyond the scope of current genetic testing in the clinical settings. Also, the F1LCDx assay detected more uncommon EGFR mutations than the Roche Cobas EGFR Mutation Test V2 ($P < 0.0001$). Thirty-four (12.6%) patients had non-detected results in the F1LCDx assay which produced a sensitivity of 83.41%. By multivariate analysis, the predictors associated with discordant blood-based NGS ctDNA results were T stage (odds ratio [OR] 0.35, 95% confidence interval [CI] 0.15–0.79, $p = 0.012$) and M stage (OR 0.21, 95% CI 0.09–0.49, $p < 0.0001$).

The most common co-occurring mutations in the blood-based NGS ctDNA assay were TP53, DNMT3A, TET2, PIK3CA and CTNNB1. Among the EGFR mutant population, first-generation compared to third-generation TKI use (hazard ratio [HR] = 0.43, 95% CI 0.22-0.85, P=0.02) and co-occurring genomic alterations in TET2 (HR = 2.35, 95% CI 1.15–3.48, P=0.02) were associated with shorter progression free survival of EGFR TKIs treatment in multivariate analysis. Disease stage was the only factor associated with overall survival in the EGFR mutant population.

Conclusion: NGS ctDNA analysis provided a more comprehensive genetic testing than conventional single gene testing kits. The lower stage which could imply lower or lack of ctDNA shedding into the blood was associated with a discordant result of the blood-based NGS ctDNA assay. Co-occurring mutations might have an impact on the treatment duration of EGFR-TKI.

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

帶有不同表皮生長因子接受體外顯子 19 缺失突變亞型的非小細胞肺癌病人對標靶藥物療效及後天性 T790M 產生的不同

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Different treatment efficacies and T790M acquisition of EGFR-TKIs on NSCLC patients with variable Del-19 subtypes of *EGFR*

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Purpose: *EGFR* exon 19 deletion (Del-19) comprises multiple advanced NSCLC subtypes. EGFR-tyrosine kinase inhibitor (TKI) efficacy and T790M acquisition in various Del-19 subtypes is unknown.

Materials and Methods: We prospectively collected tissue samples from patients harboring NSCLC with Del-19 between 2006 and 2020. We evaluated EGFR-TKI treatment effectiveness among the different Del-19 subtypes.

Results: We collected 1391 NSCLC samples from 892 patients with Del-19, and the most common subtype was del E746-A750 (67.5%). 741 patients had taken 1st- or 2nd-generation EGFR-TKIs. There were no significant differences in response rates between patients with different Del-19 subtypes (p= 0.630). Patients with indel E746 had the longest median PFS (14.6 months), but those with non-LRE deletions had the shortest PFS (8.9 months) (p= 0.002). For OS analysis, patients with indel E746 also had the longest OS (34.1 months), but those with non-LRE deletions had the shortest OS (21.1 months) (p= 0.046). Patients with different Del-19 subtypes showed no significant differences in the T790M acquisition rates (p= 0.443). Among the 151 patients with acquired T790M who received 3rd-generation EGFR-TKIs, the Del-19 subtype was not associated with different RR and PFS. *In vitro* cellular viability and activation of the EGFR pathway analysis were consistent with the clinical findings.

Conclusions: Compared with del E746-A750, indel E746 was associated with longer PFS and OS, but the non-LRE subtype was correlated with shorter survival prognosis. There were no significant differences in the acquired T790M rate and treatment effectiveness of subsequent 3rd-generation EGFR-TKIs between various Del-19 subgroups.

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

miR-557 調控肺腺癌細胞的上皮間質轉化與 EGFR 酪氨酸激酶抑製劑的藥物感受性

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miR-557 Restrains Epithelial-Mesenchymal Transition and Enhances Sensitivity to EGFR Tyrosine Kinase Inhibitors in Lung Adenocarcinoma Cells

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Although treatment with EGFR tyrosine kinase inhibitors (TKIs) improves the outcomes of patients with advanced EGFR-mutant lung adenocarcinoma, their efficacy is ultimately limited by the development of acquired resistance. Notably, epithelial-mesenchymal transition (EMT) is well known to be associated with EGFR TKI resistance, and Slug, a characterized EMT transcription factor, has been shown to confer EGFR TKI resistance in EGFR-mutant cancer cells. Because previous studies have shown that microRNAs (miRNAs) are involved in EGFR TKI resistance, we aimed to explore the specific miRNA that is capable of inhibiting EMT and sensitizing resistant cancer cells to EGFR TKIs.

In this work, we identified miR-557 as the Slug-targeting miRNA that is associated with the regulation of EMT and sensitivity to EGFR TKIs in EGFR-mutant lung cancer cells. We found that miR-557 is significantly downregulated in a variety of derived EGFR TKI-resistant cancer cell lines, as well as in cancer cells isolated from malignant pleural effusions of patients after acquiring resistance to EGFR TKIs. *In vitro* experiments revealed that suppression of miR-557 by miR-557 lockers in EGFR TKI-sensitive cancer cells leads to decreased drug sensitivity and EGFR TKI-induced apoptosis. On the contrary, ectopic expression of miR-557 enhanced drug effects in resistant cancer cells, indicating the role of miR-557 in modulating sensitivity to EGFR TKIs. Specifically, miR-557 not only regulated the expression of EMT markers but also EMT-associated phenotypes, including invasive capacity and cancer stemness traits, in cancer cells. Mechanistically, we demonstrated that miR-557 represses the protein expression of Slug by targeting the 3' UTR of Slug transcript. In rescue experiments, restoration of Slug expression reversed the effects of miR-557 on EMT and drug sensitivity, indicating that miR-557 targets Slug to modulate EMT and enhance sensitivity to EGFR TKIs in lung cancer cells. Furthermore, to determine the effect of miR-557 *in vivo*, we found that miR-557-expressing xenografts were significantly more sensitive to EGFR TKI treatment than control xenografts.

In conclusion, our results suggest that miR-557 targets Slug to exhibit its biological effects. Downregulation of miR-557 contributes to EMT and resistance to EGFR TKIs in lung cancer cells. Importantly, restoration of miR-557 might serve as a potential therapeutic approach for overcoming resistance to EGFR TKIs in EGFR-mutant lung 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)

OA07

臺灣晚期 ALK 陽性非小細胞肺癌的基因變異與其對 ALK 酪胺酸激酶抑制劑治療的影響

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Genetic Alterations and their Impacts to ALK Tyrosine Kinase Inhibitor Treatments in Advanced ALK-positive Non-small Cell Lung Cancer in Taiwan

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Introduction: ALK tyrosine kinase inhibitors (TKIs) are approved to control non-small cell lung cancer (NSCLC) with ALK fusion (ALK-positive NSCLC). However, the impacts of the genetic alterations in ALK-positive NSCLC to ALK TKI treatments are still not well-known.

Methods: In this prospective multicenter study in Taiwan, we analyzed ALK-positive NSCLC patients' cancer tissues prior to their first-line ALK TKI treatment by next-generation sequencing (NGS), ACTOnco®+ (DNA NGS) and ACTFusion™ (RNA NGS for fusion). The diagnosis of ALK-positive NSCLC was based on ALK immunohistochemistry (IHC) VENTANA ALK (D5F3) CDx Assay. Patients' clinicopathologic characteristics and ALK TKI treatment outcomes were analyzed.

Results: Totally, 80 ALK-positive NSCLC patients with adequate cancer tissues for ACTOnco®+ were enrolled. Among them, 34 received crizotinib, 6 received ceritinib and 40 received alectinib as their first-line ALK TKI. 74 of the 80 patients had adequate cancer tissues for ACTFusion™, and an ALK fusion was detected in 66 patients. EML4-ALK variant 1, variant 3a/3b and other EML4-ALK fusion variants were found in 28 (42%), 26 (39%) and 8 (12%) patients respectively. KIF5B-ALK, KLC-ALK and STRC-ALK were found in 2, 1, and 1 patient respectively. Different ALK fusion variants were not associated with crizotinib or alectinib time-to-treatment failure (TTF) (p=0.18 and p=0.90 respectively). Among the 8 patients whose ALK-fusion was not detected by NGS, one had ERBB2 Y772_A775dup and one had BRAF V600E. The tumors did not respond to alectinib. The other 6 patients had similar TTF for crizotinib (median, 14.6 vs 15.1 months, p=0.70) or alectinib (median, not reached vs 31.8 months, p=0.78), comparing to patients with ALK fusion detected by NGS. The most prevalent clinical significant co-occurring genetic alternation was a TP53 mutation (n=17, 22%). A co-occurring TP53 mutation was associated with both shorter crizotinib and alectinib TTF [adjusted hazard radio (aHR) 3.24, 95% confidence interval (CI) 1.11 – 9.24, p=0.03 and aHR 4.01, 95% CI 1.03 – 15.56, p=0.045, respectively].

Conclusions: In Taiwan, EML4-ALK variant 1 and variant 3 contribute to the majority of ALK-positive NSCLC, while a TP53 mutation is the most common co-occurring genetic alternation. TP53 mutations but not ALK fusion variants influenced ALK TKI treatment outcome in this 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)

OA08

不只是細胞，使用支氣管鏡超音波導引縱膈腔小夾切片獲取組織學檢體

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Endobronchial ultrasound-guided transbronchial mini forceps biopsy, from cytologic to histopathologic specimens

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Purpose: Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) is the standard diagnostic method for sampling mediastinal and hilar lymph nodes. One limitation of EBUS-TBNA is the size of the available needles, frequently yielding only cells for cytological examination. The aim of this study was to evaluate the efficacy and safety of newly developed mini forceps (EBUS-TBMFB) to obtain tissue for the histological diagnosis of enlarged mediastinal lymph nodes.

Materials and Methods: This retrospective chart review included consecutive 105 patients who were aged 27–85 years old and underwent EBUS-TBNA or EBUS-TBMFB between March 16, 2022, and October 15, 2022.

Results: 105 patients (71males and 34 females) with a median age of 63 (27–85) years were enrolled and 93 patients underwent EBUS-TBNA and 12 patients underwent EBUS-TBMFB. The mean lymph node size per CT imaging was 27.3 mm with a range from 9.3 to 78.5 mm. Most of the nodes were located in the mediastinum: station 7 (n= 35), station 4R (n= 31), station 4L (n = 8) and in the hilar lymph node: station 10R (n= 5), station 11R (n=16), and station 11L (n =10). Of those with definitive diagnoses, EBUS-TBNA made the diagnosis in 81.7% (76/93) of cases, whereas EBUS-TBMFB made the diagnosis in 83.3% (10/12) of cases(p=0.891). But for patients in whom the material obtained with EBUS-TBMFB was adequate for a histological examination a specific diagnosis was established in 83.3% and 75.2% in EBUS-TBNA(p=0.418). No clinically significant complications were encountered during the procedure or after follow-up in all patients up to 3 weeks after bronchoscopy. No damage of the working channel of the bronchoscopes was recorded after the procedures.

Conclusions: EBUS-TBMFB is a useful an effective, safe, and efficient method of obtaining histopathologic specimens from mediastinal and hilar abnormalities, especially in patient need more specimen for histological diagnosis or genetic test. This novel technique may have the potential to spare the patient from more invasive surgical biopsies.

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

新型設計的可攜式X光機在肺部疾病偵測的臨床運用

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Clinical application of newly designed portable X-ray machine in lung disease detections

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Purpose: A portable X ray machine (model name: CVXair) was designed with low radiation dosage and more convenient size and weight for handy operation. The study was aimed to compare CVXair with commercial portable X ray machines in clinical application.

Materials and Methods: A total of 120 subjects were enrolled in this medical device clinical trial after IRB and Taiwan FDA approval. The subjects who met the inclusion and exclusion criteria consented to participate in this trial by taking scans from the commercial X ray machine and CVXair respectively. The commercial X ray machines are approved by Taiwan FDA and US FDA. Given the images taken on different days from the commercial X ray machines and CVXair may affect the physician's interpretation due to evolution of the disease course, only 56 patients' images from the CVXair and the control machines within -1 day, 0 day, and 1 day window were selected for analysis. The is a concurrent test. The images acquired from CVXair and control machines were reviewed and scored by 2 blinded radiologists according to different biological structures and specified diseases. The 2 sets of scores in all patients were analyzed with T-test to examine the non-inferiority. In case of dissonant judgement between the 2 blinded radiologists, McNemar's Test was adopted to eliminate the inconsistency.

Conclusions: The result indicated the CVXair is non inferior to the commercial X ray machines. The primary endpoint was achieved as the differences in the total scores per patient between the CVXair and the commercial X ray machines are less than -4. The total score difference average between the CVXair and the commercial X ray machines is less than -0.8, in site 4 the edge of rib. Again, this secondary indicator reflects the CVXair is non inferior to the commercial X ray machines specifically.

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

COVID-19 Omicron 變異株之台灣本土疫情對肺癌病人的影響-臺大醫院經驗

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The impact of COVID-19 Omicron variant outbreak in Taiwan on lung cancer patients-NTUH experience

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Purpose: Omicron is well known for its higher transmissibility and lower mortality rate. Since Omicron outbreak in Taiwan in early 2022, a major proportion of Taiwanese people were infected. This study aimed to analyze whether lung cancer patients have different outcomes facing Omicron pandemic based on their different staging and treatment strategies.

Materials and Methods: We retrospectively reviewed the medical record of lung cancer patients who were diagnosed with COVID-19 infection at the National Taiwan University hospital between March 2022 and June 2022.

Results: From March 2022 to June 2022, a total of 115 patients were eligible. Their mean age was 63.7 years (SD:11.6), and 58 (50.4%) were male. The majority histology was adenocarcinoma (81.7%), followed by squamous cell carcinoma (6.1%) and small cell carcinoma (5.2%). Their cancer staging status upon COVID infection was primarily stage IV (75.6%), followed by stage III (11.3%) and stage I (10.4%). Among the total patients, 41(35.6%) patients were infected during TKI treatment, while 31(27.0%) and 11 (9.6%) patients were during chemotherapy or PD-1/PD-L1 inhibitor immunotherapy, respectively. 16 cases (13.9%) developed into moderate to severe COVID-infection who needed admission for O2 support or remdesivir intravenous treatment. Only1 patient of stage IIB lung cancer who had received local radiotherapy died of progressive course and the mortality rate was 0.9%. 2 of the patients delayed their anti-cancer treatment due to active COVID-infection and none of the patients ceased their treatment or were forced to receive different treatment modality due to disease progression or deconditioning.

Conclusions: During omicron pandemic, the major proportion of lung cancer patients infected with COVID-19 were advanced adenocarcinoma patients. Based on our single center experience, most of patients who received chemotherapy, PD-1/PD-L1 inhibitor immunotherapy or targeted therapy continued their treatment after COVID-19 infection. The mortality rate of the lung cancer patients infected with omicron variant is relatively low compared to mortality of alpha or delta variants among general population. We may assume lower virulent entity of Omicron variant had low impact to lung cancer patients both on scheduled treatment plan or survival 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)

PA03

臨床檢驗血清鋅和維生素 D 在疑似長新冠症狀之病人的考慮

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Considering both vitamin D and serum zinc and their roles in suspected long COVID patients

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Purpose: Long COVID syndrome is still not well realized about the nature or etiology. There is a positive effect of vitamin D supplement in patients hospitalized for COVID-19 from a randomized, double-Blind, placebo-controlled trial (De Niet S. et al Nutrients. 2022). High-dose (400,000 IU (oral) single dose) vitamin D supplementation in older adults with COVID-19 improved overall mortality at day 14 (Annweiler C. et al PLoS Med. 2022). Zinc concentrations is lowest in COVID-19 deaths (Maares M. et al Nutrients. 2022). Zinc supplementation may improve COVID-19 survival in a recent meta-analysis (Tabatabaeizadeh SA. Eur J Med Res. 2022). We reviewed patients visited for symptoms after COVID-19 on both vitamin D and zinc concentration.

Materials and Methods: Those who known to be confirmed COVID-19 and with persistent symptoms (cough, dyspnea, fatigue, aches, headache, etc.) were registered after visit to chest medicine OPD during 2022/Jun/20 to 2022/Jul/31. Blood tests are given, including zinc, vitamin D and fibrinogen. Patients returned to clinic seven to ten days after the blood test. Serum zinc concentration less than 700ug/L, vitamin D less than 20ng/ml are defined deficiency. The interval between the date of diagnosis and the date of visit is recorded for further statistical analysis. Numbers are expressed as means (S.D.).

Results: N=55, male: female=21:34, age=49.3 (17.5) without difference between sex. Conc. of both vitamin D and zinc are 24.1 (9.3) ng/ml and 679.8 (138.1) ug/L. Fibrinogen is 446.9 (103.2) mg/dL. Those with vitamin D deficiency account for 29.1% and serum zinc deficiency account for 63.6%. Interval of prolonged symptoms to OPD visit is 31.7 (17.7) days. There was a moderate positive statistical correlation between vitamin D and serum zinc concentrations (the Pearson's correlation 0.378, $p=0.011$). Age less than 65 years is different on lower vitamin D 22.6 (8.5) than the elder patients 29.2 (10.3) ng/ml ($p=0.047$) but not on zinc conc. Differences between vitamin D deficiency and that greater than 30 ng/ml are noted on age (42.3 vs. 59.8 years, $p<0.05$) and zinc conc. (621.4 vs. 748.2 ug/L, $p=0.053$). Zinc conc. is with statistical difference while comparing vitamin D deficiency to vitamin D>20 ng/ml ($p<0.05$). Considering zinc deficiency status, days of COVID symptoms prolongation, 32.5 (5.1) days, in vitamin D deficiency is longer than, 18.5 (4.6) days of vitamin D greater than 30 ng/ml. However, due to case numbers are small in vitamin D> 30 ng/ml arm, there is no statistical significance ($p=0.167$).

Conclusions: Both vitamin D and zinc deficiency are present in post COVID symptomatic patients. When vitamin D is greater than 30ng/ml, risk of prolonged COVID-19 is lower, and the symptomatic suffering duration may be shorter in trend.

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

肺結核胸腔 X 光人工智慧影像輔助判讀：模型建立與準確度分析

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AI-assisted image interpretation for chest X-ray of pulmonary tuberculosis: model development and accuracy validation.

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Purpose: Artificial intelligence (AI) researches in clinical medicine have been increasing. The deep neural network is especially useful for image interpretation and classification. For chest X-ray (CXR) of tuberculosis (TB), the image patterns are highly variable and mimics many disease entities. It is difficult for general physician to early identify possible TB cases by CXR.

Materials and Methods: This study evaluates the accuracy and clinical effectiveness for CXR AI models to assist TB CXR screening. We use three web-based AI image classification tools, which includes Google teachable machine(TM), Google Vertex AI, and Azure Custom Vision (CV), to train CXR AI models. The development dataset includes 348 TB CXR cases and 3806 normal CXR. We also collected 50 TB CXR cases (33 typical TB and 17 atypical TB images) and 33 normal CXR from our hospital for external validation of the 3 AI models.

Results: The internal validation of the 3 TB CXR AI model showed accuracy in Google TM: Sensitivity (Sen) = 96%, Specificity (Sp) = 98% ; Vertex AI: Sen = 69%, Sp = 98% ; Azure CV: Sen = 81.4%, Sp = 98.9%. In external validation, the overall accuracy is similar between 3 models (Google TM: area under curve (AUC) = 0.861; Vertex AI: AUC = 0.849; Azure CV: AUC = 0.865). In subgroup of typical TB CXR the accuracy is best in Google TM (AUC = 0.943, ideal cutoff level = 4.5%, Sen = 90.9%, Sp = 97%), followed by Azure CV (AUC = 0.905, cutoff level = 31.7%, Sen = 72.7%, Sp = 93.9%) and Vertex AI (AUC = 0.876, cutoff level = 5%, Sen = 87.9%, Sp = 84.8%). For atypical TB CXR the accuracy is better in Vertex AI (AUC = 0.796, cutoff level = 11.1%, Sen = 76.5%, Sp = 90.9%) than Google TM (AUC = 0.701, cutoff level = 12%, Sen = 41.2%, Sp = 97%) and Azure CV (AUC = 0.787, cutoff level = 9.3%, Sen = 47.1%, Sp = 93.9%).

Conclusions: The simple AI models developed in this study are supposed to be effective for detecting typical TB CXR. As for atypical TB CXR, the AI models become less sensitive, but the accuracy is still acceptable.

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

慢性胰臟炎形成的胰臟和胸膜瘻管導致肺出血:一個案例報告

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Pulmonary hemorrhage caused by pancreato-pleural fistula secondary to chronic pancreatitis: a case report

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Introduction: Pancreaticopleural fistula (PPF) is a rare disease which causes large and recurrent pleural effusion. PPF can present with diverse clinical findings, such as dyspnea, cough, chest pain, fever, or abdominal pain. Middle-aged men who have history of chronic alcoholism and develop pancreatitis are susceptible to develop PPF. Among clinical complications caused by PPF, pulmonary hemorrhage is an even rarer presentation. We present a case of pulmonary hemorrhage caused by a single left PPF and successfully treated with endoscopically placed stents.

Case Report: A 52-year-old smoker and alcoholism man presented with progressive hemoptysis for five days. Two months prior to this event, he was evaluated and found to have recurrent bilateral pleural effusions. Chest X-ray showed bilateral pleural effusion with left side predominance. Laboratory studies revealed elevated lipase (642U/L). Pleural fluid amylase and lipase was markedly elevated, 18134U/L and 685U/L respectively. Polymerase chain reaction was negative for tuberculosis. Contrast enhanced CT scan revealed a pseudocyst in the tail region extending along the diaphragmatic hiatus into the thorax. There was bilateral moderate pleural effusion with left lower lobe consolidation with atelectatic changes. MRCP and MRI Abdomen were done which demonstrated a large fistula from the main pancreatic duct located in the tail of the pancreas to the left pleural space and corroborated with CT findings. Analyses of bronchial washings collected during fiber-optic bronchoscopy also showed markedly elevated amylase (1083U/L).

Our patient then underwent endoscopic retrograde cholangiopancreatography (ERCP). Cannulation of the pancreatic duct was performed and contrast injection revealed a 10mm main pancreatic duct with irregularity and a fistula communicating from the tail of the pancreas to the pleural space. A 13cm/5 French stent was placed in the pancreatic duct. The patient improved in clinical symptoms, such as hemoptysis and cough, and was discharged home after 3 weeks of hospitalization.

Discussion: According to the previous reviews, the mechanism is typically by leakage of an incompletely formed or ruptured pseudocyst. Hemoptysis in our patient may be due to pancreatic enzymes and inflammatory mediators such as activated trypsin, activated phospholipase A2, interleukin (IL)-1, IL- 6 and IL-8. This leads to vast damage of the lung parenchyma leading to hemoptysis. Pleural effusion can be voluminous and has a high tendency to recur. Elevated serum lipase and amylase are usually found in laboratory testing, and blood count values are non-specific. Analysis of pleural fluid shows an exudative liquid with high levels of pancreatic enzymes. MRCP, with a sensitivity of 80%, has been shown to be the best non-invasive examination for both identifying PPF and guiding further management. Pancreatic duct stenting is the recommended first-line treatment. Stent length was chosen in order to cover the entire fistula and bridge the site of leakage. Fistula closure is facilitated by a bridging pancreatic stent mainly because it reduces ductal pressure and acts as a mechanical seal.

Conclusion: Pulmonary hemorrhage secondary to PPF is extremely rare and hard to diagnose. A high index of clinical suspicion is required to establish diagnosis, particularly in the setting of prior chronic pancreatitis. Delay in diagnosis could lead to fatal 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)

PA06

探討剪力波彈性超音波於診斷肋膜疾病上的應用

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Application of transthoracic shear-wave ultrasound elastography in pleural lesions.

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Purpose: From the Abrams closed pleural biopsy needle to the ultrasound-guided needle biopsy, advancements in diagnostic modalities have improved the diagnosis of pleural diseases. To remorselessly increase the diagnostic yield of transthoracic ultrasonography in pleural diseases, this study uses shear-wave elastography to measure the stiffness of pleural lesions. The research hypothesis is that shear-wave elastography can add the elasticity information of pleural tissues and help in the diagnosis of pleural diseases.

Materials and Methods: This observational study was performed at National Taiwan University Hospital. The inclusion criterion was patients with radiographic evidence of pleural lesions or pleural effusion. We used the Toshiba Aplio 500 Platinum Ultrasound Machine to locate the pleural lesions, followed by measuring the elasticity of pleural lesions. The diagnoses of pleural lesions were made on the basis of microbiological studies/pathology of pleural effusion/pleurae, or following up the clinical course for 6 months.

Results: From May 2018 to Sep 2022, a total of 234 patients with pleural lesions were included. The mean age was 67.4 ± 13.2 years, and 55.2%of patients were men. The mean body mass index (BMI) was 22.8 ± 3.8. The mean intercostal thickness was 14.1 ± 8.1 mm. 71 patients were diagnosed with benign pleural lesions (including chronic lymphocytic pleurisy, granulomatous inflammation, empyema, amyloidosis, and reactive mesothelial hyperplasia), while 139 patients were diagnosed with malignant pleural lesions (including mesothelioma, non-small cell carcinoma, and metastatic carcinoma). The mean elasticity of the malignant pleural lesions was significantly higher than that of the benign pleural lesions (90.5 vs. 66.5 kPa, $p < 0.001$). The cut-off point to differentiate benign from malignant pleural lesions was 77.4 kPa with an accuracy of 71.0% (sensitivity 74.1%, specificity 64.8%, and area under the ROC curve 0.694).

Conclusions: This preliminary report shows that shear-wave elastography can add the elasticity information of pleural lesions. Further validating the application of transthoracic shear-wave ultrasound elastography in differentiating malignant from benign pleural lesions is warranted.

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

台灣健康成人 10 公尺路線六分鐘步行距離參考公式：橫斷面研究

黃筱倩[1], 楊玉如[1], 許嘉年[1], 王智亮[2], 張博瑞[2], 鍾福財[3], 洪禎佑[2], 李適鴻[4]
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Reference equation for six-minute walk distance using 10-meter course in healthy Taiwan adults: A cross-sectional study

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Purpose: The six-minute walk test (6MWT) is a common and simple tool to assess functional performance in persons with chronic cardiopulmonary disorders. Many reference equations predicting six-minute walk distance (6MWD) in healthy subjects has been developed for white papulation but not for Asian. Some hospitals in Taiwan could not provide standard courses (30m) to perform 6MWT as the ATS guidelines suggest. We aim to develop a prediction model in a healthy adult sample of Taiwan, and identify demographic and anthropometric factors contributing to 6MWD and establish a reference equation that used the course size of less than 30m.

Materials and Methods: This cross-sectional study was conducted in North Taiwan and enrolled healthy adult participants. We collected demographic variables, pulmonary lung function test, body height, weight, and leg circumference to develop a regression model and predict a 6-minute walking distance. Each participant performed 6MWTs twice along a straight, flat 10m course that was marked every 3m. There was a minimum rest interval of 30 minutes between tests. We used multiple variable linear regression to develop a prediction equation.

Results: There were 92 males and 105 females participated in the experiment and analysis between January 2015 and December 2018. Males have higher physical advantages than females, including body height (170.2±5.7 vs 157.1±6.6), forced vital capacity (4.3±0.7 vs 2.9±0.5), and leg circumference (57.4±4.7 vs 55.9±4.2), and in terms of walking distance, males can walk significantly longer distances than females (607.3±60.2 vs 561.9±51.9). 6MWD was positively related to body height, gender and leg circumstance, while it was negatively related to body weight and age. The regression equation for estimating 6MWD is as follows: 6MWT pred(m)= 224.48 – [1.82*body weight(cm)] + [2.74*body high(kg)] + (30.37*gender) + [1.45*leg circumstance(cm)]– (1.52*age) (r^2=0.48). where Male =1 and Female=0)

Conclusions: The 10-meter short-distance six-minute walk test is feasible, and a good predictive model can be obtained using height, weight, age, and leg circumference.

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

比較剪力波彈性超音波與正子放射斷層攝影於胸腔惡性腫瘤病患合併頸部淋巴侵犯之診斷準確性

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Comparison of diagnostic performance between ultrasound shear wave elastography and positron emission tomography in cervical lymphadenopathy of patients with thoracic malignancy

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***Purpose**:* Accurate diagnosis of metastatic cervical lymphadenopathy in lung cancer patients predicts survival outcome and ensures the optimal treatment strategies. This study aimed to compare the diagnostic ability between ultrasound shear wave elastography (SWE) and positron emission tomography (PET) on metastatic lymphadenopathy of patients with thoracic malignancies.

Materials and methods: This prospective cohort study was conducted at a tertiary medical center at northern Taiwan. All participants were screened from the referral for thoracic ultrasound examination. Each target lymph node was scrutinized with conventional gray-scale images, color Doppler images, and two dimensional SWE. We use the maximum elasticity value (Emax) to represent the SWE result of each target. In enrollees whose whole body PET study was available upon echo workup, the maximal standard uptake value of target lymph node was recorded. The standard reference of diagnoses was the histopathology or cytology from the investigated lymphadenopathy, or 6-month clinical follow-up.

Results: From Dec. 2017 to Aug. 2022, a total number of 411 patients were included for analysis. Among benign etiologies, 112 (77.2%) were reactive/inflammation and 33 (22.8%) were tuberculous lymphadenitis. Among patients with malignant lymphadenopathy, 199 (74.8%) were diagnosed with non-small lung cancer. The area under receiver operating characteristic curve (AUROC) as a result of SWE, PET, combined SWE and PET diagnosis were 0.842, 0.746, and 0.871, respectively. There was a trend of better diagnostic performance of SWE as compared with that of PET, but the combination of both SWE and PET did not exhibit a significant difference on malignancy diagnosis. The cut-off value of Emax 40 kPa attained the highest accuracy. Multivariable analysis indicated that Emax>40 (OR: 7.35 [1.8－29.8], p=0.005), and the absence of hilum (OR: 6.29 [1.6 － 24.5], p=0.008) were independent determinants of metastatic lymphadenopathy.

Conclusions: This study showed that shear wave elastography may adjunct the differentiation between malignant and benign lymph nodes in patients with thoracic cancer. Further investigations are warranted to refine the utilization of ultrasound into lung cancer staging.

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

探討胸部電阻抗斷層掃描於單側橫膈肌麻痺之應用

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Application of electrical impedance tomography in unilateral diaphragmatic paralysis

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Purpose: The difference in physiological respiratory parameters between bilateral lungs was seldom studied, especially in asymmetrical lungs. This pilot study used electrical impedance tomography to estimate the tidal volume and maximal inspiratory flows of each lung in patients with unilateral diaphragmatic paralysis.

Materials and Methods: This observational study was performed at National Taiwan University Hospital. The inclusion criterion was patients with prolonged mechanical ventilation. The patients were categorized into unilateral diaphragmatic paralysis and non-paralysis groups based on chest ultrasound and the computed tomography of the chest. Dräger Dräger PulmoVista® 500with a frame rate of 20 Hz to estimate the tidal volumes and inspiratory flows of the right lung and left lung for 5 to 10 minutes under steady state during unassisted breath trials. Tidal volume was estimated by measuring impedance change per breath. The inspiratory flows were estimated every 0.05 seconds by diving the changes of tidal volume by time during the inspiratory phase and the highest values were analyzed.

Results: From Jan 2022 to Jul 2022, a total of nine patients were included for analysis. The mean age was 76.3 ± 11.3 years, and 77.8%of patients were men. Among the higher value of each parameter of bilateral lungs, there was no significant difference between the paralysis group and the non-paralysis group (tidal volume: 506.5 vs. 333.0 ml, $p = 0.121$; maximal inspiratory flow: 592.5 vs. 387.6 ml/s, $p = 0.058$). Conversely among the lower value of each parameter of bilateral lungs, there was a significant difference between the paralysis group and the non-paralysis group (tidal volume: 2.8 vs. 242.6 ml, $p < 0.001$; maximal inspiratory flow 45.8 vs. 298.6 ml/s, $p < 0.0001$). The difference in tidal volume and maximal inspiratory flow between bilateral lungs was significantly higher in the paralysis group than that in the non-paralysis group (difference of tidal volume: 503.8 vs. 90.4 ml, $p = 0.004$; difference of maximal inspiratory flow: 546.8 vs. 88.8 ml/sec, $p< 0.001$).

Conclusions: This pilot study shows electrical impedance tomography is a promising diagnostic tool to demonstrate the difference in tidal volume and maximal inspiratory flows between bilateral lungs in patients with unilateral diaphragmatic palsy. Further validation of its use in patients with asymmetrical lungs is warranted.

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

利用氣管內管全身麻醉下於複合式手術房機械臂導引之肺部微波消融術

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CBCT image-guided arm-support microwave ablation for lung nodules general anesthesia endotracheal tube intubation with lung separation in a hybrid operating room

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Purpose: The experience of thermal ablation to lung lesion was limited, especially performing the procedure under the localization by cone beam CT in the hybrid operation room. Here, we are going to present the experience of pulmonary ablation in our hospital.

Materials and Methods: We retrospectively reviewed consecutive patients who underwent image-guide percutaneous microwave lung ablation in the HOR at the National Taiwan University Hospital, Hsin-Chu Branch, between July 2020 and July 2022. The indications for ablation were as follows: (1) pathologically confirmed primary or metastatic lung cancers, or (2) persistence of a subsolid nodule on follow-up CT with highly suspicious malignancy or precancerous lesions. The patients considered to receive ablation were unsuitable for surgical treatment or with operable disease refusing surgery.

Results: During the study period, 39 lesions in 33 patients underwent microwave ablation under general anesthesia were included for analysis. The characteristics of the patients and lesions are presented in Table 1. Twenty-seven patients had a single pulmonary nodule; the remaining 6 patients had multiple nodules. According to the preoperative CT findings, 22 (55%) pulmonary nodules were classified as pure ground-glass nodules (GGN), 4 (10%) nodules were classified as part-solid GGN, and 14 (35%) nodules were classified as solid nodules. The nodules had a median size of 9.0 mm and a median distance from the pleural surface of 30.1 mm.

Conclusions: Thermal ablation of the pulmonary nodule under GA in the hybrid OR room can be performed safely and efficiently if we follow the workflow we provided. The procedures provide an alternative choice to manage the pulmonary nodules to the 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)

PA11

介入性肺學在偵測 T790M 突變在表皮生長子突變非小細胞肺癌一線治療失敗後的可行性

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The feasibility of Interventional pulmonology methods in Detection T790M mutation in Epidermal Growth Factor Receptor Mutated Non-Small Cell Lung Cancer progression to first line treatment

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Background: The development 3rd generation epidermal growth factor receptor (EGFR)-Tyrosine Kinase Inhibitor (TKI) targeting T790M-mutant non-small cell lung cancer (NSCLC) had raised the importance of re-biopsy after EGFR-TKI failure. The aim of this study was to investigate the feasibility of Interventional pulmonology (IP) procedures as re-biopsy methods.
Methods: A total 139 patients who underwent IP procedures for re-biopsy after EGFR-TKI treatment for NSCLC were enrolled between Jan 2020 and Aug 2022
Results: In total, 139 (100%) patients all received first re-biopsy by IP methods. In the first re-biopsy, the diagnostic yields were 81.2% and the T790M mutation detection rate was 36%. A total 30 patients underwent the 2nd repeat re-biopsy, 17 (56.6%) patients underwent IP methods and the 13 (43.4%) patients underwent non-IP methods. The T790M mutation detection rate was 36.4%. Only 6 patients received 3rd repeat re-biopsy, no T790M mutation was noted. There was no difference of T790M mutation detection between IP and non-IP methods. (33.6 % vs 37.5%, p = 0.762) Among the IP methods, the T790M mutation detection rate was no statically significantly higher in the re-biopsy tissue from pleuroscopy. Besides, in 11 cases (7.5%), a re-biopsy revealed that histology transforms from lung adenocarcinoma.
Conclusion: The study showed that IP procedures as 1st-line re-biopsy methods for NSCLC were feasible and provided sufficient tissue for the identification of resistance mechanism and target gene T790M mutation. Non-IP methods may be deferred till after negative results from IP methods.

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

表皮生長因子受體基因突變之轉移性肺腺癌合併標靶治療及前線放射線治療治療成效之統合分析

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Effectiveness of Epidermal Growth Factor Receptor Tyrosine Kinase Inhibitor Combination with Upfront Radiotherapy in *EGFR* Mutant Metastatic Lung Adenocarcinoma: A Meta-analysis

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Purpose: It is controversial for the use of upfront radiotherapy (RT) in epidermal growth factor receptor (EGFR) mutant metastatic lung adenocarcinoma (ADC) under EGFR tyrosine kinase inhibitor (TKI) treatment. We aim to assess the efficacy of the combination of EGFR TKI and upfront RT in metastatic EGFR mutant lung ADC.

Materials and Methods: Up to October, 31, 2022, Pubmed, Embase, Medline was searched for articles or trials meeting the inclusion criteria that include EGFR mutant , metastatic adenocarcinoma, and upfront radiotherapy. The primary outcome was progression free survival(PFS) and the secondary outcome was overall survival(OS).

Results: A total of 5 studies were identified for meta-analysis. The use of EGFR TKI with upfront RT in EGFR mutant metastatic lung adenocarcinoma showed an improvement in PFS (HR 0.42, 95% CI 0.35- 0.51) and OS (HR 0.46, 95% CI 0.37- 0.57) compared with EGFR TKI alone.

Conclusion: EGFR tyrosine kinase inhibitor combination with upfront radiotherapy in EGFR mutant metastatic lung adenocarcinoma may improve PFS and OS compared with EGFR TKI alone.

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

介入性支氣管鏡暨虛擬支氣管鏡導航發展於單一醫學中心之經驗

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The development of Interventional Bronchoscopy and Virtual Bronchoscopic Navigation : A single medical center experience

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Background: The view of traditional bronchoscopy is limited to the lumen and the internal surface of the airway, and it's diagnostic value is insufficient for lung cancer, especially in peripheral lesions. Endobronchial ultrasound (EBUS) and endobronchial ultrasound–transbronchial needle aspiration (EBUS-TBNA) with great potential for diagnosis are now available for mediastinal processes and staging of lung cancer. For the past few years, VBN (Virtual Bronchoscopic Navigation) is becoming a mature technology that can create a virtual bronchoscopic image and guide a pathway to the lung nodule. We will show the experiences of interventional bronchoscopy, including VBN, in a single medical center.

Methods: Between Jan 2012 to June 2022, a total of 1665 patients with peripheral lung nodules or mediastinal lymph nodes underwent interventional bronchoscopy, including EBUS-TBLB, EBUS-TBNA and VBN. We analyzed retrospectively diagnostic work-up in clinical settings, and the diagnostic yield of VBN.

Results: Among 1665 patients, 1292 patients underwent EBUS-TBLB, which combined VBN technology in 38 cases among them. 30 cases had positive bronchus sign presented on chest CT scan. 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). A total 373 patients underwent EBUS-TBNA, without severe adverse events

Conclusions: Interventional bronchoscopic techniques are widely used in the diagnosis of lung cancer. By our experiences, the increasing use of EBUS is a trend for diagnosis in lung cancer. The result of our study suggests 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)

PA14

對診斷不明之肋膜病灶或肋膜積水，施行內科胸腔鏡(肋膜腔鏡)於台大新竹分院累積之經驗

于鎧綸[1,2], 張立禹[1], 羅偉誠[3], 林敬凱[4], 柯政昌[1], 何肇基[5], 施金元[5], 余忠仁[1]

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Cumulative experience of medical thoracoscopy (pleuroscopy) for undiagnostic pleural diseases in National Taiwan University Hospital Hsin-Chu branch

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Purpose: Medical thoracoscopy (pleuroscopy) is becoming the diagnostic modality of choice for exudative pleural effusions undiagnosed by thoracocentesis. However, medical thoracoscopy was a relatively rare procedure in Taiwan. In this study, we reported our cumulative experience with medical thoracoscopy.

Materials and Methods: A total of 112 consecutive patients who underwent medical thoracoscopy from June 2016 to July 2022 were collected. Among them, 94 patients received medical thoracoscopy for undiagnostic pleural disease. The procedure was performed under light to moderate sedation in the endoscopy room or intensive care unit. Pleural biopsies were performed using conventional forceps biopsy and/or cryobiopsy

Results: The mean age was 65.9 years (SD 12.3 years). Seventy-four patients (78.7%) received the procedure in the endoscopy room, 18 patients (19.1%) in the intensive care unit, and 2 patients (2.1%) in the negative pressure isolation room. The overall diagnostic yield of medical thoracoscopy was 85.1% (80/94). Seventy-six patients received cryobiopsy plus forceps biopsy and 18 patients received forceps alone. There was no significant difference between cryobiopsy plus forceps biopsy and 18 forceps biopsy alone (85.5% vs 83.3%, P = 0.894). The final diagnosis was tuberculous pleurisy in 24 patients (25.5%), lung cancer in 18 patients (19.1%), empyema in 16 patients (17.0%), and other malignancy in 8 patients (8.5%). Minor bleeding occurred in 6 (6.4%) and prolonged pneumothorax (>3 days) in 2 (%) of cases. There is no procedure-related mortality.

Conclusions: Medical thoracoscopy is a safe procedure with high diagnostic yield for patients with undiagnosed pleural diseases in our institution.

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

在複合式手術室使用擴增實境螢光攝影與錐狀射束電腦斷層掃描導引進行周邊肺部結節生檢：病例系列報告

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Cone-beam computed tomography derived augmented fluoroscopy guided biopsy for peripheral pulmonary nodules in a hybrid operating room: a case series

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Introduction: Lung cancer is currently the second most commonly diagnosed cancer type and the leading cause of cancer death worldwide. Advancements in early detection, such as low dose computed tomography, and more treatment options have led to a decline in the incidence and the mortality of lung cancer. However, biopsy of the small peripheral pulmonary nodules (PPN) is often challenging and solely relies on bronchoscope with radial endobronchial ultrasound. This research is aimed to share the initial experience of bronchoscopic biopsy of PPN, with the aid of augmented fluoroscopic bronchoscopy (AFB) and cone beam computed tomography (CBCT) in a hybrid operating room.

Methods: We retrospectively enrolled patients who underwent robotic cone beam computed tomography and augmented fluoroscopy guided, and radial endobronchial ultrasound confirmed transbronchial biopsy and cryobiopsy in a hybrid operating room. All patients' demographic characteristics, computed tomography images, rapid on-site evaluation cytology and final pathology reports were collected.

Results: A total of 40 patients underwent CBCT guided bronchoscopic biopsy in a hybrid operating room, and 5 patients additionally received cone-beam CT guided transthoracic needle biopsy during the same procedure. The overall diagnostic yield rate was 88%, and 2 patients had procedure-related pneumothorax.

Conclusions: Bronchoscopic biopsy for PPN is feasible and can be performed safely with a high diagnostic yield using AFB and CBCT in a hybrid operating room.

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

疑似和新冠肺炎感染相關的血清癌胚蛋白抗原升高：兩病例報告與文獻回顧

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Elevated Carcinoembrynoic Antigen (CEA) Suspecting Related to Covid-19 Infection: Report of Two Cases and Review of Literature.

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Purposes: Coronavirus disease 2019 (COVID-19) affecting multiple organs has been found to induce abnormal laboratory values including carcinoembryonic antigen (CEA).

Materials and Methods: Herein two patients undergoing follow up after surgical treatment for lung adenocarcinoma, being found with transient CEA elevations, were suspected in relation to COVID-19 infections. All of them had related symptoms such as cough with sputum, sore throat, nasal discharge or fever, and COVID-19 infection were confirmed by PCR or rapid antigen test.

Results: Their serum CEA values during their COVID-19 infection period were suddenly increased 3-4 times to abnormal values. No evidence of local recurrence or distant metastasis was noted after systemic survey. Their serum CEA values went back to prior normal values at recheck 2-3 months later.

Conclusion: COVID—19 infection might result in CEA elevation, and this false positive results will have clinical significance for patients with adenocarcinomas.

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

小於 50 歲的上皮生長因子受體基因突變非小細胞肺癌病人第一線使用標靶藥物治療的預後分析

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Prognosis of EGFR-mutant NSCLC patients aged less than 50 years old receiving EGFR-TKIs as first-line treatment

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Purpose: Lung cancer is the leading cause of cancer death in Taiwan. We aim to identify the prognosis of Epidermal Growth Factor Receptor (EGFR) mutant advanced non-small cell lung cancer (NSCLC) patients who were younger than 50 years old with EGFR-tyrosine kinase inhibitors (TKIs) as first-line treatment.

Materials and Methods: We analyzed 235 patients of EGFR-mutant NSCLC in four teaching hospital including 38 patients younger than 50 years from 2010 to 2019. The clinical data, characteristics about age, gender, treatment modalities, progression-free survival (PFS), overall survival (OS) and best treatment response were recorded.

Results: Total 236 patients with advanced EGFR-mutant NSCLC, including 38 patients aged under 50 years old (young group), and 197 patients older than 65 years old (elderly group). The performance status (PS) is better in younger group (PS=0-1, 81.6% V.S 57.4%, *P*=0.005). The frequency of exon 19 deletion and L858R mutation has no significant difference between these two groups (p=0.188). The most frequent use of first line EGFR-TKI treatment was afatinib (50%) in young group and Gefitinib (45.2%) in elderly group (p=0.022). The PFS of first line EGFR-TKI treatment was 18.5 ± 12.8 months vs. 15.7 ± 10.5 months in the young group and elderly group (p=0.140). The OS was 32.2 ± 14.0 months V.S 23.4 ± 14.4 months between younger group and older group (p=0.001).In Cox hazard regression analysis, initial EGFR-TKI treatment with afatinib or erlotinib use and metastatic sites less than 3 on diagnosis have better PFS for young group. Longer PFS achieving by first line EGFR-TKI treatment was associated with better OS for young group.

Conclusions: For young patients with advanced mutant EGFR NSCLC receiving first-line EGFR-TKI, metastatic sites less than 3 on diagnosis and initial treatment with afatinib or erlotinib use have better 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)

PA18

偵測非小細胞肺癌中 KRAS 突變：一個區域醫院的經驗

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Detecting *KRAS* mutations in non-small cell lung cancer tissues: experience in a regional hospital

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Purpose: With the development of therapy targeting *KRAS* mutations, the detection of *KRAS* mutations has been a critical issue in the treatment of non-small cell lung cancer (NSCLC). In this study, we aimed to develop a method for identifying *KRAS* mutations in NSCLC tissues.

Materials and Methods: A multiplex allele specific quantitative polymerase chain reaction (qPCR) assay was developed to detect *KRAS* mutations including G13C, G12D, G12A, G12R, G12C, G12S, G12V, and G13D mutations from formalin fixed paraffin embedded NSCLC tissues in Chang Gung Memorial Hospital Chiayi Branch.

Results: Totally, 283 NSCLC tissues were included. Among those patients, 14 patients (4.9%) were qPCR positive for *KRAS* mutations and were then validated by direct sequencing. Patients with *KRAS* mutations had a higher proportion of smokers compared to patients without *KRAS* mutation (78.6% vs 43.9%, p=0.0131). *KRAS* mutation subtypes were G12C (35.7%), G12D (28.6%), and other mutations including G12A (7.1%), G12R (7.1%), G12S (7.1%), G12V (7.1%) and G13C (7.1%).

Conclusions: In our study, we developed a qPCR method for detecting *KRAS* mutations in NSCLC tissues and clarified the status of *KRAS* mutation in local NSCLC patients. Our study may aid in the diagnosis and treatment of NSCLC patients with *KRAS* mutations 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)

PA19

Bevacizumab 與 Ramucirumab 在表皮生長子突變非小細胞肺癌治療的比較：一個台灣真實世界的觀察性研究

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Bevacizumab versus Ramucirumab in EGFR-Mutated Metastatic Non-Small Cell Lung Cancer Patients: A Real-World Observational Study

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Background: The addition of bevacizumab or ramucirumab to epidermal growth factor receptor (EGFR)-tyrosine kinase inhibitor (TKI), chemotherapy, and immunotherapy in EGFR-mutated non-small cell lung cancer (NSCLC) patients provided survival benefit. There was no study to compare the difference between these two anti-angiogenic therapies (AATs) in efficacy and safety.

Methods: The stage IV EGFR- mutated NSCLC patients treated with first-line EGFR-TKIs between January 2014 and May 2022 were enrolled. We divided patients into two groups: patients who received bevacizumab or ramucirumab as combination therapy at any line.

Results: A total of 96 patients were enrolled in the final analysis. Progression-free survival (PFS) in patients receiving front-line AATs plus EGFR-TKI combination therapy was longer than those treated with later-line AATs plus other therapy (19.6 vs 10.0 months, $p < 0.001$). There was no difference in PFS according to AATs used. (24.1 vs 15.7 months, $p = 0.454$). No difference in overall survival (OS) was observed between upfront line or later line and the addition of these two AATs. (non-reach(NR) vs 44.0 months, $p = 0.261$; 48.6 vs 43.0 months, $p = 0.924$). Multivariate Cox regression analysis demonstrated that the more cycle of AATs as independent good prognostic factors for OS. However, the incidence of the adverse effects such as bleeding was higher in bevacizumab than ramucirumab

Conclusion: Front-line combination AATs and EGFR-TKI improves PFS in stage IV EGFR-mutated NSCLC patients. The effectiveness of addition of these two different AAT were similar. Adding ramucirumab to combination therapy was relatively safer than adding bevacizumab.

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

以體外循環輔助施行胸腔惡性腫瘤擴大切除手術的單一醫學中心經驗

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Extended Resection for Advanced Thoracic Malignancies with Cardiopulmonary Bypass: Single institutional experience

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Purpose: Resection of intrathoracic tumor on cardiopulmonary bypass (CPB) has rarely been reported in the literature. Our aim was to review the experience and assess the role of CPB for the surgical treatment of locally advanced mediastinal and lung cancers.

Materials and Methods: Between 2015 and 2020, we included 8 patients with primary thoracic malignancies who were deemed to have the neighboring cardiovascular invasion demonstrated by the thoracic imaging scans. Surgical treatment was performed based on a multidisciplinary tumor board consensus. All the 8 patients (3 primary lung cancers and 5 mediastinal cancers) undergoing complete resection with CPB were retrospectively analyzed regarding the perioperative variables and postoperative outcomes.

Results: Cardiopulmonary bypass was performed for tumors invading the superior vena cava (SVC) in 4 patients, the right atrium (RA) in 1 patient, the SVC with the RA in 2 patients, and the SVC with the origin of main pulmonary artery as well as the ascending aorta in 1 patient. Regardless of the primary tumor histology, 7 patients required pulmonary resections including pneumonectomy (n=4), bilobectomy (n=1), single lobectomy (n=1), and wedge resection (n=1). Thirty-day mortality occurred in two patients due to respiratory insufficiency. Four in the other 6 patients developed postoperative complications including arrythmia, pneumonia, and transient SVC syndrome but they were all discharged home after 9 to 34 days (median, 16.5 days). An R0 resection was achieved in 7 patients excepted for one patient had an R1 resection. In the long term, 4 patients are alive without recurrence 24, 26, 38, and 83 months after their operations, and one is alive with recurrence 30 months postoperatively. One patient died with recurrence 25 months postoperatively.

Conclusions: In well-selected patients, CPB is safe and effective in the extended resection of locally advanced thoracic cancers. However, long-term survival remains to be validated by future studies.

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

探討非小細胞肺癌中 TSLP 表現及免疫調控角色

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The expression and immune regulation of thymic stromal lymphopoietin in non-small cell lung cancer development and progression

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Purpose: Previous studies have shown thymic stromal lymphopoietin (TSLP) to be an important driver of type 2 inflammation. A new and unexpected function for TSLP has been found in the induction and progression of a variety of tumors. This study conducted TSLP performance in lung cancer patients and the correlation of the clinical pathological data.
Materials and Methods: The patients with pathological diagnosis of lung cancer were enrolled. The percentage of CD19 + B cells was determined in the lymphocyte gate and counted via flow cytometry. Relevant serum cytokines including TSLP were analyzed using LEGENDplex software. In vitro study was conducted by A549 cell line and the mRNA expression change of TSLP was extracted by Reverse Transcriptase PCR (RT-PCR).
Results: When comparing the frequencies of B cell subsets between early-stage (N = 31) and late-stage lung cancer group (N = 29), the frequency of memory B cell (17.3±6.1% vs 23.4±15.1%, p=0.042), CD27+IgM+ B cell (1.8±1.3% vs 2.9±2.3%, p=0.030), class-switched B cell (15.5±5.5% vs 22.2±14.9%, p=0.023), class-switched memory B cell (69.9±11.3% vs 59.9±19.7%, p=0.017) and plasmablast (8.5±7.3% vs 18.0±20.8%, p=0.019) were significantly different between groups. The patients with higher frequency of class-switched B cell had significantly worse prognosis than low frequency (HR 3.054, 95% CI 1.007-9.262, p=0.049). The level of IL-1B, IL-6, IL-10, IL-12, IL-13, and TSLP were significantly higher in the late-stage cancer patients. Simulation in vitro test with human lung A549 cell line was performed, the expression of short-form TSLP (sfTSLP) level decreased with the higher anti-cancer drug as Pemetrexed concentration.
Conclusions: The increase proportion of CD27+CD38- (class-switched) B cell could be an independent, poor prognostic factor for NSCLC patients. TSLP signaling is addressed to the anti-cancer therapeutic response. Therefore, TSLP and relevant cytokines may be involved directly and indirectly in shaping the inflammatory status of the tumor microenvironment.

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

肺腺癌病患於施打 Pemetrexed 後引起之脂肪皮膚硬化症

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Pemetrexed-induced lipodermatosclerosis in a patient of lung adenocarcinoma

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Introduction: Pemetrexed is an antifolate used to combine with cisplatin in the treatment of advanced lung adenocarcinoma without driver mutation. Cutaneous adverse effects of pemetrexed are still frequently reported with incidence about 17~22% and nonspecific skin rash is the most common presentation. Lipodermatosclerosis is a rare cutaneous adverse effect which can be induced by pemetrexed and no precise incidence is available for reference. We reported a case of pemetrexed-induced lipodermatosclerosis with typical manifestations of skin rash and lower limbs edema.

Case presentation: This 55-year-old female complained of productive cough for one month and then diagnosed of lung adenocarcinoma, T4N0M1a, stage IVA. Due to lack of driver mutation, she underwent chemotherapy with cisplatin + pemetrexed for 6 cycles and then shifted to maintenance pemetrexed. Edema of bilateral lower legs developed after one year later since we started pemetrexed treatment. Skin redness with tenderness also gradually progressed. Due to limited improvement of skin condition under steroid and antibiotics treatment, she was referred to the outpatient department of dermatologist. After detailed review of drug history and ruled out of common infectious or vascular disease, pemetrexed-induced lipodermatosclerosis was impressed.

Discussion: Lipodermatosclerosis is an inflammatory disorder of subcutaneous tissue. It also known as hypodermitis sclerodermiformis or sclerosing panniculitis. The clinical presentation of lipodermatosclerosis included skin hyperpigmentation, erythema, induration, ulceration and edema of lower limbs. The mechanism how pemetrexed induced lipodermatosclerosis is unclear. Pemetrexed-related vascular injury may be a possible explanation, but further research is needed to confirm the hypothesis. The diagnosis is based on clinical presentation, histopathologic findings and the response of appropriate treatment. Standard management of lipodermatosclerosis is using compression stocking. Medical therapies of Stanozolol, Pentoxifylline or Hydroxychloroquine also show improvement of cutaneous symptoms. Lipodermatosclerosis is mimicked to common skin disease such as contact dermatitis or cellulitis and frequently misdiagnosed initially. In patient under pemetrexed treatment, we should pay attention of lipodermatosclerosis when typical skin manifestations appear.

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

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表皮生長因子接收器-酪胺酸抑制劑合併抗血管新生藥物或 osimertinib 治療之臨床效果比較

黃彥翔[1,2]，徐國軒[3]，曾政森[1,2,4]，李柏昕[1,2]，歐偉凡[1]，楊宗穎[1,5]

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The comparison of clinical efficacies between first-line EGFR-TKI plus Anti-angiogenic Agent and Osimertinib in *EGFR*-mutant NSCLC Patients

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Purpose: The aim of this study was to investigate the difference of the clinical outcomes between Epidermal Growth Factor Receptor (EGFR)-Tyrosine Kinase Inhibitor (TKI)s combined anti-angiogenic agents and osimertinib as first line treatment in advanced and recurrence *EGFR*-mutant Non-small Cell Lung Cancer (NSCLC) patients.

Materials and Methods: From January 2017 to December 2021, we enrolled advanced and recurrence NSCLC patients who harbored exon 19 deletion or exon 21 L858R point mutation with first- or second-generation EGFR-TKIs plus anti-angiogenic agents and osimertinib as first-line treatment to analyze the clinical outcomes including Progression-Free Survival (PFS) and Overall Survival (OS).

Results: A total of 129 patients were enrolled for final analysis. Forty-four patients received gefitinib (n=3), erlotinib (n=24) and afatinib (n=17) plus anti-angiogenic agent (group A), and 85 patients received osimertinib (group O) as first-line treatment. The median PFS was 16.4 months in group A, and the median PFS was 22.1 months in group O. The median OS was 42.9 months in group A, and the median OS was 47.5 months in group O. There was no statistically significant difference between group A and group O in PFS and OS. Among group A, thirty-four patients had progressive disease to first-line treatment. The median OS was 59.8 months in patients with sequential osimertinib treatment (group A1), and the median OS was 26.3 months in patients without sequential osimertinib treatment (group A2). Among group O, forty-two patients had progressive disease to osimertinib (group O1), and the median OS was 34.0 months. According to multivariate analysis, patients in group A1 experienced significantly longer median OS than patients in group A2 and O1 (HR 0.15 (95% CI 0.04-0.55) and HR 0.19 (95% CI 0.06-0.62), respectively).

Conclusions: Our research demonstrated that both EGFR-TKI plus anti-angiogenic agents and osimertinib as first line treatment provided clinical benefits to advanced and recurrence *EGFR*-mutant NSCLC patients. Patients receiving sequential EGFR-TKI plus anti-angiogenic agents and osimertinib treatment could experience better overall survival with 60 months.

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

巨大多發性囊狀腦轉移在分化不良肺腺癌病人之表現

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Multiple Large Cystic Brain Metastasis in Poorly Differentiated Adenocarcinoma of Lung

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INTRODUCTION: Cystic brain metastasis from adenocarcinoma of lung at initial presentation is uncommon and previously be considered to have poor prognosis due to its insensitivity to radiotherapy and their large volume. We present a case of poorly differentiated adenocarcinoma with widespread metastatic disease, including multiple large cystic brain metastasis at presentation.

CASE PRESENTATION: A 47year old female with history of old TB presented with a one-month history of epigastralgia and lower abdominal fullness, ever visited other hospital where abdominal CT disclosed right adrenal gland tumor and suspicious right lower lung tumor noted and was referred to our hospital for further survey. In our hospital, CXR and chest CT revealed huge right middle lung mass with invasion of right lower lung, right pulmonary vein, and right atrium. A brain CT disclosed multiple cystic mass, 4.1x3.9x4.2cm over left cerebellum, bilateral frontal, left occipitoparietal with bizarre edema. The pathology from bronchoscopy biopsy favors undifferentiated adenocarcinoma of lung. The following molecular profile revealed EGFR (-), Alk (-), ROS1(-), BRAF (-). ACTDRUG for NGS disclosed no fusion gene detected, and amplification cannot be detected. She received whole brain RT and palliative chemo-immunotherapy after SDM.

DISCUSSION: Brain metastasis is usually regarded as an important sign of poor prognosis in malignancies, especially in cystic brain metastases. Studies have suggested that the cause of cystic masses may include the breakdown of the blood brain barrier or the higher risk of developing cystic brain metastasis in patients with poor histological grade. In NSCLC, reports have demonstrated that patients with activating EGFR gene mutations have a higher risk of BM than those with wild type EGFR. In addition, initial BM occurs in approximately 30% of cases of ALK- positive NSCLC. However, in this case, all major mutations profile were negative. Treatment of cystic brain metastasis is especially challenging, due to decreased responsiveness to radiotherapy. Treatments may include a combination of whole brain radiation, radiosurgery, neurosurgery, and chemotherapy.

CONCLUSIONS: Cystic brain metastases are uncommon complication in NSCLC and are likely associated with poorer outcomes especially in patients without harboring unique driver mutations. Currently, there are no general treatment guidelines for cystic brain metastasis.

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

酪胺酸激酶抑制劑停藥後肺癌快速擴散

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Lung Ca flare after TKI withdrawal in patients with EGFR-mutant adenocarcinoma

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Purpose: The management of NSCLC has altered in the past decade with the identification of genetic mutations. EGFR mutations were first identified in lung cancer after clinical benefit to TKI was observed. In NSCLC with EGFR mutation, first-line TKI therapy is recommended .We have observed that patient with EGFR-mutant lung cancer have accelerated progression of disease after discontinuation of TKI. The time to lung disease flare after TKI discontinuation was only 8 days.

Materials and Methods: This 67 years-old woman had past history of (1)NSCLC exon19 deletion , cT4N3M1c, stage IV, adenocarcinoma with multiple bone mets and brain metastasis, s/p tarceva for 18 monthes s/p palliative RT (2)cachexia (3)HTN (4)Hepatitis (5)uterine myoma s/p hysterectomy30 years ago. She was referred for hospice care and hold TKI.

Discussion: Phenomenon of rapid and symptomatic disease progression that occurs in patients with EGFR-mutant lung cancer shortly after discontinuation of the EGFR kinase inhibitor. Factors associated with disease flare included presence of CNS and pleural met. In patients with EGFR-mutant lung cancer or acquired resistance to TKIs, discontinuation of TKI with a clinically significant risk of accelerated disease progression as biologically and clinically different than treatment with cytotoxic chemotherapy.

Results: Due to right lower lobe increased infiltration seen on chest X-ray, they added empirical antibiotics for pneumonia .In fact its lung disease flared up. She passed way 2 days later.

Conclusions: Case with **EGFR**-mutant NSCLC discontinuation of TKI prior to initiation of an alternative treatment is associated with a clinically significant risk of accelerated disease progression. Physician should be notified the possibility of “flare-up” in patients discontinued TKIs associated with a clinically significant risk of accelerated disease progression. The patients who experienced a disease flare TKI discontinuation and disease flare rather than a more aggressive underlying biology. Appropriate approach would be to immediately substitute another therapeutic agent or add a new agent with an unacceptably high risk of more rapid 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)

PA26

免疫治療中急性腎損傷後再治療成功流程

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Encountering acute renal injury during Immunotherapy of NSCLC rechallange protocol – Case successfully complete full course treatment

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Purpose: Mainstream of 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 IRAEs developed in various organs are not uncommonly, though affecting the kidney are less reported.

Materials and Methods: The 52 years old male had past history of (1)DMII (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 T6/T7/T9/T10 TPS on 9/4.109/6/18 LUL cytology biopsy showed adenocarcinoma. 9/3 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 baseline. We hold all medicine metabolized by the kidneys, intermittent pulse and oral steroid began as predinsolone 1 mg/kg per week then tapering dosage half every week for 6 weeks until zero.

Discussion: Cortazar e.t.c reported 13 patients with nephrotoxicity at approximately 1–6 months after immune checkpoint inhibitor monotherapy or combination therapy. Kidney recovery in ten patients with AIN who were treated with corticosteroids was complete in two and partial in seven (two untreated patients with AIN did not recover renal function, and one was dialysis dependent).The presence or absence of other IRAEs does not always predict what the underlying kidney lesion will still be. On the basis of ASCO guidelines, discontinued the immune checkpoint inhibitor and administer corticosteroids when AKI developed without tissue diagnosis firstly. Approach to Immune Checkpoint Inhibitor–Associated AKI Patients can be monitored and evaluated for causes, such as volume, contrast and NSAID.

Results: His blood creatinine recovered from 6.8 mg/dl (stage5) down to 0.8mg/dl (e-GFR stage1) in 42 days. The challenge dose of immunotherapy started for half dose for 3cycle then full dosage until total 2 years without renal damage. The patient remained in stable disease with ECOG 1.In other words, he got partial remission disease after2-year mono-immune therapy.

Conclusions: Those with severe AKI should have a nephrology consultation to evaluate for the cause even renal biopsy. Corticosteroid therapy was associated with resolution of kidney injury in all patients were observed over a short period of 12 weeks follow-up. AKI developed at anywhere from 3 to 18months following checkpoint inhibitor exposure. Re-challenge to immune checkpoint inhibitors in patients who developed AKI is carefully monitored. It may be reasonable to reinitiate immune checkpoint inhibitors if responded well to corticosteroids. However, discussion with oncology/nephrology is required to assess the risks and benefits of restarting immunotherapy. Reinitiating immune checkpoint inhibitors with half -dose then full dosage may be a worthy option to treat PDL1 positive cases but more studied should be recruited.

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

晚期非小細胞肺癌合併表皮生長因子受體 20 號外顯子插入突變之病人特性、治療現況與預後探討

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Characteristics, treatment patterns and clinical outcomes in patients with advanced non-small cell lung cancer harboring *EGFR* exon 20 insertions

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Purpose: We aim to analyze the clinical characteristics, treatment patterns, treatment outcomes and survival of patients with recurrent or advanced non-small cell lung cancer (NSCLC) harboring epidermal growth factor receptor (*EGFR*) exon 20 insertions (ex20ins) in real-world practice.

Materials and Methods: Patients with advanced or recurrent NSCLC harboring *EGFR* ex20ins mutation from 2011 to 2021 who received systemic treatments were enrolled. The baseline characteristics were summarized by descriptive statistics. The treatment groups were divided into platinum-based chemotherapy (PtC), EGFR-tyrosine kinase inhibitors (TKI), and others. The response of systemic therapy, overall survival (OS) and progression-free survival (PFS) were analyzed. Cox proportional hazard models were used to assess the factors associated with survival.

Results: A total of 71 patients were enrolled and the median age was 64-year-old. Most patients were male (57.7%), never-smokers (57.7%) and stage IVB at initial diagnosis (54.9%). The median number of lines of systemic treatment the patients underwent was 3. The median OS was 18.43 months, and the median PFS of first-line (1L) treatment was 5.03 months. In the 1L setting, 41 patients underwent PtC, and 22 patients received EGFR-TKIs. Compared to PtC, EGFR-TKIs use was associated with lower overall response rate (9.1% vs. 29.3%), lower disease control rate (18.2% vs. 61%), and shorter PFS (median 3.1 vs. 5.3 months, $p < 0.05$). The PFS was also significantly shorter in the second-line (2L) EGFR-TKI group than 2L PtC group (median 2.80 vs. 4.73 months, $p < 0.05$).

Conclusions: Among the patients with advanced or recurrent NSCLC harboring *EGFR* ex20ins, PtC was the most common 1L therapy. EGFR-TKIs had limited clinical benefits both in the 1L and 2L treatment compared with PtC. More effective therapeutic options are needed for this distinct molecular subtype of NSCLC.

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

肺癌引發多重深部靜脈栓塞: 病例報告

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Complication of venous thromboembolism following lung cancer: A Case Report

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Introduction: Deep vein thrombosis (DVT) and acute pulmonary embolism (PE) are two major manifestations of venous thromboembolism (VTE), and difficult challenge to medical care providers in intensive care units (ICUs).

Case Presentation: A 52 year-old male came to the emergency department with left lower leg redness and swelling for 4-5 days, shortness of breath and chest pain for 1 hour. Also, he has loss of body weight more than 5 kilograms for 3 months and poor intake in recent 2 weeks. He had fever, tachycardia, tachypnoea, reduced oxygen saturation and swollen tender left leg on examination. The chest radiograph showed bilateral ground-glass opacities. The computed tomography (CT) of chest-abdomen-pelvis and lower extremities showed bilateral pulmonary artery embolism, bilateral lung consolidation, right popliteal vein thrombosis, left iliac vein thrombosis and liver tumor. He underwent anticoagulant treatment after ICU admission. PE resolved in repeat CT and left leg pain and swelling improved on Day-7. Heparinization was discontinued for liver tumor biopsy, and pathology showed metastatic lung adenocarcinoma. However, swelling and redness of left leg happened again after discontinuing anti-coagulants. We re-use anticoagulants first and he underwent transcatheter embolectomy on Day 10, the leg redness and swelling improved.

Discussion: anticoagulants is the first choice for the treatment of VTE, which can effectively improve pulmonary embolism and its comorbidities caused by DVT. This case was treated with anticoagulants at the beginning and the symptom was definitely improved. In order to clarify the tumor pathology. it was necessary to temporarily stop anticoagulants. Recurrent thrombosis leads to acute limbs hypoxemia. After emergency catheter thrombectomy, the swelling was greatly improved, and the patient also avoids the risk of limb amputation. Active malignancy is a risk factor for VTE, and the rate is as high as 15-20%.

Conclusions: Malignancy with DVT and pulmonary embolism is common but may critical and lethal. Using anticoagulants will prevent further complications.

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

接受免疫檢查點抑制劑治療的肺癌病人發生肺結核風險之探討

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Development of active tuberculosis among lung cancer patients receiving immune checkpoint inhibitors

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*Equal contribution

Purpose: Reactivation of tuberculosis (TB) during anti-cancer therapy with immune checkpoint inhibitors (ICIs) is being increasingly reported. However, whether ICI use is a risk factor for TB reactivation is still controversial. We aim to identify the incidence of active TB in cancer patients after they received ICIs and to compare the incidence of active TB among patients receiving ICIs with that of a control group of patients receiving tyrosine kinase inhibitors (TKI).

Materials and Methods: We performed a retrospective study using a hospital based cancer registry. Patients with lung cancer in 2015–2020 were enrolled, and those with exposure to immune checkpoint inhibitors (ICIs) or tyrosine kinase inhibitors (TKI) were reviewed and compared for TB development. Propensity score matching was performed to exclude the effect of confounding factors. Kaplan–Meier (KM) analysis and Cox proportional hazard regression were applied to identify factors associated with increasing risk of TB.

Results: In the original cohort, we enrolled 442 patients in the ICI group and 1,607 in the TKI group from the cancer registry. The incidence rate of TB development was higher in the ICI group than in the TKI group (2245 vs 630 per 100,000 person-year, p = 0.0138 by log rank test). After matching, the significance remained (2298 vs 412, p = 0.0165). In univariate analysis, group (TKI vs ICI), systemic corticosteroid use, chronic obstructive pulmonary disease, and congestive heart failure were associated with a higher risk of TB. By multivariable Cox proportional hazard regression, only group (TKI vs ICI) remained an independent factor for TB development (adjusted hazard ratio: 6.29, 95% CI 1.23-32.09, p = 0.0269).

Conclusions: ICI use in lung cancer is associated with increased risk of TB. A screening program among patients using ICI might be suggested for early detection of TB reactivation.

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

MET exon 外顯子 14 跳躍突變的非小細胞癌 - 病例經驗系列分享

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Met MET exon 14 skipping, a rare mutation in non small cell lung cancer - case series experience in single center

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MET exon 14 skipping (METex14) mutations occur in approximately 2 to 3% of patients with non–small-cell lung cancer (NSCLC). Next-generation sequencing assay (NGS) was commonly used to identify METex14 mutations. We demonstrated three patients with METex14 mutation in E-Da hospital.

Case-1 : A 71-year-old man was diagnosed as lung cancer adenocarcinoma stage IVB. Eastern cooperative oncology group (ECOG) performance status was 0. Initial molecular testing showed absence of driver mutation (EGFR, ALK and ROS-1). He received chemotherapy first. We sent tissue NGS and identified a METex14 mutation. He received capmatinib and partial response was noted. The only side effect was grade II limb edema.

Case-2: A 33-year-old man was diagnosed as lung cancer adenocarcinoma stage IVB, ECOG:0. Initial molecular testing showed absence of common driver mutation. He received carboplatin/pemetrexed. Tumor progression were noted. Gastrostomy was created because esophageal obstruction. NGS reported METex14 mutation. Elevated PD-L1 expression was also noted. We combined capmatinib and pembrolizumab for treatment. Tumor was in regression rapidly, and gastrostomy tube was removed. Now the condition was stable for 16 months.

Case-3: A 80-year-old never-smoking woman was diagnosed as lung cancer, adenocarcinoma stage IVB. The ECOG score was 3. Due to inadequate tissue, we used liquid biopsy for NGS and identified a METex14 mutation. She received target therapy with Capmatinib. Unfortunately, the patient was expired in two weeks because pneumonia with respiratory failure.

Lung cancer survival was better if driver mutation detected and we prescribed adequate target therapy. However, age and ECOG also influences cancer 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)

PA31

帶有 L858R 和 Del19 表皮生長因子受體基因突變之晚期非小細胞肺癌五年生存因素分析

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Factors Analysis of survival past five years with advanced NSCLC, EGFR-mutated in Del19 and L858R

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Background: We aim to identify the survival of the past five years between exon 19 deletion (Del19) and exon 21 Leu858Arg substitution (L858R). Secondary objective was to investigate factors that lead to long-term survival in EGFR-mutated non-small-cell lung cancer (NSCLC), in real-world clinical settings

Methods: We analyzed 50 patients with EGFR -mutated in advanced NSCLC started their first chemotherapy between January 01, 2017, and September 30, 2017; 22 patients had exon 19 deletion (Del19) and 20 patients had exon 21 Leu858 Arg substitution (L858R) in advance NSCLC, and 8 patients in others groups (exon 18/20/L861Q)(Table 1).

Results: At the time of database lock, of the exon 19 deletion (Del19) NSCLC patients, 5 patients (22.7%) were alive, and 17 patients (77.3%) had died. At the exon 21 Leu858 Arg substitution (L858R), 4 patients (20%) were alive, and 16 patients (80%) had died. In the other group), 1 patient (12.5%) was alive, and 7 patients (87.5%) had died.

The univariate analysis was performed using the Cox's proportional hazards model. The univariate analysis showed one variable to be associated with overall survival: brain metastasis (presence 15/50 vs. absence 35/50; p= 0.153 (Table 2).

Conclusions: There are long-term survivors among patients with both exon 19 deletion (Del19) and exon 21 Leu858Arg substitution (L858R), but show no significant difference in survival. The factor that influences long-term survival (past 5 years) is brain metastasis or not.

Table 1 Clinical characteristics of all patients

Characteristics	ALL		Del 19		L858R		Other group	
	N = 50	%	N = 22	%	N = 20	%	N = 8	%
AGE								
Median (Range , years)	66 (61-76)		65 (58-76)		70 (63-78)		68 (56-76)	
Follow time								
Median (Range , months)	24 (9.63-39)		29 (15-40)		20 (9-39)		14 (6-33)	
Activity								
Alive	10	20.0	5	22.7	4	20.0	1	12.5
Dead	40	80.0	17	77.3	16	80.0	7	87.5
Stage								
3B.Stage IIIB	8	16.0	4	18.2	2	10.0	2	25.0
4.Stage IV	42	84.0	18	81.8	18	90.0	6	75.0
Brain mets								
NO	35	70.0	15	68.2	15	75.0	5	62.5
YES	15	30.0	7	31.8	5	25.0	3	37.5
GENDER								
Male	20	40.0	10	45.5	5	25.0	5	62.5
Female	30	60.0	12	54.5	15	75.0	3	37.5
Smoke								
Never	37	75.5	18	85.7	14	70.0	5	62.5
Ex-smoker	4	8.2	0	0.0	3	15.0	1	12.5
Smoker	8	16.3	3	14.3	3	15.0	2	25.0
ECOG								
0-1	40	85.1	19	90.5	15	78.9	6	85.7
2	7	14.9	2	9.5	4	21.1	1	14.3

Table 2 Results of univariate and multivariate analysis of overall survival (Cox's proportional hazard mode)

		Univariate analysis		
	N	HR(95% CI)		p-value
TKI mutation				
Del 19	22	1		
L858R	20	1.176	0.267-5.176	0.83
Other group	8	2.059	0.202-20.959	0.542
Stage				
3B.Stage IIIB	8	1		
4.Stage IV	42	1.417	0.240-8.361	0.701
Brain mets				
NO	35	1		
YES	15	4.846	0.556-42.264	0.153
GENDER				
Male	20	1		
Female	30	0.58	0.131-2.575	0.474
Age, year				
< 75	35	1		
≥75	15	1.926	0.357-10.384	0.446
Smoke				
Never	37	0.444	0.048-4.116	0.475
Ex-smoker	4	-	-	0.999
Smoker	8	1		
ECOG				
0-1	40	1		
2	7	-	-	0.999

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

帶有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 afatinib 和 osimertinib 接續治療之臨床效果:單一醫學中心回溯性研究

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The clinical efficacies of sequential afatinib and osimertinib treatment in *EGFR*-mutant Non-small cell lung cancer patients: a retrospective single center study

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Purpose: The objective of this study was to investigate the clinical outcomes of first-line afatinib treatment in recurrence and stage IV *Epidermal Growth Factor Receptor (EGFR)*-mutant Non-small Cell Lung Cancer (NSCLC) patients and sequential afatinib with osimertinib therapy in patients harboring T790M.

Materials and Methods: From January 2015 to December 2020, we enrolled recurrence and stage IV NSCLC patients who harbored exon 19 deletion or exon 21 L858R point mutation with afatinib as first-line EGFR-TKI treatment to analyze the clinical efficacies included Objective Response Rate (ORR), Disease Control Rate (DCR), Progression-Free Survival (PFS) and Overall Survival (OS).

Results: A total of 143 patients were collected for final analysis. Forty (28%) patients had stage IVA disease, 75 (52.4%) patients had stage IVB disease, and 28 (19.6%) patients got recurrence after the surgery. Sixty-seven (46.9%) patients harbored exon 19 deletion, and 76 (53.1%) patients harbored exon 21 L858R mutation at baseline. The ORR of afatinib was 64.7%, and the DCR was 92.8%. The median PFS of first-line afatinib was 16.2 (95% CI 14.1 to 18.3) months, and the median OS was 43.3 (95% CI 33.3 to 53.3) months. One hundred and eighteen (82.5%) patients had progressive disease to first-line afatinib treatment, and 77 (65.2%) patients received re-biopsy. The T790M positive rate was 36.4%. Among patients with T790M, the median PFS of sequential afatinib and osimertinib was 32.1 (95% CI 15.0 to 49.2) months, and the median OS calculated from afatinib was 52.0 (95% CI 38.6 to 65.4) months. In patients receiving sequential osimertinib treatment without T790M, the median OS was 41.2 months (95% CI 30.9 to 51.5), and the median OS was 39.9 months in those who did undergo re-biopsy. Additionally, the median OS was 32.5 (95% CI 22.9 to 42.1) months in patients without osimertinib treatment.

Conclusions: Our study showed that *EGFR*-mutant NSCLC patients receiving first-line afatinib treatment experienced good clinical outcomes with median PFS 16.2 months and median OS 43.3 months. Sequential afatinib and osimertinib therapy provided promising OS with more than 50 months in patients harboring T790M after re-biopsy.

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

胸腔睪丸核蛋白癌—罕見病例報告

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Pulmonary NUT carcinoma: A 2-case report in a single medical center

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Introduction: Nuclear protein in testis (NUT) carcinoma (NC), formerly recognized as NUT midline carcinoma, is a rare and aggressive neoplasm, classically arises in midline structures (eg, head, neck and mediastinum) but can occur at multiple organ sites. Though affecting all ages without gender predilection, some cases were found particularly in adolescents and young adults. It usually involves t(15:19) translocation, reconstitutes NUT gene and bromodomain-containing protein 4 (BRD4) gene rearrangement. We report here 2 cases of pulmonary NC in a single center.

Case presentation: (Case 1) A 29-year-old woman, pregnant 31 weeks, presented with progressive left hemicrania headache, triggered by dry cough for several months. Brain images and cerebrospinal fluid analysis were unremarkable. However, her chest images disclosed a left upper lung mass, extending to hilum and encasing pulmonary artery. NC was diagnosed via ultrasound guided needle biopsy of the lung lesion and by immunohistochemistry staining. There was also multiple bone metastasis. A palliative treatment of immunotherapy, targeted therapy and repositioned drug combination was initiated; yet she was lost to follow-up after 2 weeks of treatment. **(Case 2)** A 36-year-old man with a light smoking history of 4 pack years, presented with persistent cough for two months. A chest computed tomography (CT) revealed a large left lung infiltrative bronchogenic mass, with mediastinum and pulmonary artery invasion. CT-guided biopsy and thoracoscopic wedge resection of the mass showed poorly differentiated carcinoma and squamous cell carcinoma, respectively. Further examinations demonstrated malignant pleural and pericardial effusion with bone metastasis. He received Gemcitabine-Cisplatin yet his clinical status rapidly deteriorated and expired after 2 months. The tissue samples were reassessed, ultimately indicative of NC by positive NUT staining.

Conclusions: This report presents two cases of the rare pulmonary NC, with one under pregnancy, and one presumptively diagnosed as poorly differentiated squamous carcinoma. It raises clinical suspicion of NC in young individuals, with initially poorly differentiated lung or midline neoplasms, and highlights the importance of testing NUT rearrangement.

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

一例縱膈腔類肉瘤合併頸椎神經侵犯的個案，對於抗腫瘤壞死因子α製劑併用類固醇，有良好反應

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Good Response to Tumor necrosis factor-alpha inhibitor plus Steroids in a Case of Mediastinal Sarcoidosis and Cervical Spinal Cord Neurosarcoidosis

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Previous studies have reported tumor necrosis factor-alpha inhibitor(anti-TNF-α agents) plus Steroids administrated in patients with sarcoidosis, but few reports have demonstrated the response to neurosarcoidosis. We here present a 36-year-old man with mediastinal sarcoidosis and cervical spinal neurosarcoidosis in 2022. The patient got progressive numbness and weakness in his four limbs since February, 2022. For difficulty walking, he was brought to our neurosurgery outpatient department first, then cervical spinal tumor and incidental findings of possible mediastinal tumors or lymph nodes were seen in magnetic resonance imaging(MRI) and computed tomography(CT) scans. For suspicion of lymphoma or other malignancies, neurosurgeon suggested biopsy from mediastinal tissue first. The pathology revealed non-caseous granulomatous inflammation, while sarcoidosis was highly suspected. Malignancy or tuberculosis was excluded initially. Rheumatologist suggested steroids infusion then arranged therapy of anti-TNF-α agents, Infliximab monthly since April to October, 2022. His recent two MRI of cervical spine and two CT scans of the chest, in May and August 2022 respectively, showed evident shrinkage of spinal and mediastinal tumor, with near remission. In a 2018 meta-analysis of neurosarcoidosis(brain and spine) outcomes, partial or complete remission occurred in 59%, disease remained quiescent in 24%, and progression occurred in 6% of treated patients. In the other study, of 66 patients with CNS sarcoidosis (27 definite, 39 probable) treated with infliximab for a median of 1.5 years, the mean age was 47.5 years at infliximab initiation(SD 11.7, range 24–71 years). There was clinical improvement in 77.3% of patients, with complete neurologic recovery in 28.8%, partial improvement in 48.5%. In this report, we present the case of a 36-year-old man who showed a favorable response to anti-TNF-α agents plus steroids, as demonstrated by a prominent tumor shrinkage in neurosacoidosis.

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

不同 EGFR TKI 在肺腺癌合併腦轉移病人的治療預後

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Clinical Effectiveness of Different Tyrosine Kinase Inhibitors for Pulmonary Adenocarcinoma Harboring EGFR mutation with Brain Metastasis

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Background: Brain metastasis is a poor prognostic factor for the patients with non-small cell lung cancer (NSCLC), even with epidermal growth factor receptor (EGFR) mutation. We conducted the retrospective study with real-world data to determine the optimal treatment strategy for EGFR-mutant NSCLC patients with brain metastasis received intracranial intervention or not.

Methods: Patients with treatment naive lung adenocarcinoma with EGFR mutations and brain metastasis diagnosed and treated in three Kaohsiung Medical University (KMU)-affiliated teaching hospitals were enrolled with analysis.

Results: We enrolled 186 patients of lung adenocarcinoma with brain metastasis and exon 19 deletion or exon 21 L858R point mutation treated with an EGFR TKI as their first-line systemic treatment. 79 (42%) patients received intracranial intervention for the brain metastatic tumor. Patients received intracranial intervention had similar treatment response rate (RR) as those who did not receive intracranial intervention, and these groups had similar progression-free survival (PFS) (median PFS: 11.0 vs. 10.0 months, p = 0.4842) and overall survical (OS) (median OS: 23.0 vs. 23.2 months, p = 0.2484). The treatment RR was similar in patients treated with gefitinib, erlotinib, afatinib, and osimertinib (63%, 76%, 81%, and 100%, respectively, p = 0.1390). Patients taking different TKIs had significantly different PFS (median PFS: 7.5, 10.0, 14.8 months and not reached), in those taking gefitinib, erlotinib, afatinib, and osimertinib, respectively, p = 0.0081). Patients taking gefitinib, erlotinib and afatinib had a trend for different OS (median OS: 19.2, 23.7, and 33.0 months, p = 0.0834) but not significant. Graded Prognostic Assessment (GPA) versions 2017 and 2022 properly stratified patients with different OS, while patients with higher GPA index scores had significantly longer OS (p = 0.0368 and 0.0407 for GPA versions 2017 and 2022, respectively).

Conclusion: Brain intracranial intervention had no statistically significant impact on RR, PFS and OS. Patients treated with different EGFR TKIs had no significant in RR and OS, but significant different in PFS. Patients with higher GPA score had significantly longer OS.

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

臺灣非小細胞肺癌之處方型態及治療成效：以 EXPLORE-LC 研究網進行之真實世界研究

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Treatment Patterns and Outcomes for Patients with Non-small Cell Lung Cancer (NSCLC) in Taiwan: Real-World Evidence from the EXPLORE-LC Research Network

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Purpose: EXPLORE-LC is a multi-market research program in NSCLC. For this study, EMR data from Chang Gung Research Database (CGRD) was analyzed to describe the treatment patterns and real-world outcomes of Taiwanese NSCLC patients.

Materials and Methods: EMR data was extracted and transformed into a common data model. Biomarker and line of therapy data were enhanced to create the EXPLORE-LC Taiwan dataset. All adults initially diagnosed with NSCLC and who received first NSCLC treatment between 2016 to 2020 were included. Follow-up data was extracted to June 2021. Patient characteristics and initial treatments were described via summary statistics. Among systematic anti-cancer therapies (SACT) treated Stage IIIB/IV NSCLC patients ("aNSCLC" patients), treatment sequences and clinical outcomes were further analyzed and stratified by histology. Overall survival was estimated using the Kaplan-Meier method.

Results: A total of 6,867 NSCLC patients were included in the dataset. Of the 4,196 aNSCLC patients, 79.2% (n=3,321) were non-squamous carcinoma (NSQ) and 13.0% (n=545) were squamous carcinoma (SQ). 3,211 aNSCLC patients were biomarker tested after diagnosis, 53% of patients were EGFR-mutated, 35.4% were PD-L1 expressor (≥1%) and 5% were ALK-altered. Among NSQ aNSCLC patients, 65.7% received tyrosine kinase inhibitors (TKI) at 1st line. In SQ aNSCLC patients, platinum-based chemotherapy was dominant at 1st line, while non-platinum-based chemotherapy was dominated at the 2nd line and 3rd line. NSQ patients who received ALK-TKIs and EGFR-TKIs had longer overall survival (36.0 and 26.0 months respectively) compared to other regimens. SQ patients receiving checkpoint inhibitor in combination and platinum-based chemotherapy alone at 1st line had the longer median overall survival (18.7 and 14.9 months respectively).

Conclusions: The results from EXPLORE-LC Taiwan dataset are comparable to other studies. The study provides additional data on the real-world clinical outcomes of NSCLC patients, and demonstrates how the dataset can be used for research objectives.

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

有症狀的非小細胞肺癌腦部轉移病患在接受手術切除腦轉移腫瘤之臨床預後分析探討

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Metastatic Brain Tumor Resection Surgery in Non-Small Cell Lung Cancer Patients with Symptomatic Brain metastasis

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Purpose: Though metastatic brain tumor resection surgery has been recommended in selected non-small cell lung cancer (NSCLC) patients with symptomatic brain metastasis, the clinical outcome of these patients is not clear. We aimed to analyze the clinical outcomes of NSCLC patients receiving surgery for symptomatic brain metastasis.

Materials and Methods: Between January 2017 and October 2021, data of 93 NSCLC patients receiving metastatic brain tumor resection followed by systemic therapy in Linkou, and Kaohsiung Chang Gung Memorial Hospitals were retrospectively retrieved for analysis. Cox proportional hazard regression was used to analyze the clinical factors associated with the outcome of post-surgery survival.

Results: Fifty-seven patients received targeted therapies, and thirty-six patients received non-targeted therapies after brain metastatic tumor resection surgery. In overall study patients, the median post-surgery survival was 38.33 months (95% confidence interval (CI), 29.15–47.51), and the overall survival (OS) was 45.4 months (95% CI, 35.96–54.84). In multivariate analysis, we showed that poor performance status (Eastern Cooperative Oncology Group performance status =2) and concurrent bone metastasis were independently unfavorable factors associated with post-surgery survival ($P < 0.05$). NSCLC harboring driver mutations and response to post-surgery systemic therapies were independently predictive factors associated with better post-surgery survival significantly ($P < 0.05$).

Conclusions: Brain metastatic tumor resection surgery is feasible for NSCLC patients with symptomatic brain metastasis, and may benefit the clinical outcome. Surgery can be considered priorly for selected NSCLC patients with symptomatic brain metastasis in clinical practice.

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

有表皮生長因子受體突變的肺癌病人在表皮生長因子受體酪氨酸激酶抑制劑治療失敗後使用愛寧達-鉑類治療的真實世界預後分析

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Real-world analysis of survival outcomes in EGFR-mutant advanced NSCLC patients treated with platinum-pemetrexed after EGFR-TKI failure

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Introduction: Epidermal growth-factor receptor (EGFR) tyrosine kinase inhibitors (TKIs) are the standard therapy for patients with EGFR activating mutations in the first-line setting. However, acquired resistance to EGFR-TKI inevitable occurs, and platinum-based chemotherapy remains a frequently used treatment option after TKI-failure prior to development of osimertinib. For this study, we aimed to identify independent prognostic factors for overall survival (OS) and progression free survival (PFS) among advanced non-small-cell lung cancer (NSCLC) patients harboring activating EGFR mutations and receiving first- or second-generation EGFR tyrosine kinase inhibitor (TKI) as first-line treatment followed by platinum-pemetrexed in real-world practice.

Materials and Methods: We enrolled 363 patients from January 1, 2012, to December 31, 2017. The first- or second-generation EGFR TKI included gefitinib, erlotinib and afatinib. Patients may receive osimertinib as second-line or later-line treatment.

Results: The median OS from the initiation of platinum-pemetrexed was 22.0 months (95% confidence interval [CI]:19.4-24.6) and the median PFS of platinum-pemetrexed was 6.2 months (95% CI, 5.76-6.64). In the multivariate Cox model, we found that first-line EGFR TKI PFS >12 months (HR: 0.50, 95% [CI]:0.34-0.73, p<0.001) and osimertinib treatment after platinum-pemetrexed (HR: 0.59, 95% [CI]:0.39-0.89, p=0.012) were independent prognostic factors for OS. On the other hand, EGFR TKI PFS >12 months was the only independent factor for better PFS (HR: 0.76, 95% [CI]:0.58-0.98, p=0.036). There was no statistically significant difference in OS or PFS in terms of age, gender, smoking status, EGFR mutation type, histology subtype, T790M status or different metastatic site. Taking osimertinib before platinum-pemetrexed did not affect the PFS of platinum-pemetrexed (HR: 1.11, 95% [CI]: 0.71-1.74, p=0.64).

Conclusions: First-line EGFR TKI PFS >12months predicted better OS and longer PFS of platinum-pemetrexed significantly. Osimertinib treatment before platinum-pemetrexed did not affect the efficacy of platinum-pemetrexed.

Keyword: non-small cell lung cancer, epidermal growth factor receptor, tyrosine kinase inhibitors, platinum doublet, pemetrexed

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

針對同步性和異時性肺癌具有不同驅動突變治療的臨床挑戰：病例報告

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Clinical challenge for synchronous and metachronous lung cancer with different driver mutations: cases report

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Background: Although surgery remained the main treatment strategy for synchronous and metachronous lung cancer, the driver mutation of the tumor may affect clinical decision since lung cancer with driver mutation tend to have distant metastasis. Herein, we report two cases with synchronous and metachronous lung cancer respectively, and we emphasized the crucial role of molecular test such as NGS (Next-Generation Sequencing) in determining treatment strategy for these patients.

Case presentation: Case 1. An 80-year-old male ex-smoker was found to have right upper lung nodule three years ago during health exam. The CT-guided biopsy showed lung adenocarcinoma with moderately differentiation harboring EGFR L858R mutation. He underwent surgery and the clinical stage was T2aN0M0, stage IB. He then underwent adjuvant UFUR treatment. Unfortunately, another nodule over LUL developed 3 years later. The biopsy showed adenocarcinoma and NGS result showed KRAS G12D. He underwent left upper lung video-assisted thoracic surgery wedge resection. The surgical specimen showed poorly differentiated adenocarcinoma with sarcomatoid change and the clinical stage was T3N0M0, IIB.

Case 2. A 74-year-old female non-smoker was diagnosed as synchronous lung cancers over right upper lung (RUL) and right lower lung (RLL) several years ago. She underwent RUL lobectomy and RLL wedge resection. The clinical staging was T1aN2M0, stage IIIA (RUL) and Tis (RLL) respectively. The pathologic report showed adenocarcinoma, with exon 20 insertion in RUL, and exon 19 deletion in RLL tumor. Gefitinib was started after the surgery, but she had new liver and splenic nodules 3 years later. Liver biopsy showed lung-originated metastatic adenocarcinoma and RT-PCR test for EGFR mutation showed T790M mutation. Osimertinib was administered and liver tumor size reduced. Unfortunately, metastatic hepatic tumor enlarged after osimertinib use for 1 year. Her liquid biopsy showed exon 20 insertion. She underwent carboplatin/pemetrexed with pemetrexed maintenance therapy for 8 months and the best response was stable disease. She then had amivantamab (NPP, named patient program) and the tumor decreased as follow.

Discussion: We presented one case with metachronous and the other case with synchronous lung cancer harboring different driver mutations respectively. We emphasized the role of molecular test such as NGS in determining treatment strategy in these patients. In the first case, we could expect the treatment failure if we had used the EGFR-TKI and missed the golden time for surgical intervention without repeating biopsy and NGS analysis. In the second case, the result from NGS liquid biopsy implied the mixed clone in metastatic liver tumor since these tumors first respond to osimertinib and then respond to amivantamab after development resistance to osimertinib. RT-PCR result confirmed the intratumoral heterogeneity in the liver metastatic tumor, which may originate from two different primary lung 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)

PA40

轉移性非小細胞肺癌患者使用 pembrolizumab 引發急性胰腺炎後，再使用 pembrolizumab：病例報告

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Rechallenge of pembrolizumab in metastatic NSCLC with severe side effect of acute pancreatitis: a case report

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Case presentation: The 60-year-old man had metastatic non-small cell lung cancer, adenocarcinoma, stage IV. The EGFR (epidermal growth factor receptor) and ALK (anaplastic lymphoma kinase) tests showed negative for mutation. PD-L1 (programmed death-ligand 1) reported positive, with TPS (tumor proportion score) 80%. His ECOG (Eastern Cooperative Oncology Group) status was 1, but he refused chemotherapy. With economic burden, pembrolizumab 150mg (3mg/kg) every three weeks was started.

About twenty days after the 2nd cycle, he got severe abdominal pain and vomiting. The blood test revealed acute pancreatitis (WBC 17.4k/μl, amylase 614 U/L, lipase 243 U/L). Pembrolizumab was hold and higher dose of corticosteroid was used for pembrolizumab related acute pancreatitis. After pancreatitis controlled, he was discharged with oral prednisolone 90mg/day for 4 weeks and gradually tapered to 10mg/day in 6 months. Lung abscess of Mycobacterium fortuitum infection was diagnosed and he received ceftazidime combined clindamycin for 4 weeks, followed by ciprofloxacin and baktar for 14 weeks.

For slow progression of lung cancer, the 3rd and 4th cycle of pembrolizumab 100mg every 4 weeks was started. Lung abscess of Mycobacterium mageritense infection was treated with doxycycline, linezolid, baktar and levofloxacin. Pulmonary aspergillus infection was diagnosed and treated with voricornazole. After no pembrolizumab for 1 year, the left retroperitoneal lesion progressed with hydronephrosis. The Nivolumab was administrated with 100mg 1st cycle and 200mg every 4 weeks. Disease progression with metastatic invasion of lumbar 3 vertebra was noted. Pembrolizumab 100mg was administrated every 4 weeks. The chest computed tomography showed partial response. Now he is still on pembrolizumab treatment for lung cancer control.

Conclusion:

Acute pancreatitis is a less common side effect of pembrolizumab. With higher dose of corticosteroid and reduced dose of pembrolizumab, rechallenge of pembrolizumab could be well tolerated with good cancer control.

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

Afatinib 與 Osimertinib 作為第一線治療 EGFR 外顯子 19 缺損突變非小細胞肺癌的比較：實際數據收集的台灣多中心隊列研究

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A multicenter cohort study of afatinib compared with osimertinib as first-line treatment for EGFR exon 19 deletion mutation non-small-cell lung cancer from practical dataset in Taiwan

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Introduction: Afatinib and osimertinib were both recommended as the first-line therapy for epidermal growth factor receptor (EGFR) mutated advanced stage non-small cell lung cancer (NSCLC), especially in exon 19 deletion subgroup. At present, which first-line therapy provides better clinical outcomes and which patient subgroups may benefit most from treatment strategy, remains inconclusive. Also, for those with disease progression during first-line afatinib, we surveyed the real-world clinical data for rebiopsies.

Materials and Methods: This study is a multi-center retrospective cohort study to assess the efficacy between first-line afatinib and osimertinib for stage IIIB-IV NSCLC harboring EGFR exon 19 deletion without central nervous system(CNS) metastasis at initial diagnosis. The primary outcome were TTF(time to treatment failure) and OS(overall survival). Another survival analysis was performed in three groups: afatinib followed by osimertinib, afatinib followed by other systemic therapy, and osimertinib. The characteristics of rebiopsy, and types of gene alteration examination, and T790M mutation status were recorded, and the main reason for no rebiopsy was recorded for those who did not undergo a rebiopsy.

Results: A total of 97 patients received afatinib and 60 patients received osimertinib as first-line monotherapy for EGFR exon 19 deletion mutant NSCLC patients without CNS metastasis. TTF in the afatinib and osimertinib groups was 14.4 months and 20.4 months, respectively, without significant difference ($p = 0.151$). OS in the afatinib and osimertinib groups was 34.1 months and 32.8 months, respectively, also without significant difference ($p = 0.228$). 40 patients among afatinib received re-biopsy after disease progression, 13 of them (32.5%) yielded T790M mutation and then followed by osimertinib treatment. Patients treated with afatinib followed by osimertinib had superior survival benefit compared with osimertinib or afatinib with sequential chemotherapy ($p < 0.001$).

Conclusions: TTF and OS in first-line osimertinib group was not significantly prolonged compared with the afatinib group for EGFR exon 19 deletion mutation NSCLC without initial CNS metastasis in the real world setting. There was only a subset of patients could receive biopsy after tumor progression and proved acquired T790M 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)

PA42

丙型干擾素試驗對於非小細胞肺癌病患接受免疫治療之預測性

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Exploratory Study of Predicting Immune Checkpoint Inhibitors Response by IGRA in NSCLC Patients

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Purpose: In our previous published retrospective study, we found that higher pre-treatment PHA-stimulated INF-γ (PSIG) response, assayed by IGRA testing, was associated with better disease control rate and survival among advanced NSCLC patients treated with chemotherapy. In this study, we aim to prospectively evaluate how patients' pretreatment PSIG correlated with immune checkpoint inhibitors (ICI) .

Materials and Methods: Patients with advanced NSCLC who received immunotherapy were prospectively enrolled. QuantiFERON-TB In-Tube (Qiagen, Germany), one of the Interferon-Gamma Release Assay (IGRA) test, will be applied to evaluate pretreatment PSIG levels. Patients' demographic characteristics, tumor response, and survival will be investigated and correlated with PSIG levels.

Results: Total 32 patients were enrolled,6 had driver mutation (3 with *EGFR* mutation, 1with *RET-KIT5* fusion, 1 with *ROS-1* fusion, 1 with *MET*-14 skipping mutation). ICI was first line treatment for 16 patients (15 of them received Pembrolizuamab, 1 received Nivolumab plus Ipilimumab). Fourteen patients had PSIG level under 7.06 IU/ml, and the disease control rate was 50%; 18 patients had PSIG level above 7.06 IU/ml with the diseased control rate was 33%. (p=0.34)

Conclusions: There were no statistically different of disease control rate in PSIG high and low group, although patients in PSIG low group tended to have high disease control rate. This exploratory findings seemed against our previous finding in patients receiving chemotherapy. Further studies should be done to validate our preliminary 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)

PA43

表皮生長因子受體酪氨酸激酶抑製劑在晚期非小細胞肺癌患者腦脊液穿透的相關臨床因素

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Clinical factors associated with cerebrospinal fluid penetrations of epidermal growth factor receptor-tyrosine kinase inhibitors in advanced non-small cell lung cancer patients

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Objectives: EGFR mutated non-small cell lung cancer (NSCLC) with leptomeningeal metastasis carrying a poor prognosis. The cerebrospinal fluid (CSF) penetration rates of different epidermal growth factor receptor-tyrosine kinase inhibitors (EGFR-TKIs) in treating patients with central nervous system (CNS) metastases may have influences on treatment outcomes, which is seldom investigated in real-world practice regarding various clinical scenarios.

Materials and Methods: From July 2020 to October 2022, we prospectively recruited patients diagnosed with *EGFR*-mutated NSCLC and CNS metastasis treated with EGFR-TKIs at National Taiwan University Hospital, National Taiwan University Hospital Hsinchu branch, and E-Da Cancer Hospital. We measured the plasma and CSF concentrations of gefitinib, erlotinib, afatinib, and osimertinib by using liquid chromatography–mass spectrometry/mass spectrometry (LC–MS/MS) analysis. The clinical data were also collected.

Results: Eleven patients receiving lumbar puncture for CSF studies from three hospitals were enrolled, and two patients were excluded due to no plasma sample being available. The patients were treated with gefitinib (n=1), erlotinib (n=1), afatinib (n=2, one with 40mg/day and the other with 30mg/day), and osimertinib (n=5, one with 160mg/day and four with 80mg/day) for analysis. The penetration rates were 1.21% for patients receiving gefitinib therapy, 2.12% for erlotinib, 0.41~0.59% for afatinib, 0.07-1.12% for osimertinib 80 mg/day, and 1.99% for the one receiving osimertinib 160 mg/day. The CSF penetration rates were not influenced by patients' body mass index, prior chemotherapy or EGFR-TKI treatment, and prior brain radiotherapy.

Conclusions: We used a rapid and reliable method to measure the plasma and CSF concentrations of EGFR-TKIs, and CSF penetration rates could be easily assessed. The CSF penetration rates varied in depending on different types and doses of EGFR-TKIs, which were not affected by the body size and previous treatment modalities of 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)

PA44

環狀核糖核酸 hsa_circ_0000190 會促進非小細胞肺癌的發生並透過調升分泌之 PD-L1 而影響腫瘤逃脫免疫系統

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Circular RNA hsa_circ_0000190 Facilitates the Tumorigenesis and Immune Evasion by Upregulating the Expression of Soluble PD-L1 in Non-Small-Cell Lung Cancer

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Background: Lung cancer is the leading cause of death from cancer in Taiwan and throughout the world. Immunotherapy has revealed promising and significant efficacy in NSCLC, through immune checkpoint inhibition by blocking programmed cell death protein (PD)-1/PD-1 ligand (PD-L1) signaling pathway to restore patients' T-cell immunity. Our previous results revealed that the plasma level of circular RNA hsa_circ_0000190 (C190) can be monitored by liquid-biopsy-based droplet digital PCR and may serve as a valuable blood-based biomarker to monitor the disease progression and the efficacy of immunotherapy.

Materials and Methods: The influence of the circular RNA–miRNA–mRNA axis on the immune system and immune checkpoints is evaluated, to elucidate the lung cancer immune evasion process.

Results: In this study, C190 was shown to increase the PD-L1 mRNA-mediated soluble PD-L1 (sPD-L1) expression, consequently interfering with the efficacy of anti-PD-L1 antibody and T-cell activation, which may result in immunotherapy resistance and poor outcome. Our results unraveled that C190 facilitated the tumorigenesis and immune evasion of NSCLC by upregulating sPD-L1 expression, potentially developing a different aspect in elucidating the molecular immunopathogenesis of NSCLC.

Conclusions: C190 upregulation can be an effective indicator for the progression of NSCLC, and C190 downregulation may possess a potential therapeutic value for the treatment of NSCLC in combination with immunotherapy.

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

Dacomitinib 一線使用於 EGFR 突變晚期非小細胞肺癌患者的實際臨床經驗

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A real-world experience of dacomitinib in first-line treatment for advanced non-small cell lung cancer patients with EGFR mutations

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Introduction: Dacomitinib, a second-generation irreversible epidermal growth factor receptor (EGFR) tyrosine kinase inhibitor (TKI), has been approved for the first-line treatment of non-small cell lung cancer (NSCLC) carrying EGFR mutations. However, real-world data in single medical center, in Taichung, Taiwan has not been published. We enrolled 17 patients between Jan, 2020 and Sep, 2022, then discussed the response rate and possible drug related side effects.

Materials and methods: A retrospective study was conducted in one of the largest medical centers in Taiwan over a nearly 3-year-period (January 2020 to September 2022). Patients with advanced NSCLC patients with EGFR mutations and treated with first-line TKI dacomitinib were enrolled. Clinical informations were collected and outcomes were analyzed.

Results: Seventeen patients with advanced NSCLC patients with EGFR mutations and treated with first-line TKI dacomitinib were retrospectively enrolled in our study. Eight patients (47%) were male and the mean age was 67.7. Of these, 2 patients had stage IIIb cancer, the others all got metastatic NSCLC. Only one patient's histology revealed adenosquamous, the others all revealed adenocarcinoma. The EGFR mutation of the cancer mostly were L858R (12 patients, 70.5%) in our study. During first three months cancer follow-up, only one patient got progressive disease and switched treatment to second line chemotherapy. The objective response rate was 82.4%. The disease control rate was 94.1%. The most common side effects after using dacomitinib were skin rash (13 patients, 76.5%), paronychia (8 patients, 47%) and stomatitis (7 patients, 41.2%). But only grade 2-3 side effects were documented, which could control by other medications.

Conclusion: Our study revealed that, in real-world, dacomitinib in first-line treatment for advanced NSCLC patients with EGFR mutations is safe, with less side effects and has good objective response rate and disease control rate during first three months follow-up.

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

乳糜胸水與 P53 免疫組織化學染色

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P53 protein immunostaining and chylothorax

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Purpose: Chylothorax can be due to many etiologies, which are classified as nontraumatic (as malignancy, congenital or infection) Pleural effusion analysis included cytology, culture variable biomarker became key role in differential diagnosis then further management. Malignancy-associated chylothorax is a uncertain characteristic and clinical significance but difficult to determine just from pleural effusion cytology.P53 immunostaining play role in adjunct diagnosis.

Materials and Methods: This 37 y/o Vietnam migrant male worker denied past history. According to the patient, physical examination showed CXR pleural effusion. No appetite decreased, body weight loss or general malaise were complaint. No animal contact or cluster contact were noted. His vital signs stable. CXR showed right side pleural effusion increase. EKG showed normal sinus rhythm. Under the impression of 1.left side pleural effusion, the patient was admitted for further management. After admission, CXR showed right side pleural effusion thoracentesis was done, pleural fluid showed chylous. Chest CT was arranged and revealed 1. Right pleural collection with atelectasis of RLL. 2. suspect soft tissue lesion at mediastinum. Pleural effusion cytology showed Reactive atypia. Sputum cytology showed Negative for malignant cell. Ate Pleural Fluid Microorganisms isolated: 1.No Growth after 5 days Glucose (Pl LDH(Pleura Total protein 102.000 114.000 4.300 Appearance: Chylous PH 7.000 SP.GR*1.040 RBC 40000.000 WBC 40000.000 +Neutrophil74.000 Lymphocyte 20.000 Histocyte4.000 Eosinophil 2.000 MTBC DNA Pleural 1 Not Detect, Fungus Culture Microorganisms isolated:1.No Growth in 14 days, Pleural effusion Acid-fast stain Not found: Triglyceride *2678.000(pleural effusion)ADA1 15 Sputum Acid-fast stain negative CT of chest with/without contrast enhancement shows:1. massive right pleural collection with atelectasis of right lowerlobe.2. suspected soft tissue lesions at mediastinum.

Results: Pleural effusion, cell block and cytology---- Atypical mesothelial cells .Cytology : The cell block show a few scattered cells with large irregular nuclei and increased N/C ratio. The immunostaining show calretinin(+); CK7(+); TTF-1(-); CD68(-) in these cells; the p53 is partially positive.

Conclusions: The role of positive p53 immunostaining as an adjunct in the diagnosis of malignant cells in pleural effusion. Immunohistochemistry was performed as the p53 suppressor gene product with an unequivocal cytology diagnosis of malignancy.P53 protein immunostaining is relatively sensitive and specific in differentiating benign mesothelial cells from malignant cells while activated mesothelial cells may resemble malignant cells.

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

在不同晚期肺癌病人使用雙免疫治療之實務經驗: 三個病例報告

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Real world experience of dual immune therapy in different late-stage lung cancer patients: report of three cases

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Introduction: Dual immune therapy (nivolumab plus ipilimumab) is one of the standard immune therapies for patients with stage IV lung cancer with variable PD-L1 expression. The real-world experience of dual immune therapy is severely limited due to not covered by the National Health Insurance. This report describes three cases with stage IV lung cancer who received dual immune therapy in different setting and prognosis.

Case Report 1: A 77-y/o non-smoker female was diagnosed with right middle lobe lung squamous cell carcinoma with bone and pleural metastasis. PD-L1 was low expression without known driver mutation. She was intolerant to chemotherapy with taxotere and carboplatin after palliative radiotherapy for RML and bone metastasis. Her disease responded partially after the treatment with nivolumab and ipilimumab for one year without apparent side effect.

Case Report 2: A 55-y/o active smoker male was diagnosed with left upper lobe lung squamous cell carcinoma with bone and brain metastasis. PD-L1 was negative expression without known driver mutation. He was intolerant to chemotherapy with Taxotere and carboplatin after palliative radiotherapy to brain and bone metastasis. His disease responded partially to initial chemotherapy with nivolumab and ipilimumab but later disease progressed due to irregular dual immune therapy and side effect of hypophysitis.

Case Report 3: A 83-y/o non-smoker female was diagnosed with left lower lobe lung adenocarcinoma with bone metastasis. PD-L1 was low expression without known driver mutation. She received palliative radiotherapy for lung and bone lesions. She received nivolumab and ipilimumab after disease progressed in both lung and bone lesions. Her disease responded partially after the treatment with nivolumab and ipilimumab for 3 months without apparent side effect

Conclusions: The treatment response of dual immune therapy is expected well for patients with PD-L1 low expression and less effective in PD-L1 negative expression in our three cases. Two of them did not tolerate to chemotherapy and choose dual immune therapy. Disease progression after initial immune therapy could be due to irregular treatment schedule and poor compliance of life style. Radiotherapy before dual immune therapy could also play a role in releasing tumor antigen for further 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)

PA48

病例報告：肋膜孤立性纖維瘤併發血胸和肺動脈栓塞

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Solitary fibrous tumor of the pleura: a case with hemothorax and pulmonary embolism

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Introduction: Solitary fibrous tumors (SFTs) are rare neoplasms, with an estimated frequency of 2.8 per 100,000 individuals, accounting for less than 5% of pleura. Most SFTs are benign, but there is still a 10~20% malignant rate.

Case presentation: We reported a case of a 75-year-old female presenting to the emergency room because of progressive dyspnea and chest pain. A chest X-ray revealed left lung atelectasis with massive left-sided pleural effusion. A chest CT revealed a large LUL tumor with massive hemothorax and pulmonary embolism at the branch of the right pulmonary artery. The pathology revealed spindle-shaped cells with low mitotic rates, arranged in patternless distribution with positive CD34 and STAT-6 stain. Thus, benign solitary fibrous tumor was confirmed. Complete tumor resection was done. Her symptoms subsided after surgical treatment. Since then she has been follow-up at the outpatient department for 6 months, and chest CT revealed no recurrence.

Discussion: SFTs grow slowly, so most patients are asymptomatic until the tumors become large enough to compress the adjacent lung. Few patients may present with paraneoplastic syndrome, such as Doege–Potter syndrome and hypertrophic pulmonary osteoarthropathy.

Histologically, SFTs feature spindle-shaped cells with low mitotic rates, arranged in patternless distribution. STAT6 and CD34 are important immunohistochemical markers of SFTs. As for the diagnosis of malignant solitary fibrous tumors, comprehensive evaluation, including imaging, pathologic, and immunohistochemical stains should be done. Malignant SFTs have a high recurrent rate (63%) even after complete resection and poor prognosis. Despite limited efficacy, adjuvant chemotherapy should be administered. There are on-going studies researching the efficacy of novel agents.

Conclusion: Our patient presented with complications as hemothorax and pulmonary embolism, which are less mentioned in other case reports, For hemothorax, hemostasis followed with staged tumor resection seems to be a better strategy. For pulmonary embolism, tumors with heart involvement should be ruled out. Also, SFTs may originate from the intima of pulmonary artery, mimicking pulmonary embolism.

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)

PA49

標靶治療後肺腺癌的小細胞癌轉化:病例報告

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Small cell transformation of adenocarcinoma after Afatinib treatment : A case report.

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Introduction: Small cell carcinoma transformation was known as a resistant mechanism of Epidermal growth factor receptor (EGFR)-mutant adenocarcinoma after tyrosine kinase inhibitors (TKIs). or even post immunotherapy. The overall survival duration was shorten and poor outcome was demonstrated. However, the pathophysiology had not been well studied yet even though there were several hypotheses.

Case report: We reported a female patient who was diagnosed with lung adenocarcinoma, with bone and brain meta. The driving mutation test as EGFR was positive for exon 21 L858R mutation. However, her lung mass progression after 6 months treatment of Afatinib, though there was regression of previous bone metastasis and even stable on brain metastasis. She accepted lung tumor re-biopsy, and the histopathologic report showed small cell carcinoma. After well discussion, she has started chemotherapy regimen with Cisplatin + Etoposide and kept Afatinib. The following chest X-ray 1 months later revealed dramatic shrinkage of the size of lung tumor.

Discussion: NSCLCs(Non-small-cell lung carcinoma) account for approximately 80% of all lung cancers and is associated with poor prognosis for advanced-stage disease, which remained the highest mortality rate since 2008 in Taiwan statistic record. Adenocarcinoma and Squamous cell carcinoma were two different characteristics of NSCLC but sharing multiple pathological oncogenic driving mutation even though the mutation rates were also variable, so it may have the potential of transition. We had used hematoxylin and eosin (H&E) stain or the further Immunohistochemistry (IHC) for diagnosis and as the guidance for following treatment. But it is still difficult to the accurate diagnosis of mixed SCC or transformation , because it depends on the size of specimen, location of biopsy and technique of pathophysiologist.

There were growing reports of SCC transformation after target therapy in adenocarcinoma which may occurred in any time during the treatment, but most in the first 1-2 years. One multi-center study even revealed the median survival rate drop to 10.9 months after the transformation.

However, there was also debate about if the conversion to SCC has been the ‘cause’ or ‘outcome’ of the development of resistance to EGFR-TKIs. So there was still need further discussion about the mechanism and interaction with the TKIs.

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)

PA50

非小細胞肺癌伴隨肉瘤樣變化經治療後接續 RET 融合及 EGFR C797S 突變－個案報告

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Sequential acquired RET fusion and EGFR C797S Mutation in EGFR mutant Non-small Cell Lung Cancer with Sarcomatoid Change - Case Report

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The epidermal growth factor receptor (EGFR) C797S mutation is the most well-known cause of osimertinib resistance. This mutation disturbs the covalent binding between osimertinib and its receptor, consequently reducing the efficacy of osimertinib. There is currently no standard therapeutic strategy against this mutation. Here we reported our treatment experience. Our patient was a 51-year-old Asian female and a never smoker who initially presented with productive cough. She was diagnosed with stage IVA lung adenocarcinoma with sarcomatoid change that was characterized by a right upper lobe mass with lung-to-lung, pleural, and liver metastasis. Her tumor had an EGFR mutation of an exon 19 deletion. PD-L1 was 80% by 22C3. Osimertinib was initially prescribed based on the EGFR mutation. Liver metastasis progressed after the patient had taken osimertinib for 16.3 months. Liver radiofrequency ablation was arranged. A CCDC6-RET fusion and an EGFR 19 deletion were detected in liver biopsy. The next regimen was pemetrexed, carboplatin, atezolizumab and bevacizumab. However, liver metastasis progressed after 8 cycles of treatment. RET inhibitor (pralsetinib) plus osimertinib was given with partial response. Due to adverse events of diarrhea, dizziness and hepatotoxicity, it was changed to another RET inhibitor (selpercatinib) and osimertinib. Malignant ascites and peritoneal metastasis developed. Sequencing by RNA RT-PCR from ascites showed EGFR C797S, combined with EGFR exon 19 deletion but no RET fusion. Bevacizumab was added and then ascites was controlled. After using RET inhibitor plus osimertinib for 7 months, the cancer peritonitis progressed. RET inhibitor (selpercatinib) and osimertinib were kept and she received chemotherapy using navelbine for 2 cycles. But the disease was not controlled. Next generation sequencing from blood sample showed EGFR C797S plus exon 19 deletion but no RET fusion. She passed away form disease progression. In conclusion, our report suggested that sequential development of osimertinib resistant mechanism by RET fusion and EGFR C797S could developed under osimertinib treatment.

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)

PA51

比較 Avastin 和 Mvasi 在晚期非小細胞肺癌病人的臨床療效:單一醫學中心回溯性研究

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Real-world clinical efficacies of Avastin versus Mvasi for the treatment in Non-small cell lung cancer patients: a retrospective single-center study

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Purpose: Bevacizumab has been widely used in combination therapy with chemotherapy and Epidermal Growth Factor Receptor (EGFR)-Tyrosine Kinase Inhibitor (TKI)s for advanced non-small cell lung cancer (NSCLC) patients. In recent years, biosimilars of bevacizumab have been developed, and clinical trials have proved clinical efficacies. Mvasi is one of the biosimilars of bevacizumab, and it is available in Taiwan. This study aims to investigate the difference in clinical outcomes between reference drug (Avastin) and biosimilar (Mvasi) for advanced NSCLC patients in real-world practice.

Materials and Methods: This was a retrospective study conducted at Taichung Veterans General Hospital. From January 2020 to July 2022, stage IV NSCLC patients receiving Avastin or Mvasi as combination therapy were included. These patients were divided into chemotherapy or EGFR-TKI groups. In the chemotherapy group, those receiving first-line platinum and pemetrexed combination therapy were collected. In the EGFR-TKI group, only patients receiving gefitinib, erlotinib, and afatinib as first-line treatment were enrolled. The patients' characteristics were obtained, and the clinical outcomes were analyzed.

Results: From January 2020 to July 2022, 164 patients received Avastin or Mvasi combination therapy. Based on inclusion and exclusion criteria, a total of 80 patients were collected for final analysis. Sixty patients were in the chemotherapy group. Among them, 34 patients received Avastin combined platinum plus pemetrexed treatment, and 26 underwent combination with Mvasi. There was no difference in baseline characteristics between the two groups. The median progression-free survival (PFS) was 6.9 (95% CI 3.4 to10.4) months in the Avastin group and 8.9 (95% CI 6.7 to 11.1) months in the Mvasi group (P = 0.310). On the other hand, twenty EGFR-mutant NSCLC patients received EGFR-TKI plus bevacizumab as first-line treatment. Among them, nine patients received combination with Avastin, and 11 took EGFR-TKI combined with Mvasi. The median PFS was 18.4 (95% CI 4.0 to 32.8) months in the Avastin group and not reached in the Mvasi group (P = 0.713).

Conclusions: Our study demonstrated no difference in the clinical outcomes between Avastin and Mvasi in advanced NSCLC patients. Mvasi was as effective as Avastin in both combination regimens with chemotherapy and EGFR-TKI.

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)

PA52

第三期肺癌術後放射治療對病人整體存活率並無改善

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Postoperative Radiotherapy Did Not Improve The Overall Survival Of Locally Advanced Lung Cancer Patients with Pathological N2

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Purpose: Surgical resection is still the cornerstone of curative treatment for localized lung cancer. The risk of recurrence for advanced disease is high, and adjuvant chemotherapy, target therapy and immunotherapy are proved to make patients have survival advantage. Instead, the benefit of adjuvant radiotherapy for high risk postoperative lung cancer patients is controversial. The purpose of this study is to evaluate the impact of adjuvant radiotherapy on the survival for N2 lung cancer patients.

Materials and Methods: The data was gathering from the cancer registry database at E-Da hospital between 2010 and 2020. The inclusion criteria were：1) lung cancer (C34.0-C34.9), 2)receiving treatment at the E-Da hospital ,3) no prior malignancy, 4) complete staging work-up (clear status of T, N, or M), and the index dates were assessable,5) pathological N2 M0. The primary endpoint of this study is the overall survival. The co-variated used for correct confounding included gender, age, lymphovascular invasion, tumor size, lymph node retrieved / involved, pathological T stage, systemic treatment, the status of smoking. The statistical analysis was performed with R version 4.2.1 and associated packages. Wilcoxon rank sum test or test was used for continuous variable. Pearson's Chi-squared test or Fisher's exact test was used for categorical variable. Cox proportional hazard was used for univariate survival analysis. For p less than 0.15, the variables were selected into multivariate Cox model. It was considered statistical significance when $p< 0.05$.

Results: There were 71 patients fulfilled with the selection criteria. The median of follow-up lengths was 33 months. There were 54 patients receiving adjuvant radiotherapy, the median dose was 5000 cGy (2700 ~ 6660). The median fractions of adjuvant R/T were 25 (15~37). The adjuvant R/T group had younger age, more lymph node involved. More adjuvant R/T group patients received systemic treatment (98% vs 82%, $p < 0.04$). The 5-year survival rate of the adjuvant R/T group and no R/T group were 49.8% and 36.4%. No statistical significance was found. On univariate Cox analysis for overall survival, only the tumor size (continuous variable) was statistical significance ($p = 0.025$). When putting all variables with $p < 0.15$ (smoke and tumor size) and adjuvant radiotherapy into multivariate Cox model, tumor size was the only significant prognostic markers.

Conclusions: Adding postoperative radiotherapy was not beneficial on overall survival for pathological N2 lung 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)

PA53

第四期腺癌第一線使用標靶藥物病人具有高發炎狀況有較低存活率

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High Neutrophil / Lymphocyte Ratio Is Associated with Poor Overall Survival in Stage IV Lung Adenocarcinoma with First Line Target Therapy.

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Purpose: In lung cancer, the systemic inflammatory markers was reported to be related to the survival and the efficacy of immunotherapy treatment. The aim of the study is to elucidate the relationship between the inflammatory markers and the outcome of stage IV lung adenocarcinoma patients receiving EGFR or ALK driver gene mutation drug as the first line systemic treatment.

Materials and Methods: The data was gathering from the cancer registry database at E-Da hospital between 2011 and 2020. The inclusion criteria were： 1) lung cancer, 2) adenocarcinoma, 3) receiving target treatment (including EGFR or ALK inhibitors) as first line treatment at the E-Da hospital, 4) no prior malignancy, 5) complete staging work-up, the inflammatory markers, and the index dates were assessable. The primary endpoint of this study is the overall survival. Co-variated for correct confounding included gender, age, clinical stage, EGFR or ALK mutation, CBC test, BMI (BMI < 18.5, as cachexia), smoking. The staging system was AJCC 7th. For continuous variable, Wilcoxon rank sum test was used. The difference between categorical variables was tested by Pearson's Chi-squared test, Fisher's exact test was used if necessary. Univariate Cox and multivariate Cox proportional hazard model were used assess the importance of each variable. If the possibility in two-tailed distribution was below 0.05 was considered statistical significance.

Results: Total of 457 cases were included in the analysis. The median of follow-up lengths was 13.8 months. The patients were classified as high NLR group if the NLR > 4, according to the maximally selected rank statistics. Two hundred twenty-nine patients were in the high NLR group and 228 patients were in the low NLR group. The high NLR group had older age, larger tumor size, more extrathoracic disease, more death, poorer performance status, and more deaths. Univariate Cox analysis showed that age (HR: 1.02, CI: 1.01~1.03), metastatic extrathoracic lesions (HR: 1.51, CI: 1.17~1.94), EGFR mutation (HR: 0.73, CI: 0.58) ~0.93), NLR (HR: 2.20, CI: 1.80~2.70), PLR (HR: 1.82, CI: 1.47~2.26) and cachexia (HR: 1.51, CI: 1.12~2.05) were significantly variables which had impact on overall survival. On multivariate analysis, NLR group (HR 2.1), age (HR 1.02), extrathoracic disease (HR 1.36), and cachexia (HR 1.48) were independent markers.

Conclusions: NLR is independent inflammatory marker for stage IV lung adenocarcinoma 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)

PA54

原發性惡性心包間皮瘤-病例報告及文獻複習

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Malignant Mesothelioma of Pericardium – Case Report and Literature Review

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Background: Primary pericardial mesothelioma(PPM) is a rare malignancy with prevalence of <0.002%. The diagnosis is challenging and often delayed due to non-specific and late clinical presentation. Due to late presentation and few treatment approaches, primary pericardial mesothelioma carries poor prognosis with high mortality rate. We hereby report a case of this rare tumor in a 57 years-old man.

Case presentation: This study reports a 57 years-old man with no remarkable past medical history, who presented to our hospital with chief complaints of chest tightness, productive cough and progressive dyspnea. Body weight loss of 6kg (79→73kg) was also noted in 2 months time. He went to local hospital for help and a series of imaging modalities including chest computed tomography scan and 18F-fluorodeoxyglucose-positron emission tomography scan were done which demonstrated pericardial effusion and malignant tumor in the anterior part of mediastinum. Transthoracic pericardial biopsy was done and he was eventually diagnosed with pericardial mesothelioma. Combination of chemotherapy with Pemetrexed, cisplatin and target therapy with bevacizumab was administered to this patient.

Conclusion: PPM is known as a rare and highly lethal disease due to late presentations with different cardiac manifestations including pericardial effusion and cardiac tamponade. It is a challenging diagnosis to establish and the use of multimodality imaging, detailed hemodynamic assessment for the presence of an effusive-constrictive profile, and novel cytology evaluation can provide clues to this elusive diagnosis, which highlights the importance of multidisciplinary collaboration. Unfortunately, despite advances in chemotherapeutics, clinical outcomes remain poor.

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)

PA55

ROS-1 重組之肺癌病人合併困難控制之栓塞問題: 個案報告

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Lung cancer with ROS-1 re-arrangement presenting difficult-controlled thromboembolism - A Case Report

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Introduction: Thromboembolism is common in patients with lung cancer, resulting in increased morbidity and mortality. We will introduce a 35-year-old male of lung adenocarcinoma with ROS-1 re-arrangement encountering deep venous thrombosis upon diagnosis, and subsequent ischemic stroke under the use of anticoagulants.

Case report: A 35-year-old male, with no systemic illness before, was admitted for deep venous thrombosis of right upper limb. Apixaban 5mg bid was applied immediately, and partial response was noted with mild decrease of right arm girth and stationary forearm swelling. Ischemic stroke with left hemiparesis developed about one week later after initiation of standard dosage of apixaban. At the same time, image study and endobronchial biopsy revealed lung adenocarcinoma, right upper lobe, with bone and brain metastasis, cT4N3M1c, stage IVb. Next generation sequencing reported only ROS-1 re-arrangement, and Crizotinib was administered soon after detection of the driver mutation. Transcranial doppler ultrasound for the stroke evaluation revealed total occlusion of right internal carotid artery. There was no atrial or ventricular septal defect on cardiac sonography, and survey for hypercoagulability showed no specific finding. Aspirin was then added in combination with apixaban according to the suggestion of neurologist. However, progressive respiratory distress due to interstitial lung disease was found two weeks after the use of crizotinib. Despite the switch to entrectinib, the patient still expired one week later in the intensive care unit due to multiple comorbidities.

Conclusion: According to literature review, ROS-1 re-arrangement seemed to be associated with relative higher risk of thromboembolism, which probably could explain the hypercoagulability in this young male 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)

PA56

在外顯子 19 遺失合併 MET 擴增之肺腺癌第四期病人使用化學治療成功克服 MET G3736A 所致對泰芮塔抗藥性之病例報告

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Successful treatment with chemotherapy for MET amplification resistant to capmatinib due to MET G3736A in exon 19 deletion EGFR-mutant stage IV lung adenocarcinoma with de novo MET amplification: a case report

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Introduction: Capmatinib is one of the standard tyrosine kinase inhibitor (TKI) for patients with stage IV lung adenocarcinoma harboring mesenchymal-epithelial transition factor (MET) amplification and exon 14 skipping. The resistant mechanism of capmatinib to MET amplification is not yet fully explored. This report describes the successful treatment with the combination of pemetrexed, carboplatin and afatinib in a patient with exon 19 deletion and de novo MET amplification stage IV lung adenocarcinoma after afatinib and capmatinib in use with disease progression due to MET resistance.

Case Report: A 55-y/o female was diagnosed with right upper lobe lung adenocarcinoma with lung-to-lung lymphangitis carcinomatosis and liquid biopsy revealed exon 19 deletion, TP 53 and MET amplification. Her disease responded partially after the treatment with capmatinib at NTUHCH for de novo MET amplification, aftatinib for exon 19 deletion and combined with self-paid bevacizumab. The side effect was well tolerable. However, after nearly one year treatment the disease progressed and second liquid biopsy revealed exon 19 deletion, TP53, MET amplification and MET G3736A. Her disease responded partially after the treatment with pemetrexed, carboplatin for MET amplification and MET G3736A and afatinib for exon 19 deletion with well tolerated side effect.

Conclusions: The treatment response of capmatinib is expected well for patients with MET amplification stage IV lung adenocarcinoma. Disease progression after initial TKI use should raise the consideration of new resistant mechanism. 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.

Airway Disease

Sleep medicine

Interstitial Lung Disease

Other

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

肺微生物菌叢和嗜中性細胞炎症能預測支氣管擴張症和慢性阻塞性肺病重疊的急性惡化

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Lung microbiota and neutrophilic inflammation predict exacerbations in bronchiectasis and COPD overlap

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Purpose: The association of lung microbiome and inflammatory status in bronchiectasis-chronic obstructive pulmonary disease (COPD) overlap (BCO) remains unclear. We assess the lung microbiota, airway inflammation and clinical outcomes in patients with BCO compared with individuals with COPD or bronchiectasis without overlap.

Materials and Methods: Bronchoalveolar lavage (BAL) samples were prospectively collected for the assessment of conventional culture, 16S ribosomal RNA (16S rRNA) sequencing and inflammatory markers. Quantification high-resolution computed tomography was used to evaluate the severity of emphysema and the radiological severity of bronchiectasis.

Results: In total of 181 patients, including 86 patients with COPD, 46 patients with bronchiectasis, and 49 patients with BCO were recruited between November 2018 and February 2022. Patients with BCO and bronchiectasis shared highly similar microbiome communities, which exhibited lower alpha diversity and are predominant of *Proteobacteria* when compared with COPD. Expectedly, patients in BCO group displayed more disease severity, greater neutrophilic inflammation as well as higher risk of future exacerbation when compared with individual disease without overlap. Moreover, two entities of BCO group (COPD and bronchiectasis as primary diagnosis), present with distinct clinical features and inflammatory profiles as well as small difference of microbiome composition. Further analysis revealed that *Pseudomonas* genera correlated with neutrophilic inflammation which could be a dominant trait in BCO linked to exacerbation. In contrast, patients with predominance of *Firmicutes* along with higher microbial diversity and commensal taxa could be another trait in COPD dominant cohort. Another novel finding that two oral taxa (*Treponema socranskii* and *Dialister invisus*) were associated with airway neutrophilic inflammation and further exacerbation.

Conclusions: The lung microbiota in BCO is very closer to bronchiectasis, *Proteobacteria* and neutrophilic inflammation are characterized in BCO associated with future exacerbation.

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

台灣間質性肺病患者於 NICEFIT-ON 及 NICEFIT 的臨床特徵比較

Clinical characteristics of patients with interstitial lung diseases from Taiwan in NICEFIT-ON compared with NICEFIT

Shih-Lung Cheng [1], Hao-Chien Wang [2], Diahn-Wamg Perng [3], Chun-Yao Huang[4], Kuo-Chin Kao[5], Chi Wei Tao [6], Chung-Kan Peng[7], Diana Yuwung Yeh[8], Chi-Li Chung[9], Ching-Lung Liu[10], Tzu-Tao Chen[11], Shih-Wei Lee [12], Shih-Chieh Chang[13], Yen-Fu Chen[14], Yueh-Feng Wen[15], Shih-Ming Tsao[16], Wei-Chang Huang[17], Ching-Hsiung Lin[18], Chih-Yen Tu[19], Tu-Chen Liu[20], Chien-Wen Huang[21], Chieh-Muo Lin[22], Meng-Chih Lin[23], Chau-Chyun Sheu[24], Kuo-An Chu[25], Yu-Feng Wei[26], Hsin-hung Wu[27]

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Purpose: Interstitial lung diseases (ILDs) represent a group of rare lung diseases affecting alveolar structures and the interstitium. This ongoing, prospective, non-interventional, multi-center study (NICEFIT-ON) aims to characterize the long-term treatment outcomes of nintedanib and identify prognostic factors for ILDs, including idiopathic pulmonary fibrosis (IPF), systemic-sclerosis-associated ILD (SSc-ILD), and progressive fibrosing ILD (PF-ILD). Here, we describe the baseline characteristics of patients in NICEFIT-ON, and compare them with those from NICEFIT.

Materials and Methods: Adult patients with ILDs diagnosed 6 months prior, who may or may not have started nintedanib, were enrolled from 21 January 2021 and will be followed up for 3 years. Baseline data included lung function tests by forced vital capacity (FVC) and predicted diffusion of carbon monoxide in lungs (DL_{CO}), quality of life measures (St. George's Respiratory Questionnaire [SGRQ] for IPF, or King's Brief Interstitial Lung Disease [K-BILD] for others), and health status according to the chronic obstructive pulmonary disease assessment test (CAT). NICEFIT included patients aged ≥20 years with an IPF diagnosis within 6 months of enrollment.

Results: By 31 November 2021, 91 patients were enrolled in NICEFIT-ON (IPF, n=71; SSc-ILD, n=7; PF-ILD, n=13); of these, 84 received nintedanib and 7 were untreated. Mean age was 67.6 years, 66% were male, 40.7% were never smokers and 81.3% had confirmed or probable usual interstitial pneumonia. The mean±standard deviation (SD) percent predicted FVC was numerically higher in patients with IPF (81.9±20.7%), and PF-ILD (80.3±21.8%) than in patients with SSc-ILD (68.0±19.3%). Similarly, mean±SD percent predicted DLco was numerically higher in the IPF (53.8±26.4%) and PF-ILD (53.2±23.7%) subgroups than the SSc-ILD (42.4±20.4%) subgroup. However, mean±SD K-BILD were similar in patients with SSc-ILD (54.4±9.3) and PF-ILD (54.8±12.1). Mean±SD CAT scores were lower in patients with IPF (10.3±7.3) than with SSc-ILD (13.4±9.9) or PF-ILD (14.5±10.2). Compared with patients in NICEFIT, patients receiving nintedanib in NICEFIT-ON showed numerically higher mean±SD percent predicted FVC (79.4±20.5% vs 69.7±14.1%) and DLco (51.4±26.1% vs 42.7±19.7%). The mean±SD SGRQ quality of life score was also lower (indicating better quality of life) in treated patients with IPF in the NICEFIT-ON (29.3±19.5) than the NICEFIT (35.9±19.7) study.

Conclusions: In NICEFIT-ON, patients with IPF showed better lung function and quality of life compared with those with SSc-ILD/PF-ILD; this held true when compared with IPF patients in NICEFIT. The relatively poorer lung function and/or quality of life associated with SSc-ILD and PF-ILD highlighted the need for early diagnosis and treatment initiation.

ClinicalTrials.gov ID for NICEFIT-ON study: NCT04614441; Open Access for NICEFIT study: Biomedicines 2022, 10(10), 2362; https://doi.org/10.3390/biomedicines10102362

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

血中嗜伊紅性白血球、單核細胞計數和中性粒細胞/淋巴細胞比值在特發性肺纖維化患者的臨床預後價值：一個回溯型多中心研究

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The prognostic value of blood eosinophils、monocyte count and Neutrophils/Lymphocyte ratio (NLR) in patients with idiopathic pulmonary fibrosis：A retrospective multicenter cohort study

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Purpose: Idiopathic pulmonary fibrosis (IPF) is a chronic but persistent progressive interstitial lung disease (ILD) with high mortality. We will assess the prognostic value of serum biomarkers which are associated with immunological and inflammatory responses, including neutrophil-lymphocyte ratio (NLR), monocyte counts as well as eosinophils in patients with IPF.

Materials and Methods: Between 2012 Jan 1 and 2022.May 31, patients with the clinical diagnosis of IPF according to high resolution computed tomography (HRCT) and lung function and serum biomarkers were enrolled for analysis. The demographic and clinical characteristics of the patients at baseline were recorded. Multivariable cox regression analysis was used to evaluate the association between the three biomarkers (blood eosinophils, NLR and monocyte counts and blood eosinophils) as well other clinical factors and overall survival.

Results: A total of 82 IPF patients (M: F=64:18) with mean age (75.8± 8.1) were enrolled for final analysis. The median follow-up was 2.00 years. The univariant analysis showed that high NLR ≥3.0 (p=0.014), patients with usual interstitial pneumonia (UIP) pattern (p=0.001), HRCT fibrotic area ≥10% (p=0.002), patients combined with lung cancer (p=0.037) and without antifibrotic agents (Nintedanib or Pirfenidone) exposure (p=0.001) were associated with higher mortality. After adjusting for confounders, we found that elevated NLR (HR = 2.290, 95% CI 1.005-5.219, P =0.049) and HRCT fibrotic area ≥10% (HR=5.929, 95% CI 1.345-26.129, P =0.019) were associated with worse overall survival by using multivariable cox regression analysis. Patients exposure to antifibrotic agents was independent factor associated better survival (HR=0.177, 95% CI 0.064-0.492, P =0.001). No significant differences were found in monocyte counts (≥600) (P=0.330) or blood eosinophils changes (≥300) (P=0.150).

Conclusions: Our results indicated that high NLR expression and extent of fibrosis area are associated with shorter overall survival, which are independent prognostic factors. The NLR rather than monocytes or eosinophils could be regarded as a reliable prognostic biomarker for IPF 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)

OB04

探討年輕族群肺功能快速下降於早期慢性阻塞性肺病(COPD)日後發展成臨床 COPD 的重要性之回溯姓研究

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The Retrospective Research in Importance of rapid decline in Lung Function for Early COPD for Adults Aged between 20 – 50 into Clinical COPD

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Purpose: Our aim is to identify the individuals with early COPD at the beginning of progression. For preventing from the clinical COPD, we should focus on regular lung function tests toward the young generation and implement the proper and preventive measures.

Materials and Methods: We selected the cases with more than twice pulmonary function tests (FEV1/FVC) in a northern medical center from 2014 to 2021, separated into three groups:1. The normal group with FEV1/FVC>0.7, 2. The abnormal-young group with FEV1/FVC≤0.7 and under age 50 and ,3. The abnormal-elder group with FEV1/FVC≤0.7 and over age 50. Then we compared the speed of lung function decline annually among these 3 groups. We also try to identify important factors caused the lung function decline among the conditions as age, gender, smoking status, body mass index (BMI), comorbidities and dyspnea scale (mMRC). The statistical software SPSS 20.0 was implemented for analysis, and the method of percentage, analysis of variance (ANOVA) and Scheffé post-hoc test was for comparison, and the test standard was $p<0.05$.

Results: During 2014~2021, all cases with lung function tests are 22258, but only 3526 cases are complied with the conditions we set. We classified cases into Group 1-2871 cases for normal group, Group 2-50 for group with COPD and under age 50, and Group 3-655 for group with COPD and over age 50. For Group 2: A. for the volume of decline annually, a-1: the volume between 30-60 cc of decline in FEV1 is 10%, a-2:the volume between 60-90 cc of decline in FEV1 is 6%, and a-3-the volume over 90 cc of decline in FEV1 is 40%. And B. for GOLD, which is guideline toward COPD, b-1:86% for GOLD 2 (50-79%), b-2:8% for GOLD3 (30-49%), and b-3:6% for GOLD 4 (<30%). For Group 3: A. for the volume of decline annually, a-1: the volume between 30-60 cc of decline in FEV1 is 12%, a-2: the volume between 60-90 cc of decline in FEV1 is 9%, and a-3: the volume over 90 cc of decline in FEV1 is 26%. And B. for GOLD, b-1:90% for GOLD 2 (50-79%), b-2:8% for GOLD3 (30-49%), and b-3:0.86% for GOLD 4 (<30%). The significant difference is in the development of COPD as time goes on.

Conclusions: The percentage in patients under age 50 with more than 90cc declined annually in FEV1 is up to 40%, but patients usually seek for medical treatment till suffering from severe symptoms. If the young generation with early COPD could arrange regular lung function test and rely on medical treatments, the status of lung function would be improved efficiently, and the progress of clinical COPD could be obstructed for reducing the social resource of medication.

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

慢性阻塞性肺病患者接受亞極限運動測試前後的肺內液體含量變化

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Lung fluid content during submaximal exercise testing in patients with chronic obstructive pulmonary disease

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Purpose: The 6-minute walk test (6MWT) is a submaximal exercise test that is commonly used to assess cardiorespiratory fitness in patients with chronic obstructive pulmonary disease (COPD). However, it is uncertain about lung fluid content during 6MWT in COPD patients. The Remote Dielectric Sensing system (ReDS) is an FDA-approved device that can measure lung fluid content in absolute values quickly and non-invasively. In this study, we aimed to investigate the changes in lung fluid content by ReDS before and after 6MWT in COPD. In particular, the differences in ReDS between patients with and without comorbid heart failure were sought.

Materials and Methods: This prospective study was conducted at the National Taiwan University Hospital. From June 2021 to July 2022, spirometry-confirmed COPD patients who were referred for 6MWT were invited to participate in this study. Measurements of lung fluid content by ReDS were conducted just before and right after 6MWT by a single manufacturer-certified personnel. The data with regard to patient demographics, smoking status, body habitus, history of exacerbations, spirometry, and 6MWT were collected. In addition, the patients were assessed for comorbid heart failure by comprehensive cardiovascular evaluation. The main outcomes of measures for this study were pre-6MWT ReDS, post-6MWT ReDS, and post–pre ΔReDS.

Results: A total of 133 COPD patients (mean age 72 years, 70% men) were included. Overall, the average pre-6MWT ReDS of the cohort was 26.6±4.9%, which did not differ from the post-6MWT ReDS (26.4±5.7%; P =0.492 by paired t-test). Comparisons between COPD patients with and without heart failure indicated a similar pre-6MWT ReDS (26.9±5.9% vs. 26.5±4.7%; P =0.751), but a significant difference in post-6MWT ReDS (29.7±6.3 vs. 25.7±5.3; P =0.002) and post–pre ΔReDS (2.9±3.2 vs. -0.8±2.5; P <0.001). Receiver operating characteristic curve analysis showed an area under the curve of 0.82 (95% CI 0.71–0.93) for post–pre ΔReDS. The optimal cut-off by Youden Index for post–pre ΔReDS was >2%, with sensitivity and specificity of 61% and 91%, respectively, to detect comorbid heart failure.

Conclusions: Dynamic changes in lung fluid content prior to and following 6MWT significantly differed between COPD patients with and without comorbid heart failure. Measurements of lung fluid content by ReDS during 6MWT in COPD patients may be of merit to identify patients with unrecognized heart 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)

OB06

以脈衝震盪肺功能測定用於預測嚴重氣喘患者的靜止過度通氣

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Impulse oscillometry parameters predicts static lung hyperinflation in severe asthma

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Purpose: We aim to identify the correlation between static lung hyperinflation (SLH) and small airway dysfunction (SAD) in patients with severe asthma and the improvement of SLH and SAD in response to treatment.

Materials and Methods: We analyzed data from patients who were enrolled in the Taiwan Severe Asthma Registry in Taipei Veterans General Hospital. Plethysmography and impulse oscillometry (IOS) were regularly performed. We analyzed the relationship between spirometric and IOS parameters and changes in the clinical outcomes in response to treatment.

Results: SLH was found in 83 (77.6%) of 107 patients with severe asthma. Compared with those without SLH, these patients were older, female predominant, worse lung function and small airway resistance and reactance. Increased small airway resistance and reactance were significantly correlated with RV/TLC ratio. Airway reactance at 5 Hz (X_5) ≤ −0.21 [kPa/(L/s)] predicts SLH with the area under the receiver operating characteristic curve of 0.84 (p< 0.0001), sensitivity 85.2% and specificity 83.3%. After 12 months follow-up, patients who received add-on biologics treatment had significantly improved forced expiratory volume in the first second (FEV1) and X_5 as well as a trend of reduced RV/TLC ratio compared to those without biologics treatment.

Conclusions: Airway reactance X_5 might be a novel predictor to assess SLH in addition to body plethysmography in severe asthma 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)

OB07

慢性阻塞性肺病患使用乾粉吸入劑時,影響尖峰吸氣流速的因子分析:肌少症及力弱症的角色

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The Impact of Dynapenia and Sarcopenia on Inspiratory Flow Rates during Dry Powder Inhaler use in Chronic Obstructive pulmonary Disease

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Purpose: Adequate bronchodilator delivery in chronic obstructive pulmonary disease (COPD) patients requires they achieve an optimal peak inspiratory flow rate (PIFR) when using an inhaler. PIFR guided inhaler training has been shown to reduce severe COPD exacerbations. However, measuring PIFR requires a specialized device and is also affected by different inhaler devices' internal resistance. In prior studies, dynapenia (low muscle strength) and sarcopenia (low muscle mass) are associated with lung function and functional capacity in COPD patients. We aim to examine the association between dynapenia, sarcopenia, and PIFR amongst outpatients with COPD.

Materials and Methods: Adult outpatients with COPD in our hospital's pulmonary rehabilitation program were enrolled. Patients were classified into normal, dynapenia, or sarcopenia groups based on their handgrip strength and fat free mass. Each patients' PIFR was measured using the In-Check DIAL flow meter across 4 different resistances: low [PIFR-L], medium-low [PIFR-ML], medium [PIFR-M], medium-high [PIFR-MH]). The relationships between dynapenia, sarcopenia, their chair sit to stand speed, FEV_1% predicted, and PIFR were analyzed.

Results: 280 patients were enrolled. 14.6% of patients had dynapenia; 15.4% of patients had sarcopenia. Compared to normal patients, dynapenia and sarcopenia patients were older and performed worse on the short physical performance battery (SPPB). There was no difference amongst the three groups in markers of COPD severity. There is a significant association between PIFR and fat free mass, handgrip strength, sit to stand speed, and FEV_1% predicted across all resistances. Most patients (>86%) had an optimal PIFR-L (PIFR > 60 L/min) regardless of their dynapenia / sarcopenia status. When testing against PIFR-ML, PIFR-M, PIFR-MH, only 68.2%, 50%, and 38.6% of dynapenia patients had optimal PIFR respectively. This proportion was significantly lower than normal patients against all four resistances, but it was not significantly different from sarcopenia patients. The proportion of patients achieving optimal PIFR only differs between GOLD groups against PIFR-M and between GOLD stages against PIFR-L and PIFR-ML.

Conclusion: Patients with sarcopenia and dynapenia had a significantly higher proportion of less-than-optimal PIFR. The association between muscle strength and PIFR was also higher than the association between FEV_1 with PIFR. Handgrip strength may be served as a useful marker for guiding inhaler device prescription.

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

間歇性缺氧與肥胖對於免疫力與肺炎感受度之交互影響

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The impact of intermittent hypoxia and obesity on immunity/susceptibility of pneumonia

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Purpose: Obstructive sleep apnea confers a higher risk for incident pneumonia and sepsis-related adverse outcomes, suggestive of defective immunity in affected patients, who are commonly obese. We aimed to elucidate the differential effect of intermittent hypoxia (IH)-the typical characteristics of obstructive sleep apnea and obesity in a murine model of induced pneumonia.

Materials and Methods:

5-week-old male obese mice (db/db mice) and their lean control (db/+) were treated with IH or normoxia for 3 weeks. IH was achieved by adjusting the inflow of nitrogen and oxygen through a solenoid valve to the chamber, resulting in cyclic fluctuation of oxygen concentration between 5.7 to 21% per 90 seconds. IH was given every day from 9 AM to 5 PM for 3 weeks. Murine BMDMs (bone marrow-derived macrophages) were collected with phagocytic abilities measured by a commercial kit. Pneumonia was induced by intratracheal injection of E. coli. Blood and lung pathology were collected 4 hours later. We used another set of mice with induced pneumonia to evaluate mortality in different conditions.

Results: Compared to lean control mice under a normoxic condition, IH-treated and db/db mice exhibited the depressed phagocytic ability of BMDM, which was worst in combination (IH-treated db/db mice). The severity of pneumonia was most severe in IH-treated db/db mice, followed by normoxic db/db mice and IH-treated db/+ mice. The survival analysis showed a similar trend.

Conclusions: Obesity and IH treatment increased the severity of pneumonia, and the effect was synergic. Control of body weight and correction of IH were both important for patients with obstructive sleep apnea regarding the susceptibility of potential complications such as infections.

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

前瞻性世代研究：異位性氣喘與非異位性氣喘和早發性氣喘與晚發性氣喘之比較

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林口長庚呼吸胸腔科

A prospective cohort study of atopic and non-atopic asthmatics in early onset asthma and late onset asthma

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Background: Late-onset asthma (LOA), which differs from early-onset asthma (EOA) in terms of worse prognosis and poorer response to standard asthma treatment. Atopic asthma is characterized by infiltration of the bronchial mucosa with eosinophils and T helper 2 (Th2)-type cells. The study aimed to compare the outcomes in asthma patients with these different phenotypes after 12-month treatment.

Materials and Methods: The study recruited consecutive asthma patients in a pay-for-performance program at Chang Gung Memorial Hospital, Linkou branch. The patients received regular outpatient clinic treatment for at least one year in outpatient clinic since 2019. The baseline characteristics and clinical outcomes of LOA (≥ 40 years) and EOA (< 40 years) were compared.

Results: Among the total 101 asthma patients, 21 subjects (20.7%) were EOA and 80 (79.3%) were LOA. Compared to the LOA group, EOA patients were younger, had a longer duration of asthma and higher rate of asthma family history, and more co-morbidities with allergic rhinitis and rhino-sinusitis. EOA patients had higher extent of FEV1 (-2.1±8.4 vs. 6.8±13.1, % of predicted value, p=0.037) and FVC (-4.6±12.0 vs. 6.1±13.6, % of predicted value, p=0.023) decline in 12-month period than those in LOA patients. In non-atopic group with EOA had significant higher exacerbation rate at 12 months compared with LOA group (50% vs. 11.8%, p=0.012).

Conclusions: Patients with non-atopic EOA had higher incidence of acute exacerbation than patients than non-atopic LOA patients in 12-month treatment period. Identification of different phenotypes of asthma is important in clinical practice due to the treatment responses may 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)

PB02

高齡慢性阻塞性肺病患者之基本社會人口學與自尊的相關性探討：一項橫斷性研究

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The relationship between socio-demographic variability and self-esteem among elderly patients with chronic obstructive pulmonary disease: A cross-sectional study

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Purpose: Patients with chronic obstructive pulmonary disease (COPD) may be admitted frequently due to acute illness, which cause financial burden and psychological stress to patients and their family members, and lead to lower esteem of patients themselves. Our study is aimed to find out the relationship between patient's social-demographic variability and self-esteem after admission.
Materials and Methods: A cross-sectional study was conducted in a medical center in southern Taiwan. A convenience sampling was used for the study, and elderly patients with COPD were selected randomly. The interview technique was applied to gather data using validated tools. Tools used in the study was Rosenberg self-esteem scale and scoring was carried out for self-esteem in accordance with the procedures. Data were analyzed using descriptive statistics and inferential statistics (Chi-square, independent t-test and Pearson's correlation statistical analysis).
Results: We included 76 patients with COPD. Of all participants, 40.8% were males. The range of age was 67–82 years old (mean=72.95±4.38). 72 patients were married (94.7%); Only 5 patients (6.6%) had an occupation, while most did not employed because of they were either on leave, retired or simply jobless (n=71; 93.4%). For education level, 54 patients were elementary school or lower level (71.1%), 13 patients were high school (17.1%) and 9 patients were college or higher level (11.8%). The mean of activity of daily living (ADL), body mass index (BMI) and scoring of self-esteem were calculated, which was 89.87±17.45, 24.57±3.7, and 30.2±3.87, respectively. A statistically significant difference in education levels was found with self-esteem (F=29.422; 95% CI 3.142–9.472, p<0.0001). We also found that self-esteem negatively associated with older age (r=-0.550, p<0.0001), but positive associated with ADL(r=0.237, p=0.039) and BMI (r=0.264, p=0.021).
Conclusions: This study indicates that in elderly patients with COPD, younger age, higher education levels, BMI and ADL were associated with better self-esteem after 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)

PB03

三合一吸入型藥物治療肺阻塞的真實世界經驗

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A Real-World Experience of Triple Therapy in Treating Chronic Obstructive Pulmonary Disease

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Purpose: The double-blind randomized controlled trials presented patients with chronic obstructive pulmonary disease (COPD) received triple therapy can improve lung function, dyspnea scale, life quality, reduce acute exacerbation and mortality compared those with long-acting muscarinic antagonist/long-acting β2-agonist but the real-word treatment scenario may be different from strict and well design study. The aim of our study was to assess long term outcomes in patients with COPD received triple therapy in real-world practice..

Materials and Methods: Taiwan's National Health Insurance Research Database (NHIRD) between 2005 and 2016 was used to identify COPD patients who aged more than 40 years old with diagnosis codes: 490-492, 496 (ICD-9-CM) or J41-44 (ICD-10-CM). After matching, COPD patients with and without received triple therapy were enrolled in this study. The Cox proportional regression was used to estimate the mortality risk between smoking status and COPD patients with and without received triple therapy.

Results: There are 19,358 patients with COPD with and without received triple therapy were enrolled in this study. Some prevalence of comorbidities was higher in patients with COPD received triple therapy compared those without received triple therapy. These comorbidities included lung cancer, thoracic malignancies, bronchiectasis, and heart failure. The risks of mortality were higher in patients received triple therapy compared those without received triple therapy with crude hazard ration, fully-adjusted model hazard ration and reduced hazard ration with a stepwise approach with 1.568 (95% CI, 1.500-1.639), 1.675 (95% CI, 1.596-1.757), 1.677 (95% CI, 1.599-1.76), respectively.

Conclusions: During 5 years observation, patients with COPD received triple therapy have higher mortality compared those without receive triple 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)

PB04

評估台灣肺阻塞病人流感感染者的長效支氣管擴張劑順從性

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Evaluating Long-acting Bronchodilator Adherence in Taiwan Chronic Obstructive Pulmonary Disease Patients with Influenza Infection

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Purpose: Chronic obstructive pulmonary disease (COPD) is a chronic respiratory condition, which causes irreversible airflow obstruction. Patients with COPD are at high risk for influenza infection. Since long-acting bronchodilators are a maintenance treatment for COPD patients, adequate medication adherence reduces COPD exacerbations and improves lung function, thus potentially reducing the risk of influenza; however, there is a lack of evidence in this regard. Therefore, this study evaluated the long-acting bronchodilators adherence and the risk of influenza in COPD patients.

Materials and Methods: The nested case-control study was conducted by retrieving data from Taiwan National Health Insurance Research Database. Patients newly diagnosed with COPD from 2012 to 2018 and aged between 40 and 90 years were included in this study. Logistic regression was used to evaluate the odds ratio of long-acting bronchodilator adherence and risk of influenza based on the number of days covered.

Results: This study included 6,073 patients in the case group and 12,146 in the control group after matching. High adherence to long-acting bronchodilators showed a significantly reduced risk of influenza compared to low adherence, with an odds ratio of 0.811 (95% confidence interval = 0.754–0.883, $P < 0.001$). A reduced risk of influenza also was observed in patients with high adherence and receiving influenza vaccination.

Conclusions: Using long-acting bronchodilators was crucial for disease control and further influenza protection. Therefore, patients with COPD should be aware of the risk of influenza infection, and patient education on medication adherence should be compulsory.

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

藉由脈衝震盪檢驗值對阻塞性肺病之預測價值

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Resistance, Frequency response and Body Mass Index and their Predictability of Obstructive Pulmonary Disorder by Impulse Oscillometry

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Background: Impulse oscillometry (IOS) variables have been shown to be more sensitive to spirometry. The clinical application of it for general practice expands quite popular in Taiwan. Especially since the COVID-19 outbreak has been around the world, the standard, labor-intensive pulmonary function test is not as good as the IOS test requiring normal tidal breathing. This retrospect case-series trial investigated the correlation between spirometry and IOS in patients with clinical upper or lower respiratory symptoms in a regional teaching hospital.

Methods: Patients were enrolled between Jan/1 and December/31 202021. All patients were assessed with available data from both spirometry and IOS in the same day. High resistance (HR) is defined by R5>140%pred and Fres>15.01 Hz, and high reactance (HX) by R5<140%pred and Fres>15.01 Hz. IOS results between the cases of spirometry-defined COPD and non-COPD are evaluated one-way ANOVA test. To strictly calculate the post-BD FEV1/FVC of spirometry less than 0.6, the IOS variables are tested in a ROC statistic. All tests were two-sided and performed at a significance level of 0.05. The accuracy of oscillometry as a predictor of spirometry-defined COPD was evaluated using receiver operator characteristic (ROC) analysis.

Results: Of the 115 accessed cases, male: female=61:54, mean age equaled to 62.9±15.7 years old. 25 in 56 cases with bronchodilatation test were found to be BD responsiveness (44.6%). Thirty cases met to COPD criteria (26.1%). Comparisons of tobacco-smoking years between COPD and non-COPD cases are with statistically significance, i.e., 24.0±24.8 pack-years in COPD and 11.2±20.2 pack-years in non-COPD cases ($p<0.01$). Obese cases have higher R5%pred and R20 results with statistical significance. BMI and R5%pred are with positive correlation and the Pearson's correlation is 0.274 ($p<0.05$). AX between different sex is with statistically difference ($p<0.01$). The medium of R5–R20 in COPD is 0.23±0.22 kPa/L/s and is 0.14±0.11 kPa/L/s in non-COPD. The mean AX of HR and HX is 2.30±1.67 kPa/L and 0.72±0.56 kPa/L ($p<0.01$). The role of R5%pred to predict a COPD might be modest, AUC equaled to 0.64±0.06 (95%CI 0.51–0.76). Fres and AX might be better indicated, AUC for each equaled to 0.67±0.06 (95%CI 0.56–0.79) and 0.70±0.06 (95%CI 0.58–0.81). The best variables for spirometry-defined COPD would be AX and (R5%pred*Fres)/BMI. But for strictly post-BD FEV1/FVC less than 0.6, (R5%pred*Fres)/BMI provided a higher AUC of 0.782 (95%CI 0.620-0.945) than AX. (R5%pred*Fres)/BMI equaled to 160 would provide a moderate prediction of spirometry-defined COPD.

Conclusion: Variables in impulse oscillometry are valuable to predict a severe obstructive pulmonary disorder especially selective items like AX and (R5%pred*Fres)/BMI.

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

成人阻塞型睡眠呼吸中止症使用持續陽壓呼吸器面臨的困境：一個分析使用持續陽壓呼吸器順從性的世代研究

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The dilemma of continuous positive airway pressure therapy (CPAP) on adult obstructive sleep apnea：a longitudinal cohort study for CPAP compliance

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Background: Obstructive sleep apnea (OSA) is frequently associated with comorbidities including metabolic and cardiovascular diseases. Continuous positive airway pressure (CPAP) is one of the standard treatments for adults with moderate to severe OSA. The compliance of at least 4 hours each night for 70% of the nights has been considered acceptable to achieve clinical improvements but only 30-74% of patients qualified. The present study aims to present a summary of clinical course of CPAP acceptance and compliance among patients with OSA in a sleep center-based database.

Methods: This single center longitudinal observational cohort study was conducted in a sleep center of tertiary referral hospital. Adults received polysomnography for the first-time which apnea-hypopnea index (AHI) ≥ 5 per hour between January 2008 and December 2020 was eligible for screening. Patients receiving OSA treatment before, concomitant with hypoventilation, refused CPAP therapy or loss of follow-up were excluded. The follow-up period was 5 years. The included subjects were followed until December 2020 by medical records. The compliance reports of PAP use were collected for analysis.

Results: A total of 11791 adults were screened and 73.8% were moderate or severe OSA. Only 3826 (32.4%) received evaluation of PAP therapy, including manual or home CPAP titration. Among them, 1518 (39.7% of patients who received evaluation) received CPAP therapy. They were middle-aged (mean age 51.1±12.6 years old), over-weighted (BMI 28.8 ± 4.9 Kg/m2), and male predominant. About 30.2% of patients had smoking history, 45.7% had hypertension, and 12.2% had diabetes mellitus. The mean Epworth sleepiness scale (ESS) was 11.0±5.0, and 60.1% had excessive daytime sleepiness. They had mean AHI was 51.8±21.1/h and 83.5% were severe OSA. During the follow-up period, around 52.0% patients kept using CPAP and received follow-up at the center after 12 months of initiation of treatment, but only 11.5% after 60 months. Women seemed lost follow-up more than men (49.2% received follow-up vs 55.5%, p=0.017). Patients who had CPAP compliance reports in the 12th month showed residual AHI 3.6±5.1/h, therapeutic pressure 10.3±3.7 cmH2O, and usage hour 5.0±1.8 hours.

Conclusions: Only half of OSA patients who received regular follow-up at sleep center after 12 months of initiation of treatment. It is a critical issue to improve patient's willing to receive CPAP therapy and regular follow-up.

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

探討與預測過敏疾病患者發生骨折的相關風險因子

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Risk of Developing Fractures Among Adult Patients Experiencing Allergic Disease: A Nationwide Population-Based Cohort Study

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Purpose: Fractures are a concerning health issue associated with morbidity, quality of life, life span and health care expenditure. However, representative national data remains lacking, and longitudinal cohort studies on the association between allergic disease and any subsequent fracture risk are scant.

Materials and Method: Data taken from patients diagnosed with allergic diseases, including atopic dermatitis, allergic rhinitis and asthma, and then subsequently matched to a control cohort during the period January 2000 to December 2009, were extracted from the Taiwan National Health Insurance Research Database. A Cox proportional-hazards regression model was then constructed to calculate hazard ratios (HRs) for fracture risk between the allergic disease patients and control cohorts

Results: Of the 105,828 people diagnosed with allergic disease (mean age: 54.4 years old, 51% female), 9,332 reported newly diagnosed fractures (incidence rate: 8.8%), which was significantly higher than the proportion in the control population (6,864, 7.7%; $P < 0.001$). For allergic patients bearing all three allergic components (atopic dermatitis, allergic rhinitis and asthma), the highest risk for developing fracture events was discovered using an adjusted HR: 1.74 (CI: 1.47~ 2.07, P< 0.001). Once systemic corticosteroids were added to the clinical treatment provided to the allergic groups, the aHR was lowered to 1.49 (CI: 1.28~ 1.73).

Conclusion: Over a 10-year follow up period, the allergic group experienced more comorbidities and fracture events when compared with the control group. A high comorbidity burden, along with steroid exposure, contributed to a high risk of fracture events for adult allergic groups once they began to coexist with allergic dermatitis, allergic rhinitis and 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)

PB08

吸入型類固醇與長效乙二型擬交感興奮劑用於支氣管擴張症的療效與安全性探討

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Effectiveness and Safety of ICS/LABA Combinations Use in Patients with Bronchiectasis

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Purpose: Current clinical guidelines are unclear regarding the association of ICS-LABA combinations with the risk of acute exacerbation (AE) and pneumonia in patients with bronchiectasis
Materials and Methods: We performed a retrospective cohort study using Taipei Veteran General Hospital electronic medical record database. Patients with HRCT (high-resolution computed tomography)-confirmed bronchiectasis and treated with ICS-LABAs or LAMAs (long-acting muscarinic antagonists) during Jan.2008-Mar.2020 were identified.
Results: A total of 1,736 bronchiectasis patients were enrolled in this study, with 1,281 ICS-LABAs users and 455 LAMAs users. HRs of ICS-LABAs comparing LAMAs were 1.22 for hospitalized respiratory infection, 1.06 for acute exacerbation, and 1.06 for all-cause hospitalization (all $p > 0.05$). The results showed a similar risk of outcome occurrence between ICS-LABAs and LAMAs. The HRs of BEC/FOR(beclomethasone/formoterol)comparing FLU/SAL (fluticasone/salmeterol) were 0.48 for hospitalized respiratory infection, 0.59 for acute exacerbation, and 0.55 for all-cause hospitalization (all $p < 0.05$). The HRs of BUD/FOR (budesonide/formoterol) comparing FLU/SAL were 0.59（$p = 0.07$）for hospitalized respiratory infection, 0.68（$p < 0.05$）for acute exacerbation, and 0.75（$p = 0.14$）for all-cause hospitalization. BEC/FOR and BUD/FOR were associated with lower risk of outcome occurrence comparing FLU/SAL.
Conclusions: For bronchiectasis patients, ICS-LABAs are effective and safe maintenance treatment. In different ICS-LABA regimens, compared to FLU/SAL, BEC/FOR and BUD/FOR are associated with better effectiveness and safety.

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

探討得舒飲食對於肺阻塞病人的預後

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Discovering the Role of Dietary Approaches to Stop Hypertension (DASH) Diet in Chronic Obstructive Pulmonary Disease (COPD)

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Purpose: Chronic obstructive pulmonary disease (COPD) bears multiple comorbidities and medical burdens. High mortality is related to cardiovascular (CV) event. Traditionally, Mediterranean diet is beneficial for lung function improvement and better survival in COPD. The role of Dietary Approaches to Stop Hypertension (DASH) diet in lowering CV event is unknown. We want to further explore and discover the role of DASH in COPD outcome.

Materials and Method: We reviewed the data derived from the **N**ational **H**ealth **a**nd **N**utrition **E**xamination **S**urvey (**NHANES**) cohort from 2007 to 2012. All enrolled patients were aged above 18 years and total 13,145 cases were analyzed. We collected the pulmonary function data with regard to FEV1/ FVC ratio (≥70%:Normal or < 70%: favor COPD) and adherence to DASH diet by DASH score (>2 or ≤ 2). Joint effects of adherence to DASH diet and Pulmonary function impairment (COPD status) on different mortality condition including all cause, CV, Cancer were calculated separately

Results: Of the 13, 145 cases, the mean age was around 44.47 years old. For COPD group (FEV1/FVC <70%) , the mean DASH score was 2.44. For normal population with good adherence to DASH diet, the adjusted HR of CV mortality was 0.611 (0.045~0.923, P=0.02) when compared with poor adherence to DASH diet (score not more than 2). For COPD group, good adherence to DASH diet (score >2) did not show the same cardiovascular protection effect as compared with control group (adjusted HR: 1.236; 0.827~1.849, P=0.294).

Conclusion: DASH diet was beneficial for normal population with good adherence to DASH diet. As for COPD group, the reduction of cardiovascular event was not reached by enhancing adherence to DASH diet.

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

台中榮總亞急性呼吸照護病房之呼吸器撤除與安寧緩和照護之經驗

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Palliative care consultation to the discussion of withdrawal from a ventilator: the experience of medical centers in Central Taiwan

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Purpose: Withdrawal from the ventilator was administrated in the patients with terminal illnesses, after consultation with the palliative care team. Prolonged intubation periods were associated with higher risks of ventilator-associated complications. In this article, we aimed to explore the association between prolonged withdrawal waiting time(WWT) and the clinical characteristics of patients and establish possible resolutions for prolonged extubation.

Materials and Method: A Unicenter, observational study of patients with the terminal diagnosis from Taichung veteran hospital from 2014 to 2021, to explore prolonged WWT (defined as 7-day or longer interval from the day of palliative care consultation to assisting withdrawal from the ventilator) and its association with clinical parameters (including age, Glasgow coma status(GCS), APACHE II score, malignancy, and brain injury).

Results: A total of 50 patients were enrolled. All patients were diagnosed with terminal illness and received withdrawal from the ventilator. Compared with WWT of less than 7 days, prolonged WWT was associated with younger age (69.7 v.s. 73.4, P= 0.341), lower GCS (5.07 v.s. 5.41, P= 0.685), and lower APACHE II score (21.2 v.s. 22.48, P= 0.461). In the prolonged WWT group, 22% of patients were diagnosed with brain injury, and 14% with malignancy. Both brain injury and malignancy were higher compared with the group with WWT less than 7 days, but there was no significant difference.

Conclusion: The results of this real-life study showed that prolonged WWT was associated with younger age and lower disease severity. Despite the positive results of this study, future work will hopefully clarify the current reliability concern.

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

採用 power BI 的即時資料視覺化監控面板以改善肺阻塞病患之預後

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Using business intelligence real-time visualization system for improving outcomes in chronic obstructive pulmonary disease patients.

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Purpose: Suboptimal care quality for patients with chronic obstructive pulmonary disease (COPD) is reflected by high rates of emergency department visits and hospital readmissions, as well as excessive costs. Moreover, a substantial proportion of COPD patients receive suboptimal collaboration among members of interprofessional health care teams and gaps in relationships among patients and providers. We conduct business intelligence (BI) for real-time data visualization to integrate interprofessional COPD team. This study aims to evaluate whether the use of BI is associated with improve the outcome of COPD patients.

Materials and Methods: We construct a COPD patient-centered integrated health care system to promote physicians, nurses, case managers, health educator, respiratory therapist, pharmacists, and nutritionists achieving the goals of COPD care. Besides, we apply BI to real-time monitoring of quality indicators, tracking the effectiveness of interprofessional collaborative practice, comparing whether it can improve the rate of acute exacerbation and mortality or not in patients who were cared by this model for more than one year.

Results: From May 2021 to October 2022, there were 2419 COPD patients in China Medical University Hospital, 421 of them were cared with interprofessional collaborative practice. Comparing the patients who were cared by interprofessional collaborative practice to those who weren't, they had increasing rates of pulmonary rehabilitation, nutrition counselling and smoking cessation education significantly, which made the mortality (1.4% vs 3.8%, $p<0.001$), rate of readmission within 14 days (1.9% vs 5.3%, $p<0.001$), and the rate of return visiting to emergency department within 30 days after discharge (3.6% vs 9.4%, $p<0.001$) have significant improvement.

Conclusions: Through BI for real-time visualization is helpful in tracking quality indicators, case management, revisit rate and the health education status, and then to detect problem earlier. The use of real-time visualization system for interprofessional COPD team was associated with significantly improved the outcomes of 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)

PB12

脈衝震盪肺功能測定在類風濕關節炎相關間質性肺疾病和氣道疾病中的應用

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Application of Impulse Oscillometry in Adult with rheumatoid arthritis associated interstitial lung disease and airway disease

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Background: Clinically evident interstitial lung disease (ILD) affects between 10 and 40% of the patients with rheumatoid arthritis (RA). Airway involvement seems to be even more common. High-Resolution Computerized Tomography (HRCT) can be used to early detect these lung diseases. We investigated the role of impulse oscillometry (IOS) in detecting lung involvement in replace of HRCT.
Methods: The patients with RA underwent pulmonary function test (PFT), IOS, structured questionnaire, and joint disease evaluation between Sep 2021 and Sep 2022 were enrolled. We analyzed which variables of PFT or IOS were associated with the presence of lung disease on HRCT.
Results: A total of 89 patients underwent PFT and IOS. Among them, a total 60 patients received HRCT and were included to analyze. A total 47 patients had airway disease or ILD and 13 patients had no obvious abnormalities on HRCT. In these 47 patients with abnormal HRCT change, the abnormal parameters in IOS and PFT were observed in 44 and 32 patients, respectively. Patients with abnormal HRCT presented significantly lower values of FVC% and MMEF%. Higher value of R5, R5-R20, Fres, and AX were observed in patients with abnormal HRCT. Patients with ILD and airway disease had significantly lower values of FVC%, MMEF% and higher values of R5, R5-R20, and AX. Compared to other parameters, Fres > 14.14 was found significant associated with alterations in HRCT.
Conclusion: Fres > 14.14 is significant associated with RA patients with lung involvement. Performing spirometry together with IOS is more beneficial than spirometry alone for evaluation lung involvement in RA 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)

PB13

過敏原致敏對肺阻塞患者臨床表現之影響

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The impact of allergen sensitization in patients with chronic obstructive pulmonary disease

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Purpose: Previous studies have demonstrated that nearly one-third of individuals with chronic obstructive pulmonary disease (COPD) have concomitant allergic sensitization. We aim to identify the prevalence and associations of allergen sensitization to common environmental allergens with symptoms, exacerbation and lung function in COPD.

Materials and Methods: During the period of 4 May 2017 to 21 July 2022, 626 patients with chronic obstructive pulmonary disease were participated to the COPD integrated care program in a medical center in northern Taiwan. We retrospectively analysed 132 patients, who had received blood analysis for sensitization to eleven common environmental allergens (feather chicken, Alternaria, Aspergillus, Cladosporium, Penicillium, cat, dog, housedust, cockroach mix, mite farinae, mite pterony) using MAST allergen test. Sensitization status was defined as >= class 1 to any tested allergens mentioned above. Clinical association was evaluated including symptoms, exacerbations, baseline and longitudinal lung function.

Results: 34 of 132 patients had sensitization to at least one of the tested allergens, with 22.7% sensitized to mite farinae, 18.2% sensitized to mite pterony, 6.8% sensitized to housedust, and 6.1% sensitized to corckroach. Sensitization to any tested allergens was associated with higher total IgE level (mean: 563.5 IU/mL v.s. 164.02 IU/mL, $P < .001$). No significant association with baseline FEV1, response to bronchodilator test, CAT score, GOLD group, frequency of acute exacerbation and admission within one year before participate into the program was identified. Longitudinal FEV1 and FEV1 change within two years after the patients participated into the program was also not significantly associated to allergen sensitization.

Conclusions: In our study, about one-fourth of patient with COPD was sensitized to the common environmental allergens. Allergen sensitization was significantly associated with higher total IgE level in patients with COPD. However, no significant association with symptoms, lung function and exacerbation was identified.

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

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

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The Clinical Effect of Inhaled Corticosteroid Withdrawal in stable Chronic Obstructive Pulmonary Disease Patients Who Received Long Term Triple Therapy

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Introduction: Long-term use of inhaled corticosteroids (ICS) is associated with adverse reactions. Currently there were no strict guidelines to follow regarding the timing or eligibility about discontinuation of inhaled corticosteroids in stable chronic obstructive pulmonary disease (COPD).

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 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.

Results: A total 37 COPD patients who received triple therapy for more than 6 months were enrolled. Discontinuation of inhaled corticosteroids was performed. The age was 72.21 ± 11.08 years among our patients and 86.4% (n= 32) of them were male. The post-bronchodilator FVC was 2.36 ± 0.57 L at baseline and 2.42 ± 0.18 L at 6 months (*P*= 0.723). The post-bronchodilator FEV1 was 1.31 ± 0.39 L at baseline and 1.24 ± 0.13 L at 6 months (*P*= 0.655). No significant difference was observed in lung function change at sixth months of follow-up compared to the baseline. The CAT score (9.67 ± 5.27 vs. 6.43 ± 2.30, *P*= 0.197) or mMRC scale (2.10 ± 0.59 vs. 1.78 ± 0.69, *P*= 0.344) did not show significant difference, either. In the follow-up period, 5.4% (n= 2) had documented acute exacerbation. One patient died because of COPD.

Conclusions: In stable COPD patients who have a blood eosinophil < 300 and who received triple therapy for more than 6 months, discontinuation of ICS did not lead to increased exacerbation rate, significant reduction of lung function or worsening of symptoms.

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

慢性阻塞性肺病個案較非慢性阻塞性肺病個案容易形成肌少症

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The incidence of sarcopenia is higher in the group of COPD subjects than non-COPD subjects

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Background: The incidence and prevalence of sarcopenia is strongly age, sex, and diseases dependent. High senile and men are more likely to become sarcopenia had been proven. The purpose of this study was to identify which group of older adults with and without chronic obstructive pulmonary disease (COPD) was more easily to become sarcopenia.

Methods: Our participants are a group of healthy older people who live in retirement homes and can take care of their daily lives without nursing assistance. There were 305 enrolled and the average age was 81.8 years old with 43.3% being male. The incidence of COPD was 12.5% according to the 2017 GOLD guidelines. There were 38 in group of COPD subjects and 267 in the group of non-COPD subjects. There were 20 had sarcopenia in 25 COPD of 132 male subjects and 5 had sarcopenia in 13 COPD of 173 female subjects according to Asian Working Group for Sarcopenia (AWGS) 2019 criteria.

Results: The incidence and prevalence of sarcopenia in the group of COPD and non-COPD subjects were explored in our study. Twenty-five from 38 COPD subjects and 109 from 267 non-COPD subjects had sarcopenia (odds ratios (OR): 2.79; 95% CI= 1.37-5.69; *p* value=0.005). Five from 13 female COPD subjects and 53 from 160 female non-COPD subjects had sarcopenia (odds ratios (OR): 1.26; 95% CI= 0.39-4.04; *p* value=0.696). Twenty from 25 male COPD subjects and 56 from 107 male non-COPD subjects had sarcopenia (odds ratios (OR): 3.64; 95% CI= 1.27-10.42; *p* value=0.016).

Conclusion: The group of COPD subjects is more likely to have sarcopenia than the group of non-COPD subjects, especially in the group of male COPD subjects.

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

COVID-19 疫情下影片輔助衛教對於氣喘病患使用吸入型藥物之正確率影響：一歷史對照研究

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Effectiveness of video-based inhaler education on the accuracy of inhaler technique in asthma patients during the COVID-19 pandemic: a historical comparator study

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Purpose: Inhaler technique plays a central role in achieving total control of asthma. Face-to-face education, involving demonstration of inhaler technique by asthma case managers followed by repeating the technique by patients, is a common method for inhaler technique teaching in clinical practice. However, face mask mandate during the COVID-19 pandemic precluded the performance of face-to-face inhaler education. To overcome the barrier of inhaler education during the COVID-19 pandemic, we developed a video-based education program to replace physical demonstration of inhaler technique for patients with asthma. This study aimed to evaluate the effectiveness of the video-based education program on the accuracy of inhaler technique in patients with asthma.

Materials and Methods: This study included 192 patients with asthma who were referred to the inhaler education center in a medical center between January 1, 2019 and December 31, 2021. A pre-defined inhaler technique checklist was used to evaluate the accuracy of inhaler technique. Difficulties in the use of inhalers were evaluated by questionnaires between February 1, 2020 and September 30, 2020. Video-based education program was started from October 1, 2020. We compared the accuracy of inhaler technique among three time periods, namely face-to-face education method before the COVID-19 pandemic, face mask mandate stage without video-based education program, and the stage using video-based education program.

Results: The mean accuracy of inhaler technique using the face-to-face method was 94.1%, with the highest correct rate in the use of soft-mist-inhaler (SMI) with aerochamber (100%) and lowest in metered-dose-inhaler (MDI) (91.5%). In the early phase of COVID-19 pandemic when physical demonstration of inhaler technique was prohibited, the mean accuracy of inhaler technique decreased to 89.6% as compared to the baseline (89.6% vs 94.1%, $p = 0.002$). The result of inhaler technique difficulty questionnaire showed that lack of acknowledge of inhaler (25%), poor memory (24%) and worries about side effects (14%) were the three most common barriers for the accurate use of inhalers. After the implementation of video-based education of inhaler technique, the mean accuracy of inhaler technique significantly increased to 96.4% ($p< 0.001$).

Conclusions: Our data suggest that face mask mandate during the COVID-19 pandemic had negative impact on inhaler technique learning and video-based education program is a feasible approach to mitigate the unfavorable effect.

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

慢性阻塞性肺病病患腸道菌和肺功能下降之關聯性:一年追蹤性研究

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Relationship between gut microbiota and lung function decline in patients with chronic obstructive pulmonary disease: A 1-year follow-up study

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Purpose: Chronic obstructive pulmonary disease (COPD) is a chronic inflammatory lung disease characterized by a persistent limitation in airflow. Gut microbiota is closely correlated with lung inflammation. However, gut microbiota has not been studied in patients with declining lung function, due to chronic lung disease progression.

Materials and Methods: Stool samples were obtained from 55 patients with COPD that were in in stable condition at enrolment (stage 1) and at a 1-year follow-up (stage 2). After extracting stool DNA, we performed next generation sequencing to analyse the distribution of gut microbiota.

Results: Patients were divided to control and declining lung function groups, based on whether the rate of forced expiratory volume in 1 second (FEV1) had declined over time. An alpha diversity analysis of initial and follow-up stool samples showed a significant difference in the community richness of microbiota in the declining function group, but not in the control group. At the phylum level, Bacteroidetes was more abundant in the control group and Firmicutes was more abundant in the declining function group. The Alloprevotella genus was more abundant in the control group than in the declining function group. At 1-year follow-up, the mean proportions of Acinetobacter and Stenotrophomonas significantly increased in the control and declining function groups, respectively.

Conclusion: Some community shifts in gut microbiota were associated with lung function decline. Future studies should investigate the mechanism underlying alterations in lung function, due to changes in gut bacterial communities, in 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)

PB18

慢性阻塞性肺病和非慢性阻塞性肺病個案形成肌少症的致病機轉是不同的

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The pathogenesis of sarcopenia is different in the group of male COPD and non-COPD subjects

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Background: The incidence and prevalence of sarcopenia is strongly age, sex, and diseases dependent. Men are more likely to develop sarcopenia according to previous study. The purpose of this study was to identify possible pathogenesis of sarcopenia for the male older adults with and without chronic obstructive pulmonary disease (COPD) using plasma metabolites.
Methods: Our participants are a group of healthy older people who live in retirement homes and can take care of their daily lives without nursing assistance. There were 305 enrolled and the average age was 81.8 years old with 43.3% being male. The incidence of COPD was 12.5% according to the 2017 GOLD guidelines. There were 38 in group of COPD subjects and 267 in the group of non-COPD subjects. There were 20 had sarcopenia in 25 COPD of 132 male subjects and 5 had sarcopenia in 13 COPD of 173 female subjects according to Asian Working Group for Sarcopenia (AWGS) 2019 criteria. Mass spectrometry-based profiling of metabolites in plasma of all participants were measured and then the results were calculated the difference between the group of male COPD and non-COPD subjects with/without sarcopenia.
Results: Metabolite patterns of male COPD and non-COPD subjects with/without sarcopenia were explored in our study. Plasma acylcarnitines (C2, C4, C5, C9 and C14) were identified with higher concentrations with significant difference in the group of male non-COPD subjects with sarcopenia. Plasma amino acid (BCAA, essential AA, Arg, Ile, Leu, Lys, Orn, Thr, and Val) were identified with lower concentrations with significant difference in the group of male non-COPD subjects with sarcopenia. The concentration of plasma acylcarnitines and amino acid in the group of male COPD subjects with sarcopenia did not have difference with significant difference compared with the group of male COPD subjects without sarcopenia.
Conclusion: The pathogenesis of sarcopenia in the group of male COPD and non-COPD subjects may be different by the metabolomic 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)

PB19

台灣前兩例熱蒸氣消融術個案半年追蹤報告

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The 6-Months Results of The First Two Cases of Bronchoscopic Thermal Vaper Ablation in Taiwan

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Purpose: Bronchoscopic thermal ablation (BTVA) is a naval intervention for emphysema treatment in Taiwan. We reported the results of 6-months follow up for the first 2 cases.

Materials and Methods: We analyzed the change of standard pulmonary function test (PFT), diffusing capacity of the lung for carbon monoxide (DLCO), six-minute walking distance (6MWD), St. George's Respiratory Questionnaire (SGRQ) and severe adverse effect (SAE). We also compared these data with previous reported data (STEP-UP trial)

Results: In 3-months after BTVA, the changes for the 2 patients including: FEV1 +40mL/ +300mL; RV +90mL/ -110mL; DLCO +6%/ -5%; 6MWD +25meter/ +70meter; SGRQ -34.13/ -21.51. In 6-months after BTVA, the results of followed indexes showed FEV1 +160mL/ +110mL; RV -560mL/ -500mL; DLCO -13%/ -1%; 6MWD +115meter/ +100meter; SGRQ -21.9/ -28.55. The 2nd case has SAE with *Pseudomonas aeruginosa* pneumonia plus bacteremia/ respiratory failure, and discharged smoothly after 1 month hospital treatment course. According to STEP-UP trial, results of change in these indexes between treatment and control groups in 3 months/ 6months were: FEV1 +80.5mL/ +130.8; RV -44.1mL/ -302.5mL; 6MWD +29.4meter/ +30.5meter; SGRQ-C -6.6/ -6.7. The overall SAE rate in 6 months was 36%.

Conclusions: Compared with STEP-UP trial data, the treatment response of BTVA might be better in Oriental group than Caucasian group in same treatment setting, but we need more experience to proof it.

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

成人先天性囊腫性腺瘤樣畸形-病例報告

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Adult congenital cystic adenomatoid malformation- Case Report

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Introduction: Congenital cystic adenomatoid malformations (CCAMs) are a malformation of the lower respiratory tract. It's typically diagnosed in the prenatal or neonatal period and is rarely encountered in the adult population. Patients with CCAMs may present asymptomatic initially but will be at high risk of recurrent pneumonia, hemorrhage, pneumothorax, and malignancy. We here present a case of adult CCAMs, which are asymptomatic but then have recurrent pneumonia.

Case presentation: A 25-year-old man Taiwanese is a restaurant worker, non-smoker, not drink alcohol, not chew betelnuts, without systematic disease. He had productive cough with bloody-tinged content. He came to our Chest Medicine clinic for help, and the chest X-ray revealed cystic formation at the right middle lung field. The chest CT revealed complicated cysts and compressive pneumonitis in the right lower lobe. The received treatment had clinical improvement. Five months later, he presented a productive cough and hemoptysis. His chest X-ray revealed an air-fluid level over the right lower lung field, and chest CT showed huge cystic lesions with an air-fluid level mainly occupying the right lower lobe. The Uni-port video-assisted thoracic surgery (VATS) was performed for right lower lobe lobectomy and lymph node dissection, and the pathology revealed congenital pulmonary airway malformation, type I, and reactive hyperplasia of the lymph nodes over the peri-bronchial area. After discharge, he visited the Chest Medicine clinic and Thoracic Surgery clinic for further management.

Conclusion: CCAM is a rare lung disease in the adult. Its clinical presentation may be asymptomatic and then recurrent pneumonia, and may be malignancy transformation. We need to consider this differential diagnosis in patients with hemoptysis and recurrent pulmonary 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)

PB21

小呼吸道功能障礙於成人氣喘、老人氣喘以及慢性阻塞性肺病之相互比較

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Comparison of Small Airway Dysfunction in Young and Elderly Asthma versus Chronic Obstructive Pulmonary Disease

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Purpose: Small airway dysfunction (SAD) affected by aging and pathophysiological change in asthma and COPD remains unclear. We aim to compare small airway resistance, reactance, and reversibility in relation to spirometry and type 2 inflammatory biomarkers in young asthma, elderly asthma, and COPD.

Materials and Methods: The newly diagnosed asthma and COPD patients who received bronchodilator tests and impulse oscillometry (IOS) between May 2017 and August 2021 were reviewed. A total of 77 COPD patients and 77 age- and gender-matched elderly asthmatics (EA, age≥ 60 years) as well as 165 asthmatic patients age <60 years classified as young asthma (YA) group were selected.

Results: The airflow obstruction (FEV1/FVC and FEF25-75%) were significantly more severe in COPD than in YA and EA. The airway resistance and reactance indicated by R5-R20, X5, Fres, and AX, were significantly lower in YA than in COPD. The EA had lower X5 but not R5-R20, Fres, and AX as compared to COPD. The correlations between spirometric and IOS parameters were statistically significant in both asthma and COPD. In asthma, blood eosinophil counts (BEC) and IgE levels were significantly correlated with the reduction of AX after bronchodilator test. In COPD with BEC ≥150u/L, the IgE levels were significantly correlated with the reduction of X5, Fre, and AX.

Conclusions: The difference in pathophysiological change in small airways and duration of progression may determine the variable severity of SAD in asthma and 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)

PB22

插管患者之氣囊漏氣測試的相關危險因素分析

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The risk factors associated with cuff leak test in intubated patients

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Purpose: The endotracheal tube cuff leak test (CLT) is a common method to predict the laryngeal edema or upper airway obstruction prior to tracheal extubation. A cuff leak absolute volume less than 110 mL is one of the thresholds for CLT. The real risk factors associated with CLT are still undetermined. The aim of our study is to explore whether the risk factors are related to CLT in intubated patients or their successful rate of extubation.

Materials and Methods: Using the Chang Gung Research Database, we identified ventilated patients with acute respiratory failure in the intensive care unit (ICU) of cardiology, neurology and neurosurgery between 2016 and 2020. CLT was conducted prior to extubation. The failure of CLT was defined by CLT≤110ml or ≤24%. The CLT results, clinical parameters, and extubation outcomes were recorded.

Results: Of 4681 intubated patients, 399 patients (8.6%) had a failure of CLT. Compared to the CTL success group, the CLT failure group was older, with more female, lower Glasgow coma score (GCS), higher rate of renal failure and pneumonia, and longer days of ventilator support. Among the parameters of weaning profile, the CLT failure group had a lower tidal volume, a higher rapid shallow breathing index (RSBI) and a lower maximal inspiratory pressure (PiMax). The endotracheal tube (ET) size was not associated with CLT. However, the CLT failure group was frequently receiving more corticosteroids ($p<0.01$) and epinephrine ($p<0.01$). Female, renal failures, pneumonia, days of ventilator support, PiMax and use of corticosteroids were independently associated with a failure of CLT in intubated patients. The successful rate of weaning in the CLT failure group (36.59%) was significantly lower compared to the CLT success group (45.41%, $p=0.0009$). Lower tidal volume, longer days of ventilator support and increased ET size were associated with increased risk of reintubation during hospitalization.

Conclusions: Intubated patients with low CLT were associated with older, more female, lower GCS, higher rate of renal failure and pneumonia, and longer days of ventilator support. Failure of CLT may decrease the rate of successful weaning from ventilator. We highlight the importance of CLT in assessing the intubated patients.

Keywords: cuff leak test, weaning, respiratory failure, extubation.

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

肺阻塞整合照護介入期時間對於病患預後的影響

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The Impact of the Duration of the Integrated Disease Management Program on COPD-related Outcomes

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Purpose: We aim to assess the impact of the duration of the integrated disease management (IDM) program on COPD-related outcomes in real-world setting.

Materials and Methods: A retrospective cohort study was conducted among patients who completed the IDM program for 1 year between April 1, 2017 and December 31, 2018. We used CAT MCID as the primary outcome to determine the optimal cutoff point of duration of the IDM program on achieving CAT MCID improvement using receiver operating characteristic (ROC) analysis. We examined the relationship between intervention duration and improvement in CAT scores achieved MCID thresholds using logistic regression. Time-dependent Cox proportional hazards models was used to estimate risk of exacerbations.

Results: Among 3,771 enrolled COPD patients, the change from baseline to each follow-up visit in CAT score improved by 0.87 to 1.4 within one year. An optimal cut-off of intervention duration for achieving MCID improvement in CAT score was 9 months. For GOLD B and GOLD D, both CAT score and proportion of patients achieved MCID improvement in CAT were greater than GOLD A and GOLD C. Moreover, treatment-naïve patients also found greater improvement in CAT score than treatment-experienced patients. Risk of COPD-related hospitalizations decreased in patients who received interventions longer than 1 year.

Conclusions: This is the first real world study indicating that 9 months is the most effective intervention duration for COPD IDM program on achieving MCID improvement in CAT. The potential better beneficiary group for COPD IDM program are GOLD B, GOLD D, and treatment-naïve 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)

PB24

比較單方及複方支氣管擴張劑於肺阻塞 GOLD B 病患之臨床預後

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Comparison of The Clinical Outcomes of Dual Therapy and Monotherapy in COPD Group B Patients

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Purpose: Our aim is to compare the efficacy of dual therapy with long-acting β-agonist (LABA)/ long-acting muscarinic antagonist (LAMA) combination compared with monotherapy with LAMA or LABA for patients with COPD GOLD B in real-world setting.
Materials and Methods: A retrospective cohort study was conducted among patients classified into GOLD B who receiving mono-bronchodilator therapy or dual-bronchodilator therapy between April 1, 2017 and December 31, 2018 were included. We evaluated the efficacy of dual versus monotherapy in the following outcomes: risk of acute exacerbation (mild, moderate, and severe), risk of escalation of bronchodilator, changes in expiratory volume in 1 second (FEV_1) and COPD Assessment Test (CAT) score. Cox proportional hazards models was used to estimate risk of exacerbations and escalation of bronchodilator. Least-Squares Means were used to estimate the mean values of changes in FEV1 and CAT score.
Results: A total of 1,844 GOLD B patients were enrolled. Dual therapy was significantly more effective in decreasing the risk of mild AECOPD (HR: 0.823, 95% CI: 0.727 to 0.932) and risk of escalation of bronchodilator (HR: 0.345, 95% CI: 0.283-0.452). Dual therapy resulted in significant improvement in FEV1 (change from baseline to 1-year after enrollment: 0.027L, 95% CI: 0.008-0.046). Both mono and dual therapy were significantly improved in CAT score (change from baseline to 1-year after enrollment: mono therapy: -1.97, 95% CI: -2.36 to -1.58; dual therapy: -1.71, 95% CI: -2.10 to -1.31).
Conclusions: Our real-world study demonstrate that dual therapy have beneficial effect on decreasing the risk of mild AECOPD, escalation of bronchodilator, and improvements in FEV_1 in patients with COPD GOLD B.

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

藉由肺功能的改變來比較雙長效合併支氣管擴張劑於肺阻塞病人的影響

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Differences in pulmonary function improvement after once-daily LABA/LAMA fixed-dose combinations in patients with COPD

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Purpose: This real-world study evaluated the efficacy of once-daily long-acting β2-agonist (LABA)/long-acting muscarinic antagonist (LAMA) fixed-dose combinations (FDCs) for improving spirometry in patients with chronic obstructive pulmonary disease (COPD).

Materials and Methods: Patients with COPD who were treated with once-daily LABA/LAMA FDCs for 12 months were enrolled. We evaluated their lung function improvement after 12 months treatment with different LABA/LAMA FDCs.

Results: A total of 198 patients with COPD who were treated with once-daily LABA/LAMA FDCs were analyzed. 114 patients were treated with umeclidinium/vilanterol (UMEC/VIL); 34 patients were treated with indacaterol/glycopyrronium (IND/GLY) and 50 patients were treated with tiotropium/olodaterol (TIO/OLO). The forced expiratory volume in 1 second (FEV1%) was significantly increased in the patients treated with all three once-daily FDCs (55.2% to 60.9%, p=0.012 for UMEC/VIL, 58.2% to 63.6%, p=0.023 for IND/GLY, and 54.1% to 57.7%, p=0.009 for TIO/OLO). Treatment of COPD patients with TIO/OLO resulted in a significant improvement in both forced vital capacity (FVC%) (71.7% to 77.9%, p=0.009) and residual volume (RV%) (180.1% to 152.5%, p<0.01) compared with those treated with UMEC/VIL (FVC%: 75.1% to 81.5%, p < 0.001; RV%:173.8% to 165.2%, p=0.231) or IND/GLY (FVC%: 73.9% to 79.3%, p = 0.08; RV%:176.8% to 168.3%, p=0.589).

Conclusions: Patients treated with UMEC/VIL or TIO/OLO showed better improvement in FVC compared to those treated with IND/GLY. On the other hand, those receiving TIO/OLO had better improvement in RV compared to those who received UMEC/VIL or IND/GLY.

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

營養狀態及發炎狀況是慢性呼吸照護病房病人脫離呼吸器的重要因子

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The Impact of Nutritional and Inflammatory Status on Weaning from Prolonged Mechanical Ventilation in Respiratory Care Ward

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Purpose: We aim to investigate the patients' outcome, weaning rates and factors related to the successful weaning from prolonged mechanical ventilation (PMV) at respiratory care ward (RCW).

Materials and Methods: This was a retrospective observational study performed in a 20-bed RCW at E-DA Cancer Hospital, data collected from May 2017 to August 2022. Patient characteristics, demographics, laboratory data, physiological and clinical variable were analyzed. Successful weaning was defined as patient independence from MV for 5 consecutive days and nights. Demographic, clinical characteristics and laboratory data were compared using Student *t* test or Chi-Square test. Variables associated with successful weaning were performed both univariate and multivariate analyses. A p value of less 0.05 was considered statistically significant.

Results: A total of 133 patients (59.4% male) with PMV were included in this study (Figure 1). The average age was 71.5±15.3 years (IQR 18.5-91). The median day on mechanical ventilator was 172 days (113-343 days). The overall survival rate was 55.6%, weaning rate was 36.1% (48/133). The significant factors for successful weaning included age, Acute Physiology and Chronic Health Evaluation II (APCHE II) scores, duration of mechanical ventilator, comorbidity of cancer diseases, rapid shallow breath index (RSBI), maximum inspiratory force (Pimax), body mass index (BMI), hemoglobulin (Hb), neutrophile count, lymphocyte count, neutrophile/lymphocyte ratio (NLR), albumin, blood urea nitrogen (BUN), daily ingestion of calories and protein ($p<0.05$ for all) (Table1). The results of the stepwise multivariate logistic regression analysis revealed that Pimax (odds ratio [OR]=1.122 ; 95% CI=1.053-1.195; $p<0.001$), BMI<24 (OR=7.557; 95% CI=2.169-26.327; p=0.001), NLR≦6 (OR=7.091; 95% CI= 1.824-27.568; p=0.005) were significant predictors of successful weaning (Table 2).

Conclusions: Aside from traditional weaning parameter Pimax, nutritional status (BMI<24) and inflammatory marker (NLR≦6) are important predictors of successful weaning in RCW.

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

慢性阻塞性肺疾病病人壓迫性骨折風險因子探討

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Risk factors for compression fracture in chronic obstructive pulmonary disease (COPD) patients

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Background: Osteoporosis is a systemic skeletal disease which increases the bone fragility and the susceptibility to fracture. Preventive measures and early intervention for osteoporosis could reduce the disease burden, treatment costs, morbidity, and mortality. According to previous studies, vertebral fractures are associated with increased risk of further vertebral fractures and increased risk of nonvertebral fractures. However, currently there was no specific tools to screen osteoporotic vertebral compression fracture (OVCF) in chronic obstructive pulmonary disease (COPD) patients.

Method: This study enrolled 140 patients with the diagnosis of chronic obstructive pulmonary disease (COPD). Patients were categorized into two groups: patient without compression fracture and patients with compression fracture by a lateral view lumbosacral radiography according to Genant grades. Each participant was interviewed by a well-trained nurse to complete the questionnaire that incorporated possible factors related to osteoporotic fracture. (Age, gender, weight, body mass index; post bronchial dilator FEV1<50%; decrease heigh more than 3 cm; occiput to wall distance more than 3 cm; previous fracture; parent fractured hip; glucocorticoid use; alcohol use; current smoking; rheumatoid arthritis; diabetes mellitus.)

We use Mann-Whitney U test to test discontinuous variable and logic regression for continuous variable. Receiver operating characteristic (ROC) curve and the area under the curve (AUC) was used to analysis the sensitivity/specificity.

Result: Totally 140 patients were enrolled in our study. There were 71 patients without compression fracture (Genant grades 0) and 69 patients with compression fracture (Genant grades 1.2.3.) Among the factors maintained above, age and body weight index had statistical significance with the rate of compression fracture. (Age- compression fracture: p value: 0.028; BMI- compression fracture: p value: 0.038.)

Conclusion: Age and body weight were found related to risk of compression fracture. Traditionally, body weight index was thought as a protective factor for osteoporosis in general population. However, increased boy weight index associated with increase compression fracture rate in COPD patients in our study. Development of a specific screening tool for osteoporosis in COPD patients might be necessary due to special conditioning of the 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)

PB28

嚴重氣喘患者對於使用生物製劑治療後的呼吸機械生理變化

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Alterations of Respiratory Mechanics in Clinical Response to Biological Therapy in Severe Asthma

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Purpose: We aim to find the differences in impulse oscillometry parameters between clinical responders and non-responders in patients with severe asthma under biological therapy.

Materials and Methods: Patients with severe asthma under biological therapy (including anti-IgE and anti-IL-5 therapy) were enrolled in an observational cohort study at 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, exacerbation, and comorbidities were also collected. The primary endpoint was the relationship between the parameters of impulse oscillometry and clinical response. The determination of clinical responder including zero exacerbation, withdraw of baseline oral corticosteroid, increase 100ml of pre-bronchodilator FEV1, or well-controlled asthma symptoms according to previous clinical trials.

Results: Among 13 patients enrolled in the study, 61.5% of patients were women, 69.2% were never-smokers. 12 patients received long-acting muscarinic antagonists, 6 patients received anti-IgE therapy and other 7 patients received anti-IL-5 therapy. Only 2 patients reached all clinical response after biological therapy. 9 patients achieved withdrawal of baseline corticosteroid, and 7 patients had zero exacerbations after biologic therapy. 12 patients reached an increase of ACT score at least 3 scores compared to baseline, which fulfilled minimal clinically important difference (MCID), and 9 patients achieved well-controlled asthma (ACT score≥20). 5 patients had an increase of 100ml of pre-bronchodilator FEV1. Compared to different clinical outcomes, the reduction of resistance in 20Hz (R20) in those patients who successfully withdraw oral corticosteroid, was significantly larger than those who failed. (median difference: -0.06 vs. 0.01 kPa/l/s, P=0.034).

Conclusions: The application of impulse oscillometry in patients with severe asthma might help the clinician to evaluate disease control and it might be associated with biological treatment responsiveness. Further research are warrant for elucidating the pathophysiology of severe 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)

PB29

運動攝氧效率異常對慢性阻塞性肺病臨床表現之影響

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The association between impaired oxygen uptake efficiency during exercise and clinical outcomes in chronic obstructive pulmonary disease

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Purpose: Chronic obstructive pulmonary disease (COPD) is characterized by exertional dyspnea, airflow limitation and reduced exercise capacity. Oxygen uptake efficiency plateau (OUEP), primarily reflect the cardiovascular function, is known to be decreased in COPD. However, the efficacy of OUEP to predict the clinical status of COPD is unknown. Thus, we aimed to explore whether low OUEP is associated with more symptoms, more airflow limitation, or poor exercise capacity.

Materials and Methods: We retrospectively evaluated patients with COPD in a single hospital database. Clinical outcomes, including modified Medical Research Council dyspnea scale (mMRC), the distance of six-minute walk test (6MWT), the results of pulmonary function test and cardiopulmonary exercise testing were collected. The association between OUEP and these clinical outcomes were analyzed.

Results: Total 90 patients with COPD were enrolled and 86% was men. Average forced expiratory volume in one second (FEV1) was 67.61 ± 24.00% of predicted. Patients with OUEP below the upper limit of normal have significantly lower FEV1 ($p = 0.043$), lower diffusing lung capacity for carbon monoxide ($p = 0.007$), higher level of nadir $\dot{V}E/\dot{V}CO2$ ($p < 0.001$), shorter 6MWT distance ($p = 0.008$) and lower level of nadir SpO2 during exercise ($p = 0.046$). Besides, the correlation between OUEP and mMRC ($R2 = 0.14$) is stronger than the correlation between nadir $\dot{V}E/\dot{V}CO2$ and mMRC ($R2 = 0.09$).

Conclusions: In our study, we found that low OUEP is associated with more symptoms, more airflow limitation and poor exercise capacity. Besides, compared with nadir $\dot{V}E/\dot{V}CO2$, OUEP has better correlation with clinical symptoms.

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

Amiodarone 相關間質性肺病 – 多變之影像暨組織學特性與避免同藥暴露之重要性

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Amiodarone-related interstitial lung disease – variable radiographic and histological features and the importance of avoiding further exposure

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Purpose: We report the clinical presentation, radiographic features, and histological findings of three patients with amiodarone-related interstitial lung disease (ILD).

Materials and Methods: We carefully reviewed the medical records of the patients. Relevant information and images were collected and presented in this thematic poster.

Results: Case 1 was a 62-year-old man who had taken amiodarone (400 mg/day) for atrial fibrillation (Af) from another hospital for about 6 months. He presented to our emergency room with pneumonia and hepatitis. Initial chest CT showed large consolidations in both lungs, compatible with an organizing pneumonia (OP) pattern. Diffuse hyperintensity of the liver was also noticed. His pneumonia progressed quickly to respiratory failure. Histology of the wedge-biopsied lung tissue (from LUL) revealed features of a nonspecific interstitial pneumonia (NSIP) pattern together with many foamy macrophages in the alveoli. Lamellar inclusion bodies were observed in these macrophages under electronic microscopy. Despite systemic steroid treatment and no further amiodarone exposure, the patient later died from ventilator-associated pneumonia. Case 2 was a 72-year-old male who had his first episode of amiodarone-related ILD in May 2012, after 18 months of amiodarone treatment (600 mg/day for 30 days and then 200 mg/day) for Af. The chest CT revealed an OP pattern in both lungs, whereas histology of wedge-biopsied lung tissues (from RUL & RLL) reported a mixed pattern of OP and lymphocytic interstitial pneumonia. His ILD gradually resolved after shifting amiodarone to dronedarone, plus an extended course of low-dose prednisolone (tapering off over 6 months). In June 2020, due to increasing ectopic beats and palpitation, his dronedarone was again shifted to amiodarone by the cardiologist. Within weeks, he experienced symptomatic recurrence of the ILD. Amiodarone was immediately replaced by rytmonorm, and low-dose prednisolone was administered. His ILD improved both clinically and radiographically over the next 4 months. Case 3 was a 75-year-old man who developed nonproductive cough and exertional dyspnea after 16 months of amiodarone (200 mg/day) for Af. Chest CT showed a combination of extensive ground-glass and reticular opacities, suggesting a NSIP pattern. The patient recovered well following low-dose prednisolone and prompt cessation of amiodarone.

Conclusions: Despite its very common usage, the potential pulmonary toxicity of amiodarone must not be overlooked. For patients receiving amiodarone, regardless of dose and duration, unexplained airway symptoms should herald pertinent surveys to exclude ILD. For confirmed cases of amiodarone-related ILD, further exposure to amiodarone must be avoided as 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)

PB31

一名 55 歲女性 MDA-5 及 RO-52 抗體陽性無肌變型皮肌炎相關的廣泛間質性肺病於切片術後快速惡化併發難治低血氧至死亡個案報告及文獻回顧

陳奇恩[1], 李枝新[1], 陳瓏方[2], 張彥俊[3]

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Rapidly Progression of Diffuse Parenchymal Lung Disease in A Woman with Dual Positives of Anti-MDA-5 and Anti-RO-52 Amyopathic Dermatomyositis Resulted in Refractory Hypoxemia and Death Following Surgical Lung Biopsy: A Case Report and Literature Review

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Case description: A 55-year-old female presented with Gottron's papule, mechanic's hands, and periungual erythematous change. She was diagnosed with amyopathic dermatomyositis with dual positives of anti-MDA-5 and anti-RO-52 antibodies. Despite aggressive immune modifying therapy and comprehensive antimicrobial treatment, she developed rapidly progressive diffuse parenchymal lung disease following the surgical biopsy that resulted in refractory hypoxemia and death. We performed a literature review and scrutinized the clinical course for the possible etiologies causing devastating complications following the surgical biopsy for our patient. We found that transbronchial lung cryobiopsy, an emerging novel technique, could be a potential diagnostic alternative to surgical lung biopsy to avoid post-operative morbidities and mortalities in patients with amyopathic dermatomyositis with diffuse parenchymal lung disease.

Conclusion: Clinically amyopathic dermatomyositis with dual positives of anti-MDA-5 and anti-RO-52 autoantibodies is usually accompanied by rapidly progressive Interstitial lung disease. It carries excessively high mortality despite aggressive immune-modifying therapies. For patients with suboptimal clinical response to maximal immune-modifying therapies and comprehensive anti-microbial treatment, histopathological diagnosis by surgical lung biopsy may be required. Shared decision-making with a thorough evaluation of the risks and benefits of the surgical procedures should be done cautiously. The risk of postoperative morbidities and in-hospital mortality of surgical lung biopsy in this population should not be neglected. In medical centers with adequate experience, transcronchial lung cryobiopsy through flexible bronchoscopy could be considered a reasonable diagnostic alternative to surgical lung biopsy.

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

病例報告論文-肉芽腫性多血管炎

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Granulomatosis with polyangiitis: A Case Report and Review of Literature

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Granulomatosis with polyangiitis (GPA), formerly called Wegener granulomatosis, is a rare vasculitis affecting small vessels. Clinically, it commonly affects the upper respiratory tract, lungs and kidneys, which lead to dyspnea, hemoptysis or hematuria. The damage to the organs can be fatal. The exact mechanisms leading to GPA are not well understood, it is now widely presumed that the anti-neutrophil cytoplasmic antibodies (ANCA) are associated with the inflammation in GPA. The diagnosis of GPA is based on clinical presentation, laboratory findings and image studies. Recently, the 2022 American College of Rheumatology and European Alliance of Associations for Rheumatology developed a revised classification criterion for GPA. Treatment consists of induction phase and maintenance phase with glucocorticoid or immunosuppressive agents such as cyclophosphamide, rituximab or methotrexate.

GPA is a rare disease in Taiwan, we reported a case of GPA, presented with bilateral lung cavitary nodules and consolidations. The diagnosis was proved by echo-guided lung biopsy. The patient showed good response to cyclophosphamide pulse therapy and was under maintenance therapy with rituximab and oral prednisolone currently.

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

肺泡蛋白質沉積症的台灣本土現況

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Epidemiology of pulmonary alveolar proteinosis in Taiwan

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Purpose: Pulmonary alveolar proteinosis (PAP) is rare disease manifested as alveolar macrophage dysfunction and abnormal accumulation of surfactant protein in the alveoli. In this nationwide, population-based study, we investigated the epidemiology of PAP in Taiwan, and discovered the comorbidities and prognostic factors of PAP.

Materials and Methods: From the National Health Insurance Research Database (NHIRD), we obtained comprehensive information about all patients of PAP in Taiwan between 1995 and 2013. The incidence, baseline characteristics comorbidities, and prognostic factors of PAP were investigated.

Results: The annual incidence rate of PAP was around 0.79 (range: 0.49-1.17) patients per million people after 2000, and the prevalence rate was 7.96 patients per million people by the end of 2013. In total, 276 patients of PAP were identified, including 177 (64%) and 99 (36%) patients with primary and secondary PAP, respectively. The median age of diagnosis was 53.8 years. The median survival was 9.6 years after the initial PAP diagnosis, and the 5-year survival rate was 65.96%. Twenty (7%) patients received whole lung lavage (WLL) within three months after the diagnosis had significantly better survival compared to the others. Multivariable Cox regression analyses showed that elder age, secondary PAP, and malignancy were associated with poorer survival, while WLL within 3 months of diagnosis might greatly improve the survival.

Conclusions: We demonstrated the epidemiology of PAP in Taiwan, showing several poor prognostic factors and the potential effectiveness of WLL. Further prospective studies based on registry are warranted to improve the diagnosis and treatment of PAP.

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

特發性肺纖維化的死亡相關因子分析

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Contributing Factors to Mortality of Idiopathic Pulmonary Fibrosis: Results from a Cohort in Taiwan (2000-2016)

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Introduction: Idiopathic pulmonary fibrosis (IPF) is a fibrosing interstitial pneumonia of unknown cause and is associated with typical features of usual interstitial pneumonia. It occurs primarily in older people and is presented by progressive worsening of dyspnea and lung function. Most importantly, it has a very poor prognosis with a median survival of 3–5 years.

Methods: We aimed to identify contributing factors to IPF mortality. We establish an IPF cohort including patients with newly diagnosed IPF among 2,000,000 persons in Taiwan Longitudinal Health Insurance Database between 2000 and 2016. We recorded demographic characteristics and baseline comorbidities from 1995 to the date of diagnosis. The endpoint of the study was set on December 31, 2016. Logistic regression analyses were performed to calculate odds ratios (ORs) and 95% confidence intervals (CIs).

Results: The study included 921 patients with newly diagnosed IPF. The mean age was 69.7±14.2 years, and 58.4% of patients were male. During the follow-up period of 3.77±4.09 years, the number of deaths was 334 (36.3%) and the time duration to death was 3.27±3.03 years. Logistic regression analyses adjusted for sex, age, and comorbidity identified several factors associated with IPF mortality, which included older age (adjusted OR = 2.79, 95% CI = 1.92–4.07), heart failure (adjusted OR = 2.09, 95% CI = 1.44–3.03), chronic obstructive pulmonary disease (adjusted OR = 1.93, 95% CI = 1.32–2.80), and male sex (adjusted OR = 1.68, 95% CI = 1.20–2.35).

Conclusions: The mortality rate of IPF was high and the time duration from diagnosis to death was short. Older age, male sex, heart failure and chronic obstructive pulmonary disease may be contributing factors to IPF 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)

PB35

運用機器學習方法量化高解析度電腦斷層中特發性肺纖維化體積

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Machine Learning Methods to Quantify Volume of Idiopathic Pulmonary Fibrosis in High-Resolution Computed Tomography

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Background: Idiopathic pulmonary fibrosis (IPF) is a chronic progressive fibrosing interstitial lung disease characterized by an increasing extent of fibrosis on high-resolution computed tomography (HRCT). The INBUILD trial showed that the annual rate of decline in FVC was significantly lower among patients who received nintedanib. However, the enrollment criteria for more than 10% fibrosis of lung volume on HRCT are not precise. The purpose of the study was to quantify the volume of fibrosis in HRCT using machine learning methods.

Methods: In this study, a total of 26 consecutive patients with IPF were included. An U-Net-based segmentation model is proposed to detect the area of fibrosis. For achieving good performance and detection time, the EfficientNet is employed in the encoder of the segmentation model. Moreover, to avoid the model overfitting problem, data augmentation is also applied to original images during model training. In our experiments, the dice similarity coefficient (DSC) is utilized to measure the similarity between the predicted fibrosis area and the ground truth.

Results: With 26 cases, the proposed model achieves 0.5889 average DSC. Furthermore, to further validate the performance of the system, 26 cases are divided into two sets according to the rate of fibrosis with a threshold of 10%. In the subset with fibrosis less than 10%, the average DSC is 0.5431 while the average DSC is 0.6425 in another subset. In addition, the U-test is executed and the p-value is calculated. The p-value is greater than 0.05 and indicates that the performance difference between the two subsets is not significant.

Conclusion: The quantification of fibrotic lung volume in IPF patients using machine learning methods showed moderate performance. The performance of machine learning methods between the fibrosis rate more or less than 10% was not statistically significant.

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

探討藍芽耳掛式生理穿戴裝置與肺纖維化病人肺功能與動態生理測試之相關性:前瞻性研究

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Evaluate the correlation of physical parameters obtained from Bluetooth ear-hook device, lung function test and parameters obtained from walking test in patients with fibrotic lung diseases: a prospective study

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Purpose: Exercise intolerance and shortness of breath were commonly found in patients with fibrotic lung disease. Parameters obtained from high resolution chest tomography (HRCT), spirometry and blood oxygen concentration were fundamental for these patients. It is suggested that parameters obtained from dynamic status rather than static status were more sensitive to reflect functional decline of patients. However, it is very difficult to obtain the dynamic parameters from patients during walking. The aim of current study is to explore the correlation of parameters obtained from wearable device and 6 min walking test (6MWT).

Materials and Methods: The prospective study enrolled patients who were diagnosed as fibrotic lung disease. Patient who has a resting oxygen level more than 95% and could tolerate with 6MWT was recruited. A Bluetooth ear-hook device was used to monitor five physical parameters, such as blood pressure, body temperature, heart rate, oxygenation level and perfusion index (PI) during 6MWT. Spearman's rank correlation coefficient was applied to analyze the correlation.

Results: A total of 71 patients were enrolled into study and completed the analysis. The demographic data showed age was 63 (IQR: 53-72), GAP score was 2.0 (1-3), FVC (%) was 74% (61-90%) and the FEV1(%) was 75% (54-88). The 6MWT showed SaO2 in pretest was 96.0 % (96- 97.5), SaO2 in posttest was 93.0% (87-96) and nadir 89.0% (82-93); the distance was 423 meters (351.5-486); and Borg Scale was 1.0 (0-2) in pretest and 4.0 (2-5) in posttest. From the Spearman`s rank correlation test, we found that perfusion index was significantly correlated to FVC (%),
FEV1(L), FEV1(%) and Borg Scale after 6MWT with a Spearman's rho was 0.25, 0.27, 0.33 and -0.35, respectively. The GAP score was significantly negative correlated to diastolic blood pressure, heart rate and maximal heart rate after 6MWT with a Spearman's rho was -0.33, -0.36, and -0.53, respectively.

Conclusions: Wearable Bluetooth ear-hook device can be applied in monitoring the dynamic physical function in patients with fibrotic lung disease during 6MWT test or during exercise. Further investigation regarding the usage of information obtained from the device is warrant 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)

PB37

探討肺纖維化病人 GAP score 與人工智慧移動影像分析技術及六分鐘運動生理參數之相關性:前瞻性研究

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Evaluate the correlation of GAP sore, parameters obtained from artificial intelligence gait image analysis and 6-min walking test in patients with fibrotic lung diseases: a prospective study

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Purpose: Gender, age, and the two physiologic variables in PFT “FVC” and “DLCO” have been recently integrated into the gender, age and pulmonary physiology (GAP) index, which can also precisely predict the survival rate in patients with fibrotic lung disease. The gait speed test is a simple functional performance measure for older adults or patients with chronic obstructive lung disease. Although artificial intelligence image analysis has been used for chest ray image, it was rarely used to analyze the physiological function in patients with fibrotic lung disease. The aim of current study is to evaluate the correlation of GAP sore, parameters obtained from artificial intelligence gait image analysis and 6-min walking test in patients with fibrotic lung disease.

Materials and Methods: The prospective study enrolled patients who were diagnosed as fibrotic lung disease. Patient who has a resting oxygen level more than 95% and could tolerate with 6MWT was recruited. An artificial intelligence (AI) gait image analysis system was conducted by using two cameras positioned in two different directions to capture images of patients during walking. Spearman's rank correlation coefficient was applied to analyze the correlation. The chi-square test was used to analyze discrete variables.

Results: A total of 65 patients were enrolled into analysis. Five parameters were defined by using AI gait image analysis system, which includes rhythm (step/sec), maximum stride (m), moving speed (m/sec), Joint swing angle analysis of forward leaning angle and average shoulder angle.

From the Spearman`s rank correlation test, we found that GAP score was significantly correlated to maximum stride and moving speed with a Spearman's rho was -0.39 and -0.42, respectively. In the comparison of GAP I & II-III, higher GAP score was also significantly decreased in maximum stride and moving speed.

Conclusions: An artificial intelligence (AI) gait image analysis system could be used as a dynamic functional assessment tool in evaluating the disease severity of fibrotic lung disease. Maximum stride and moving speed were moderate correlated the GAP score in the current study. Investigation regarding the usage of AI gait image analysis system is warrant 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)

PB38

Tocilizumab 治療在嚴重新冠肺炎合併特發性肺纖維化急性惡化的經驗

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Tocilizumab treatment experience in Severe COVID-19 with Acute Exacerbation of Idiopathic Pulmonary Fibrosis

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Tocilizumab, a potent interleukin-6 receptor antagonist, demonstrated survival benefit against severe COVID-19 in clinical trials. However, the safety and efficacy in multiple comorbidities population is unknown. A challenging case with severe COVID-19 disease and concurrent acute exacerbation of idiopathic pulmonary fibrosis is first ever present here. Hesitation about the prescription of tocilizumab has been solved by comprehensive multidisciplinary discussion in our interstitial lung disease board. The rationale of tocilizumab prescription is based on flourishing data on the role of IL-6 in acute exacerbation of idiopathic pulmonary fibrosis and potential benefit of fibroblast suppression in vitro. Successful management with much improved oxygenation and pulmonary infiltration is documented and further support the use of tocilizumab in such complex situation. Since scarcity of effective treatment for acute exacerbation of idiopathic pulmonary fibrosis, we also hope our case may light the enthusiasm of investigation on the role of IL-6 antagonist in management of acute exacerbation of idiopathic pulmonary fibrosis.

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

以全肺灌洗術治療肺蛋白沉積症-台大經驗分享

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Treating Pulmonary Alveolar Proteinosis with Whole Lung Lavage, experience at a medical center in Taiwan

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Purpose: Pulmonary alveolar proteinosis (PAP) is a rare interstitial lung disease characterized by the deposition of surfactant in the alveoli. Symptoms can range from asymptomatic to significant airway symptoms to respiratory failure. The current gold standard of treatment is whole lung lavage (WLL). The purpose of this study is to identify epidemiological, clinical, pathological features of patients with pulmonary alveolar proteinosis receiving follow up at our hospital. The efficacy as well as burden of whole lung lavage is analyzed for PAP patients who received it.

Materials and Methods: Adult patients with a diagnosis of alveolar proteinosis at our hospital were enrolled. Their demographic data, clinical presentation, pulmonary function tests were collected from our hospital's medical records. Since granulocyte–macrophage colony-stimulating
Factor (GM-CSF) auto-antibody level testing is not routinely available in Taiwan, a patient's PAP was considered unclassifiable if no secondary cause could be identified. We describe the effects that WLL has on lung function as well as associated procedural complications.

Results: A total of 37 patients with pulmonary alveolar proteinosis were followed up at our hospital between 1996 and 2021. Of these 37 patients, 11 patients' PAP were secondary to another attributable cause. Most patients (94.7%) were symptomatic with dyspnea at diagnosis. 18 patients underwent at least 1 unilateral whole lung lavage procedure at our hospital. For those who did not require WLL, 9 improved spontaneously or were mild, 1 resolved after hematopoietic stem cell transplantation for myelofibrosis, 6 had medical conditions unsuitable for lavage, 1 received segmental lavage via bronchoscopy, 1 underwent WLL at another hospital, and 1 was lost to follow-up. The mean diffusing capacity for carbon monoxide (DLCO) at diagnosis was 60.9 ± 19.1 ml/min/mmHg. A total of 72 WLL were performed. An outlier with advanced PAP complicated by pulmonary fibrosis required 27 WLL procedures. Otherwise, the median number of WLL performed per patient was 2 (one for each lung). The median duration of hospitalization per-procedure was 7.88 days. The mean duration of each procedure was 277 minutes. There was a significant improvement in DLCO in patients after receiving WLL (58.6±12.6 ml/min/mmHg to 84.7±18.6 ml/min/mmHg, p=0.006). Of the patients 14 who had post-procedural CT follow-up, 10 (71.4%). The most common adverse event associated with WLL was self-limited fever (11.1% of patients).

Conclusion: For patients without an identifiable secondary cause of PAP, whole lung lavage is safe, and it improves interstitial infiltration and DLCO.

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

台灣基層醫療院所使用 E 化系統進行慢性病個案管理之服務缺口:一個初步調查性研究

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The unmet needs of using information technology on managing chronic illness in primary care settings in Taiwan: A preliminary survey

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Purpose: The prevalence of chronic illness, such as diabetes, asthma, chronic obstructive pulmonary disease (COPD) and cardiovascular disease were increased in Taiwan due to the aging process of society. Primary care (PC) settings serve as important role and will pay much time and labors on providing health care service in such chronic illness. Therefore, using information technology (IT) to help PC physicians is a trend in health care system. The aim of current study is to survey the unmet needs of using IT on managing chronic illness in PC settings in Taiwan.

Materials and Methods: The current survey was conducted by using method of questionnaire survey to PC physicians who were key opinion leaders in Taiwan Medical Clinics Association. A total of 62 PC physicians were invited and 48 (77.4%) of them completed the questionnaire from July to September in 2022. The questionnaire has five domains including (1) basic information; (2) healthcare volume of diabetes, chronic kidney disease and asthma in pay-for-performance (P4P) program; (3) status of manpower and time spending on P4P program; (4) status of bi-directional referral with medical centers; (5) status of IT introduction in the management of chronic illness including attitude and suggestions regarding IT introduction.

Results: About 68.75% of PC physicians participated in P4P program. However, only 14.6% of them have used IT in the care process and case management. All of respondents (100%) would be willing to adopt an IT system for chronic disease management now or in the future. Regarding the expected functions of IT systems, 97.9% of the respondents suggest a reminder function to manage patient visiting and 95.5% of them ask for help in the declaration workflow of P4P program. In addition, an ideal IT system should have functions to help physicians to find new cases and to facilitate patient education. Finally, 89.6% of physicians want to a revolution of IT system on the base of current system rather than using a new one.

Conclusions: The current status of using IT system on managing chronic illness is not so popular and exists unmet needs in primary care settings. IT introduction in the health care system, especially in dealing with chronic illness are expected 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)

PB41

電腦斷層導引肺切片後醫源性空氣栓塞與高壓氧治療:病例報告

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Hyperbaric Oxygen Therapy in Treating Iatrogenic Air Embolism Followed by CT-guided Lung Biopsy: Case reports

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Computed tomography (CT) guided biopsy is a well-established technique to obtain lung tissue for evaluating pulmonary lesion. Several complications after transthoracic biopsy have been documented but seldom lead to catastrophe outcome. Air embolism is a rare but fatal complication of CT guided lung biopsy and causes morbidity and mortality. Hyperbaric oxygen therapy (HBOT) is defined as treatment of 100% oxygen in air pressure higher than 1.4 atmosphere absolute (ATA) and it plays a crucial role in treating systemic air embolism and may reduce neurological sequelae. This time, we presented two cases of systemic air embolism followed by percutaneous lung biopsy treated with HBOT.

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

顱內出血呼吸衰竭患者的長期預後分析

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The long-term survival of intracranial hemorrhage patients successfully weaned from prolonged mechanical ventilation

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Purpose: Ninety-one intracranial hemorrhage prolonged mechanical ventilation patients were liberated from the ventilator. How is the long-term outcome of these successfully weaned intracranial hemorrhage prolonged mechanical ventilation patients?

Materials and Methods: We analyzed retrospective data from successfully weaned intracranial hemorrhage prolonged mechanical ventilation patients to investigate the clinical variables, intracranial hemorrhage type, Glasgow Coma Scale score, and long-term survival.

Results: We had long-term follow-up data on 69 of these successfully weaned intracranial hemorrhage prolonged mechanical ventilation patients. The 1-year survival rate of successfully weaned patients was 43.5%. Four factors were independently associated with the 1-year survival rate of these patients: Glasgow Coma Scale score at discharge from the respiratory care center, age > 65 years, signed do-not-resuscitate and do-not-intubate orders, and the absence of comorbidity.

Conclusions: These results emphasized the following key points in terms of the survival of successfully weaned intracranial hemorrhage prolonged mechanical ventilation patients. 1.Older and those who had signed do-not-resuscitate and do-not-intubate orders had poorer long-term survival. 2. Patient's Glasgow Coma Scale score at discharge from the respiratory care center is an important predictor of outcomes. These results can help physicians better plan the clinical course for intracranial hemorrhage prolonged mechanical ventilation 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)

PB43

青少年自發性氣縱膈併發椎管積氣:南台灣單一中心 11 年回溯性研究

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Pneumorrhachis Complicated by Spontaneous Pneumomediastinum in Adolescents: An 11-year Single Institutional Retrospective Study in Southern Taiwan

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Purpose: Although uncommon, available evidence suggests pneumorrhachis (PR) complicated by spontaneous pneumomediastinum (SPM) in adulthood is usually benign and self-limiting. This study aimed to review our experience and identify the risk factors of PR in adolescent patients with SPM.

Materials and Methods: Between September 2007 and September 2017, SPM in patients aged ≤18 years was retrospectively reviewed. The clinical features and outcomes between SPM patients with and without PR were analyzed.

Results: In total, thirty consecutive occurrences of SPM in 29 patients were finally identified and classified into SPM (n=24) and SPM plus PR (n=6) groups. No significant differences in received interventional exams, prophylactic antibiotic administration or restriction of oral intake between the two groups were found. Both groups were treated with hospitalization predominantly, whereas the SPM plus PR group tended to have longer length of hospital stay (median 5.5 vs. 3 days, $p = 0.08$). PR was observed more frequently in patients with abnormal serum C-reactive protein (CRP) level (> 5mg/L), identified predisposing factors, and those with more severe grade of SPM (p =0.005, 0.001 and <0.001 respectively). On multivariable regression analysis, the SPM plus PR group exhibited more predisposing factors than did the SPM group (coefficient: 0.514, standard error: 0.136, p <0.001). All patients were successfully treated without morbidity and mortality.

Conclusions: Although patients with pneumorrhachis retained a higher CRP level, more identified predisposing factors, and prolonged inpatient care, conservative management without an extensive work-up would be an appropriate and favorable strategy in adolescent patients with PR complicated by SPM.

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

以人工智能證實原發性氣胸的病因是胸壁尖坑。

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The Chest wall apex pit is the etiology of primary pneumothorax proved by artificial intelligence

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Purpose: The etiology of primary spontaneous pneumothorax (PSP) was not clear. We observed the bleb and vascular penetration defect were matched in some cases. Furthermore we observed the chest wall configuration is different for patient with and without PSP and Chest wall apex pit (CWAP) was named.

Method: Image of chest CT with and without PSP compared. Convolutional Neural Network (CNN) model of EfficientNetB3 and InceptionV3 were used with transfer learning on the Imagenet to compare the two set of image. Heatmap was created. Scale-invariant feature transform (SIFT) was adopted to further compare in the image level.

Results: 26 non-pneumothorax patients with a total of 2312 images and 26 pneumothorax patients with a total of 1122 images were selected. 237 and 218 coronal images were selected and filtered to chest wall image only. The image was augmented to 4740 and 4360 images for training and testing. The accuracy of testing is as high as 96.95%. The heatmap showed the active area is the apex of the chest wall. The SIFT results showed the similarity within group of with and without pneumothorax was 59.16%(55.28-62.84%), 59.09%(55.02-62.85%), and between groups 48.61% (36.73-5.00%, $p<0.001$).

Conclusion: The chest wall configuration is different between patients with and without PSP. We assume the difference is CWAP, and emphysematous like change (ELC) and bleb / bulla was formed here, the first etiology of the PSP.

Keywords: Primary spontaneous pneumothorax, Chest wall, Apex, Convolutional Neural Network, Heatmap, Scale-invariant feature transform.

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

反覆續發性自發性氣胸自癒

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SPONTANEOUS RESOLUTION OF RECURRENT 2ND PNEUMOTHORAX

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Purpose: We described a case of a 2nd spontaneous pneumothorax) that resolved completely without intervention. Spontaneous pneumothorax can occur with no underlying lung disease or secondary in nature. Management of pneumothorax depends on size, etiology, and stability of the patient. The current recommendation is observing in stable patients with <15% pneumothorax and tube thoracotomy in patients with >15% pneumothorax.

Materials and Methods: A 69-year-old man presented to our clinics complaining of cough and sputum even SOB for days with smoking and old TB history. His breath sounds were reported as decreased. CXR was ordered, which revealed a moderate right-sided pneumothorax ER referral or admission advice for further management all were refused then subsequently discharged. Fortunately, the patient returned to the chest clinics for follow up 1 month later, CXR was repeated, full absorption of the pneumothorax noted. He was treated with oral pills during that time. This is a typical 2nd pneumothorax but with an atypical result.

Discussion: The question is whether even in the case of 2nd pneumothorax, the threshold for placement of chest tubes could be reconsidered in stable patients. Subsequent CXR showed a reduction in the size of the pneumothorax which resolved one month after the initial accident Pneumothorax is a common complication, large pneumothorax is defined when the distance between the lung margin and the chest wall greater than 2 cm on an upright. The management is guided by etiology, clinical presentation, and risk stratification. Current recommendations are to observe small pneumothorax in stable asymptomatic patients. The pneumothorax resolves by resorption increases 4-fold by administering supplemental O2. Most physicians will place a chest tube for a large pneumothorax supporting guidelines that recommend placing a thoracic tube for all pneumothorax to avoid developing a tension pneumothorax.

Results: Our case reports that recurrent 2nd pneumothorax can be treated conservatively and resolved spontaneously without administration of supplemental O2or placement chest tube.

Conclusions: Caution must be notified in treating larger pneumothorax with chest tubes, as literature supports conservative management of selected clinically stable patients.

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

淋巴球活化基因蛋白在鳥型分枝桿菌肺病的鑑別角色

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The association between Mycobacterium avium complex-lung disease and soluble lymphocyte activation gene-3 (sLAG3) protein

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Purpose: Patients with Mycobacterium avium complex-lung disease (MAC-LD) may have immune exhaustion involving the pathway of immune checkpoints proteins, such as programmed cell death 1 (PD-1) receptors and soluble PD-1 (sPD-1). As, a new immune checkpoint receptor, lymphocyte activation gene-3 (LAG-3) may work with PD-1 to regulate T-cell function. Similar to soluble PD-1 (sPD-1), soluble LAG3 (sLAG3) exists in serum. But, the association between sLAG-3 and MAC-LD remains unknown.

Materials and Methods: From May 2015 to June 2019, MAC-LD patients and healthy controls were prospectively enrolled at National Taiwan University Hospital and Taipei Veterans General Hospital in Taiwan. Immune checkpoint proteins including sLAG3, sPD-1, soluble programmed death-ligand 1, and soluble T-cell immunoglobulin mucin domain 3 (sTIM3) were measured, and their associations with MAC-LD were analyzed.

Results: 104 patients with MAC-LD and 55 controls were included for analysis. The levels of sLAG3 and sPD-1 were significantly lower in patients with MAC-LD than the controls (109.8 ±1213.9 vs 1662.8 ±662.7 pg/mL, p<0.001, and 68.6 ±1.1 vs 81.3 ±54.5 pg/mL, p=0.024). Overall, sLAG3 levels were positively correlated with age (Spearman's rho=0.212, p=0.008), sPD-1 level (rho=0.292, p<0.001) and sTIM3 level (rho=0.1982, p=0.013). In Receiver Operating Characteristic (ROC) Curve analysis, the areas under the ROC curve were 0.761 (95% CI 0.684-0.838) for sLAG3 and it were 0.623 (0.528-0.717) for sPD-1. In a multivariable analysis, sLAG3 <1000 pg/mL was independently associated with MAC-LD vs HC (odds ratio 28.967, 95% CI 7.365-113.924, p<0.001) after adjusted by age, sex, body mass index, the levels of sPD1 and sTIM3. Notably, among patients with MAC-LD, the levels of sLAG3 and sPD-1were significantly lower in patients presented with hemoptysis than in those without (817.2 ±1144.1 vs 1222.3 ±1237.3 pg/mL, p=0.010, and 56.6 ±53.6 vs 73.2 ±49.8 pg/mL, p=0.013).

Conclusions: sLAG3 is significantly associated with patients with MAC-LD versus healthy control group and correlated with clinical presentation of patients with MAC-LD. Further study is warranted to investigate its potential role in the diagnosis and pathogenesis of MAC-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)

OC02

使用腸道微生物菌叢組成區分糖尿病控制不佳患者之潛伏性結核感染狀態

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The composition of gut microbiota can discriminate latent TB infection status in poorly-controlled diabetic patients

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Background: Diabetes mellitus (DM) is a major risk factor for tuberculosis (TB). Evidence has linked the DM-related dysbiosis of gut microbiota to modifiable host immunity to Mycobacterium tuberculosis infection. However, the crosslinks between gut microbiota composition and immunological effects on the development of latent TB infection (LTBI) in DM patients remain uncertain.

Methods: We prospectively obtained stool, blood, and medical records from 130 patients with poorly-controlled DM (pDM), defined as ever having an HbA1c > 9.0% within previous 1 year. Among them, 43 had LTBI, as determined by QuantiFERON-TB Gold in-Tube assay. The differences in the taxonomic diversity of gut microbiota between LTBI and non-LTBI groups were investigated using 16S ribosomal RNA sequencing, and a predictive algorithm was established using a random forest model. Serum cytokine levels were measured to determine their correlations with gut microbiota.

Results: Compared with non-LTBI group, the microbiota in LTBI group displayed a similar alpha-diversity but different beta-diversity, featuring decrease of *Prevotella_9*, *Streptococcus*, and *Actinomyces* and increase of *Bacteroides*, *Alistipes*, and *Blautia* at the genus level. The accuracy was 0.872 for the LTBI prediction model using the aforementioned 6 microbiome-based biomarkers. Compared with the non-LTBI group, the LTBI group had a significantly lower serum levels of IL-17F ($p = 0.025$) and TNF-α ($p = 0.038$), which were correlated with the abundance of the aforementioned 6 taxa.

Conclusions: The study results suggest that gut microbiome composition may modulate host immunity relevant to TB susceptibility, and microbial signature might be a potential diagnostic biomarker and therapeutic target for LTBI in pDM 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)

OC03

急性呼吸窘迫症病人驅動呼吸和反向驅動呼吸的局部通氣及肺力學變化

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Regional ventilation distribution and respiratory mechanics of trigger and reverse triggering breaths in patients with acute respiratory distress syndrome

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Purpose: Regional ventilation alteration and reverse triggering occurs in patients with acute respiratory distress syndrome (ARDS) transitioning from controlled to spontaneous breaths. We combined electrical impedance tomography (EIT) and physiological monitoring to examine transpulmonary pressure (P_L) and regional ventilation changes in trigger and reverse triggering breaths in mechanically ventilated patients with ARDS.

Materials and Methods: EIT and P_L measurements were analyzed in 20 mechanically ventilated patients with ARDS during volume-cycled ventilation. Breathing efforts were classified into rest (0 cm H_2O), low (< 5cm H_2O), moderate (≥ 5, < 10cm H_2O), and high effort (≥ 10cm H_2O) based on esophageal pressure swing (ΔP_{es}) results of 2,142 analyzed breaths. 200 resting breaths, 5,155 trigger breaths and 3,518 reverse triggering breaths were counted in this study.

Results: For trigger breaths, peak dynamic, mean inspiratory, mean expiratory, and end-expiratory P_L decreased most with high effort (rest vs high effort: 20.1±4.8 vs 16.9±4.4, 13.0±3.8 vs 9.0±3.3, 1.0±3.0 vs -1.5±4.9, 0.4±3.0 vs -3.2±4.6 cm H_2O, respectively, $p<0.0001$). For reverse triggering breaths, peak dynamic, mean inspiratory, and end-expiratory P_L decreased significantly with all breathing efforts (rest vs low, moderate, and high effort: 19.7±5.1 vs 17±5.3, 17.1±5.2, and 17.8±5.8; 12.8±4.0 vs 10.7±4.1, 10.5±4.4, and 11.1±4.4; 0.6±3.0 vs -0.5±3.4, -0.5±3.4, and -0.3±3.4 cm H_2O, respectively, $p<0.05$). End-expiratory lung impedance (EELI) decreased significantly with increasing breathing efforts. The pendelluft response to breathing efforts varied and was significantly greater in trigger versus reverse triggering breaths (3.9±6.8 vs 1.9±2.8 ml, respectively, $p<0.0001$). In trigger breaths, cases of high pendelluft revealed higher global inhomogeneity index values than in the low pendelluft group (0.62±0.16 vs 0.56±0.19, respectively, $p<0.0001$). The prediction of pendelluft from ΔPes was characterized by a low positive predictive value.

Conclusions: Both trigger and reverse triggering breaths led to decreased P_L and EELI values and effort-related pendelluft should be individualized. A high pendelluft was associated with higher global inhomogeneity index values for trigger breaths. However, ARDS cases with high effort-related pendelluft were uncommon in our study population. **The trial was registered at ClinicalTrials.gov (NCT04442815)**

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

接受免疫檢查點抑制劑治療的癌症病人發生潛伏結核感染的風險: 一全台多中心研究

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Latent tuberculosis infection among cancer patients receiving immune checkpoint inhibitors: a multicenter study in Taiwan

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Background: Tuberculosis (TB) remains the most common infectious disease worldwide and almost one-fourth of the global population has been infected by *Mycobacterium tuberculosis*, which is latent tuberculosis infection (LTBI). Notably, cancer patients have been reportedly increasing TB incidence during using immune checkpoint inhibitor (ICI). However, whether the incidence of LTBI increases among cancer patients using ICI is poorly understood.

Methods: From April 2020 to October 2022, we enrolled cancer patients, mostly lung cancer, who received ICI or tyrosine kinase inhibitor (TKI) from five hospitals. We checked the LTBI status by QuantiFeron-TB Gold plus (QFT) before and after the participants under anti-cancer therapy. We analyzed the prevalence and incidence of LTBI in ICI users compared with TKI group.

Results: We enrolled 122 cancer patients, and of them, 72 received ICI treatment and 50 TKI group. Age and sex were not significantly different between the two groups. The baseline LTBI status, defined by QFT, was 20% and 15.1% in TKI and ICI users, respectively (no significant difference, $p>0.05$). Among the enrolled cancer patients with QFT examination, 88 participants (51 ICI and 37 TKI users) were followed up and 66 (39 ICI and 27 TKI users) had baseline negative LTBI status. The follow-up LTBI status changed to positive in seven patients using ICI, higher than zero in TKI group (18% vs 0, $p=0.025$ by log-rank test).

Conclusions: Patients with cancer receiving ICI had similar baseline LTBI prevalence but a higher incidence of LTBI after ICI treatment than that in cancer patients using TKI.

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

COVID-19 重症病患發生次發性肺炎之微生物學動態變化、危險因子和預後：一項多中心回溯性世代研究

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Microbial dynamics, risk factors and outcomes of critical COVID-19 patients acquiring secondary pneumonia: A multicenter retrospective cohort study

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Purpose: Secondary infection plays a crucial role in determining treatment outcome among hospitalized patients with COVID-19. Previous studies have investigated risk factors and pathogen distribution of secondary pneumonia in hospitalized COVID-19 patients. However, geographical variation may have limited the generalizability of these data. The data from the East Asia remain obscure. The aim of this study is to provide the epidemiological data of secondary pneumonia in patients with critical COVID-19 in Taiwan.

Materials and Methods: This multicenter, retrospective cohort study included patients with critical COVID-19 requiring ICU admission between December 31, 2020 and June 1, 2022 in three referral hospitals in Taiwan. We described incidence, risk factors and outcomes of secondary pneumonia in patients admitted with critical COVID-19. The time of onset of secondary pneumonia and pathogen distribution were also analyzed.

Results: One hundred and twenty-four patients were included in the study. Of them, 72 (58.1%) were male and the median age was 68 years (IQR, 57-79 years). We identified 86 episodes of secondary pneumonia in 51 of 124 (41.1%) patients. The median time from hospital admission to onset of secondary pneumonia was 13 days (IQR, 11-16 days). The most frequently isolated microorganisms during the first ten days in ICU were *Aspergillus* (24.7%) followed by *Acinetobacter species* (20.5%), *Klebsiella species* (13.7%), and methicillin-susceptible *Staphylococcus aureus* (11.0%). Between day 10 to 20, the most frequently isolated microorganism was *Stenotrophomonas maltophilia* (16.0%). After day 21, the most frequently isolated microorganisms were *Stenotrophomonas maltophilia* (32.1%), followed by *Pseudomonas species* (14.3%). In multivariable analysis, APACHE II score was the only risk factor for secondary pneumonia (OR, 1.065; 95% CI: 1.003 – 1.129; p = 0.038). In-hospital mortality were significantly higher in patients with secondary pneumonia as compared to those without (35.71% vs 19.12%; p = 0.037).

Conclusions: The pathogens causing secondary pneumonia in critical COVID-19 showed a bimodal distribution with the time. Gram-positive bacteria and fungi accounted for the majority of secondary pneumonia in the first two weeks, while gram-negative bacteria became the main pathogens after two weeks of ICU stay. The choice of empirical antimicrobial therapy in critical COVID-19 should be according to the length of ICU stay and local epidemics.

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

分析間接能量儀測定之能量消耗與實際營養治療成分對急性呼吸窘迫症候群患者之影響:一項前瞻性觀察型研究

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Analyzing the impact of Indirect Calorimetry Measured Energy Expenditure and Actual Nutrition Therapy Component on Acute Respiratory Distress Syndrome (ARDS) Patients: A Prospective Observational Study

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Purpose: The ideal quantity and protocol of nutrition support for critically ill patients remains controversial. There is a huge evidence gap regarding the target calorie intake in acute respiratory distress syndrome (ARDS). In current clinical setting, we usually use predictive equations for the estimation of resting energy expenditure which may lead to very inadequate result and high probability of malnourishment amount critically ill patients. The primary objective is to investigate the impact of energy expenditure measured by indirect calorimetry (IC) and actual nutritional therapy on intensive care unit (ICU) clinical outcomes.

Materials and Methods: We prospectively enrolled patients who was admitted to medical ICU because of ARDS and was recovering from the disease for IC measurement from July 2021 to July 2022. Inclusion criteria were as follows: ≥20 years, diagnosis of ARDS, received mechanical ventilation more than 48 hrs. Exclusion criteria were as follows: hemodynamic instability, tracheostomized patients, PaO2/FiO2 ratio still less than 150. IC measurement was performed on D1, D4, D8 and D11; meanwhile, the daily total caloric intake, daily protein intake, proportion of enteral nutrition (EN) and parenteral nutrition (PN) were analyzed by an independent dietician who was blind to clinical outcomes.

Results: During the study period, a total of 130 patients fulfilled the study criteria received at least one IC measurement were finally analyzed, among them, 87 were ICU survivors and 43 were non-survivors. There were no differences in the mean energy expenditure between the survivors and non-survivors. We noticed non-survivors received significant higher daily total calories than survivors on D1 (1000, 890-1322 vs. 890, 654-1200; p =0.023). Multivariate logistic regression analysis showed higher caloric intake to measured energy expenditure ratio was an independent factor associated with ICU mortality (aOR= 9.39, 95% CI, 1.27-69.2, p-0.028), meanwhile higher PN/EN+PN ratio at D1 also associated with high ICU mortality (aOR=3.76, 95% CI, 1.10-12.86), p=0.035).

Conclusions: Hypocaloric feeding during ARDS convalescence phase may lead to better survival outcome, extra PN support was unnecessary and potentially harmful for the patients. Indirect calorimetry should be utilized to provide accurate energy targets for critically ill 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)

OC07

在非結核性分枝桿菌肺病中外泌體上細胞程式死亡-配體 1 的角色：與疾病、治療反應和免疫細胞存活的關係

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The role of exosomal PD-L1 in nontuberculous mycobacterial lung disease: association with disease, treatment response and immune cell survival

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Purpose: Nontuberculous mycobacterial lung disease (NTM-LD) increases worldwide but the host susceptibility remains poor understood. The expression of exosomal PD-L1 is reported important for immune regulation in cancer but is scarcely studied in NTM-LD regarding its pathogenesis, disease severity and treatment response.

Materials and Methods: We isolated exosomes from donor plasma and cell culture with ExoQuick ULTRA EV Isolation Kit or ExoQuick-TC, respectively. The exosome concentration and size were detected by Nanoparticle Tracking Analysis (NTA). The exosomal PD-L1 was measured by ELISA and Western blot. We stimulated Jurkat cells with exosomes with or without PD1/PD-L1 blocking antibodies and detected the survival rate 1 day later by Cell Counting Kit-8 (CCK-8) assay.

Results: The levels of plasma exosome were similar between the 18 NTM-LD patients (included 6 treatment non-responder patients) and 19 health controls but the expression of exosomal PD-L1 was higher in NTM-LD patients than that in healthy controls. In addition, the level of plasma exosomal PD-L1 was higher in patients with radiographic cavity than non-cavity status. In exosome-stimulating assay, the exosomes from NTM-LD patients induced more lymphocyte cell death than the exosomes from the controls and the induced lymphocyte death was reduced by anti- PD-1 and PD-L1 antibodies blocking. After anti-NTM treatment, the level of exosomal PD-L1 from the treatment-responder group reduced significantly, but that in the treatment non-responder group did not. To further validate the production of exosomal PD-L1 during NTM infection, we infected THP-1 derived macrophage with *Mycobacterium avium* Chester (ATCC 700898), and identified exosome amount in the reaction supernatants. We found that exosomal PD-L1 increased by *Mycobacterium avium* Chester -infected macrophages compared with the control group. Similarly, the exosome secreted by MAC-infected macrophage induced significant lymphocyte cell death, which was reversed by adding PD-1/PD-L1 blocking antibodies.

Conclusions: In the present study, we found that increased level of plasma exosomal PD-L1 expression in NTM-LD patients and it might correlate with immune attenuation, disease severity, and treatment response through lymphocyte cell death. By NTM-infected macrophage model, we confirmed the production of exosomal PD-L1 during NTM 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)

OC08

上升中的侵襲性肺部麴菌感染症發生率與臨床重要性：台灣單一醫學中心回溯性世代研究

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Increasing trend and clinical impact of invasive pulmonary aspergillosis: a single center retrospective cohort study in Taiwan

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Background: Invasive pulmonary aspergillosis (IPA) is an emerging and potentially life-threatening disease, occurring in immunocompromised hosts such as the patients with hematologic or non-hematologic malignancy patients receiving cytotoxic therapy, organ transplantation recipients, and patients with autoimmune diseases. With the increasing number of immunocompromised hosts, the epidemiology and trend of IPA would be of great clinical importance and remains to be elucidated.

Materials and Methods: Adult patients with positive serum aspergillus galactomannan (GM) test (>0.5) in National Taiwan University Hospital during 2013~2020 were retrospectively enrolled. Patients without chest computed tomography (CT) scans for clarification of IPA imaging features were excluded. Patients with probable and proven IPA were identified. Demographic data and clinical parameters were collected. Outcomes including intensive care unit (ICU), in-hospital, 1-month, and 3-month mortality since IPA diagnosis were further analyzed. The trend and proportion of hematologic malignancy / non-hematologic disease patients among IPA was also described.

Results: 456 patients with sero-positivity of GM test were recognized, of which 200 patients were diagnosed to be proven or probable IPA and had chest CT images available. The mean age of the population was 57.1-year-old, and a slight male predominance was noted (106/200, 53.0%). 109 of the 200 patients (54.5%) had underlying hematologic malignancy, and 94 of the 200 patients (47.0%) were receiving systemic steroid or other immunosuppressant. The ICU, in-hospital, 1-month, and 3-month mortality rate of IPA were 63.2%, 59.0%, 27.5%, and 52.5% respectively. Notably, there was an increasing trend for IPA in recent years (from 23 per 100000 person-year to 44 per 100000 person-year in 2020). Additionally, while the number of hematologic and non-hematologic IPA patients is simultaneously increasing, the proportion of non-hematologic IPA has significantly increased and even surpassed hematologic IPA patients (non-hematologic IPA 36.8% (7/19) in 2014 to 56.4% (22/39) in 2020).

Conclusion: Patients with IPA have poor clinical outcome and are associated with significant mortality rate. The incidence of IPA increased significantly in recent years. Non-hematologic disease IPA is and emerging disease entity and warrants special attention.

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

急性呼吸窘迫症候群與高齡者的關聯與特性

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Characteristics of Acute Respiratory Distress Syndrome in the Elderly: a single center cohort

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Purpose: Acute respiratory distress syndrome (ARDS) has been causing high mortality. The association between age and the outcomes of patients with ARDS was unclear.

Materials and Methods: We conducted a single center cohort study at Taichung Veterans General Hospital. Patients who had invasive mechanical ventilation, admitted to the intensive care unit (ICU), and diagnosed with ARDS were included. The data were collected prospectively, and we compare the characteristics of the elderly or older patients (Age ≥65) with young patients (Age <65). The associated factors of in-hospital mortality of the elderly were analyzed.

Results: A total of 728 patients were included. The mean age was 66 years and 63% of them were male. Most of the patients were admitted to medical ICU (79%). The elderly had lower body mass index (BMI) (23.8 vs 25.2), higher Acute Physiology and Chronic Health Evaluation (APACHE) II score (28.9 vs 26.3), higher Charlson Comorbidity Index (CCI) (4.0 vs 3.4), and lower Sequential Organ Failure Assessment (SOFA) score (10.0 vs 11.1). The elderly had similar mortality with young patients (40.5% vs 42.9%, p=0.542), but had longer ICU LOS than young adults (17.6 vs 15.6 days, p=0.047). For the elderly, BMI <18.5 (Odds ratio, OR 2.78; 95% confidence interval, CI, 1.45 – 5.34), higher SOFA score (OR 1.20, 95% CI 1.12 – 1.28), and moderate (OR 1.95, 95% CI 1.20 – 3.14) or severe ARDS (OR 2.30, 95% CI 1.26 – 4.22) were independent risk factors for mortality.

Conclusions: ARDS patients with an age ≥65 had lower BMI, more comorbidities, and higher APACHE II score than those with an age <65. Old patients had comparable mortality with young patients, but had longer ICU LOS than young patients. In older patients with ARDS, underweight condition, higher SOFA score, and moderate or severe ARDS were associated with in-hospital mortality independently.

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

一位黴漿菌肺炎併急性呼吸窘迫症候群病人未使用機械性通氣的不尋常經驗

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A Patient with Mycoplasma Pneumonia and Acute Respiratory Distress Syndrome Without Mechanical Ventilation: An Unusual Experience

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Purpose: Acute respiratory distress syndrome (ARDS) is characterized by severe hypoxemia due to different etiology resulting in increased pulmonary capillary permeability and mechanical ventilation always plays an important role in the management of ARDS. Pneumonia is one of the common etiologies of ARDS, however, mycoplasma pneumonia is unusual for ARDS. Here, we will present a patient with mycoplasma pneumonia and ARDS without mechanical ventilation.

Case Presentation: This 34-year-old patient was healthy before. She had been suffered from general soreness for 6 days, fever with cough for 4 days, and severe cough with shortness of breath for 2 days so she visited Guo General Hospital two days ago before admission. At Guo General Hospital, pneumonia and acute hypoxemic respiratory failure were observed so she was referred to our emergency department then admitted to the intensive care unit (ICU). Antibiotic therapy of Tazobactam/Piperacilin with Moxifloxacin was administered. At ICU, severe hypoxemia with PO_2/FiO_2 of 48.4 mmHg was heeded. Endotracheal intubation with mechanical ventilation was suggested but this patient refused. She also could not tolerate non-invasive positive pressure ventilator. Patient was strongly informed of the need of endotracheal intubation with mechanical ventilation if persistent hyperlactatemia or lactic acidosis, oxygen extraction ratio more than 30%, and severe disturbance of eating, sleeping and defecation. Patient agreed the suggestion. During stay at ICU, the patient experienced and tolerated hypoxemic with ventilatory challenge and she was smoothly discharged.

Discussion: Fundamental therapy of ARDS includes the treatment of underlying disease and protective ventilation strategy. Pulmonary infection is usually listed in the etiology of ARDS. Mycoplasma pneumonia is not common for ARDS; however, should still be considered as the potential pathogen. For the majority patients with ARDS, mechanical ventilation is necessary due to both hypoxemic and ventilatory failure. However, patients may adapt to the hypoxemic and ventilatory challenge during the critical period of ARDS although very rare.

Conclusion: It's unusual to successfully treat a patient with ARDS without mechanical ventilation; however, rare patients passed the hypoxemic and ventilatory challenge.

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

有和無咳嗽機輔助的腹部重量訓練在長期機械通氣患者在肺功能的效果：一項隨機試驗

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Effect of abdominal weight training assisted by cough assist machine on lung function in the patients with prolonged mechanical ventilation

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Purpose: The patients with prolonged mechanical ventilation (PMV) have the risk of ineffective coughing and infection due to diaphragm weakness. This study aimed to explore the effect of abdominal weight training (AWT) intervention with/without cough machine (CM) assistance on lung function, respiratory muscle strength and cough ability in these patients.

Methods: Forty patients with PMV were randomly assigned to three groups: AWT group (n = 12), AWT + CM group (n = 14) and control group (n = 14). Change of maximum inspiratory pressure (MIP), Maximum expiratory pressure (MEP) and peak cough flow (PCF) between 1 day before and 2 weeks after the intervention were compared among these three groups.

Results: MIP before and after 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; $p < 0.05$) compared with control group (28.43 ± 9.74 vs 26.71 ± 10.77; $p > 0.05$) was significantly improved. MEP before and after intervention 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; $p < 0.05$) compared with control group (28.86 ± 10.25 vs. 29.57 ± 14.21; $p > 0.05$) was significantly improved. PCF before and after intervention in AWT group 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; $p < 0.05$) compared to control group (108.57 ± 19.96 vs. 109.86 ± 17.44; $p > 0.05$) showed significant improvements. AWT + CM group had significantly greater improvements than control group in MIP and peak cough flow than 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 PMV patients. AWT + CM can further improve their expiratory muscle strength and cough ability.

Trial registration ClinicalTrials.gov registry (registration number: NCT05 29538 retrospectively registered on March 3,2022). **Crit Care. 2022;26(1):153.**

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

包含 Rifamycin 類藥物的潛伏結核感染治療處方在腎移植病人的安全性、完成度和結核發病預防效果：一介入性初探研究

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The safety, completion rate and prevention effect by rifamycin-containing regimens for latent tuberculosis infection in patients with kidney transplantation: a prospective intervention pilot study

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Background: Tuberculosis (TB) remains the leading infectious disease worldwide and kidney transplant recipients (KTR) is high risk population needing prevention from reactivation, which cause high mortality. However, the suitable regimen for LTBI treatment in KTRs remains unclear.

Methods: We enrolled KTR patients with LTBI undergoing treatment. According to the treatment regimens, they were classified as 3-month course of isoniazid plus rifamycin **(3HP group)** and 9-month course of daily isoniazid **(9H group)**. We analyze the safe issues (adverse drug reactions [ADR] and drug-drug interaction), completion rate, and prevention effect based on the treatment regimen.

Results: In the first-year project, we have enrolled 32 participants who were KTR and had LTBI. Among them, 22 received 9H regimen, 8 had 3HR, one underwent 3-month of weekly isoniazid plus rifapentine, and the remaining one used 4-month of rifampin. Regarding ADRs, there was no severe ADR, but 2 of 3HR group had mild (Grade 1) non-specific reaction of malaise, which was borderline higher than 9H group (20% vs 0%, p=0.091). The effect of FK506 by rifamycin was all adjustable and no kidney injury was found. Only one of 9H group had interrupted LTBI treatment course due to other cause. The incompletion rate was insignificant difference between 9H and 3HR groups. Three-month course cost less and patients had lower clinic return times compared with 9H group. There was no occurrence of active TB for all participants during this study.

Conclusions: The preliminary report showed that 3-month LTBI treatment with rifamycin had borderline more mild ADR than 9H group. The two groups had no severe ADR, and similar completion rate. There was no un-adjustable drug-drug interaction and kidney injury in 3HR group. No active TB occurrence for all participants, lower than the incidence in KTR with LTBI and receiving observation in the literature.

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

病例報告: 胸腔鏡手術用於葉克膜相關血胸

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Surgical Intervention in Massive hemothorax during ECMO Use: A Case Report

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Case Presentation: A 28-year-old man was sent to emergency department for sudden collapse at workplace. Cardio-pulmonary-cerebral resuscitation was performed and extracorporeal membranous oxygenator (ECMO) was inserted for refractory shock. The coronary angiography was done, and showed 3-vessel disease. Angioplasty with stenting was done. On day 7 after admitting to intensive care unit, pericardiocentesis was done for massive pericardial effusion. However, desaturation and hypotension happened on the same day. Chest film showed left massive pleural effusion. Tube thoracostomy was done and massive blood was drained out. Chest surgeon was consulted for video-assisted thorocoscopy (VATS) for left side hemothorax, and 2750 mL blood clot was drained out. The hemodynamic status and oxygen saturation improved after the procedure. Finally, ECMO and ventilator were successfully weaned off.

Discussion: ECMO is frequently used for critically ill patients. However, bleeding complication develops up to 60% during ECMO use. Extraordinarily high shear stress induced acquired von Willebrand syndrome maybe the cause of high bleeding rate in ECMO use.

Our case demonstrates complications of hemothorax after pericardiocentesis during the ECMO support. Heparin was not used in the patient for bleeding tendency. Tube thorocostomy showed massive blood drainage and we used surgical intervention to stop bleeding.

The pericardiocentesis related complication includes coronary artery or cardiac chamber puncture, arrhythmia, hemothorax, and pneumothorax. The incidence ranges from 4% to 10% and higher especially during ECMO support. Massive hemothorax and continuous bleeding with unstable hemodynamics are indications for surgical intervention. VATS has an important role in the diagnosis and treatment of certain thoracic injuries. For retained hemothorax, VATS is favored for evacuation and adequate hemothorax drainage.

Conclusions: Bleeding complication in patients with ECMO is frequent and associated with increased mortality, even free-heparinization in procedures. When ECMO related hemothorax happens, surgical intervention is the optimal approach otherwise to conservative treatment.

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

利用『RALE』胸部 X 光評分系統預測流感引起急性呼吸窘迫症候群之晚期預後

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Late radiographic assessment of lung edema score is associated with clinical outcome in patients with severe influenza-associated acute respiratory distress syndrome

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Background: Influenza is an acute respiratory disease caused by influenza A and influenza B viruses. It often occurs in outbreaks and epidemics worldwide, leading to pulmonary injury and more severely, acute respiratory distress syndrome (ARDS). Non-cardiogenic pulmonary edema resulting from increasing pulmonary permeability is a key feature of ARDS. The Radiographic Assessment of Lung Edema (RALE) score has been proposed as a feasible and reliable tool to assess the extent and density of alveolar opacities on the chest radiographs in patients with ARDS. Whether late RALE scores predicted clinical outcome in patients with influenza-associated ARDS is not known.

Methods: This was a retrospective single-center cohort study from December 2015 to March 2016. Patients with the diagnosis of Influenza infection confirmed by rapid influenza diagnostic test or RT-PCR and the development of ARDS requiring ICU admission were enrolled. Two independent reviewers scored chest radiographs obtained on the day of ICU admission (day 0), and days 2 and day 7 following ICU admission. Baseline characteristics, laboratory data and clinical outcomes were recorded.

Results: Among 42 influenza-associated ARDS patients enrolled, 12 patients deceased in the hospital. Patients who died in the hospital had a higher SOFA score (p = 0.049) and RALE score on day 7 following ICU admission (p = 0.010), and a higher percentage of vasopressor (p = 0.014) and sedative agent use (p = 0.032) compared with patient who survived. Most important, RALE score on day 7 following ICU admission was independently associated with mortality (adjusted odds radio 1.133, 95% CI 1.023-1.255, p = 0.016).

Conclusion: The RALE score for the evaluation of the opacity on chest radiography is a highly reproducible tool that can be easily and rapidly implemented at the bedside. Moreover, RALE sore on day 7 following ICU admission was an independent predictor of mortality in patients with influenza-associated 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)

PC07

以風險校正後的管制圖監測延長性呼吸器使用病人的呼吸器脫離成功率用以評估照護品質

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Monitoring the performance of a dedicated weaning unit by the risk-adjusted control charts for the weaning rate in patients receiving prolonged mechanical ventilation

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Purpose: Weaning rate is an important quality indicator of caring for patients with prolonged mechanical ventilation (MV), but the diverse clinical characteristics often affect the measured rates. A risk-adjusted control chart might provide benefits in assessing care quality. **Materials and Methods:** We analyzed the 2018-2020 patients with prolonged MV discharged from a dedicated weaning unit at a medical center. Clinical, laboratory and physiologic characteristics upon weaning unit admission of the first two years (Phase I) were analyzed by a multivariate logistic regression model to derive an estimation formula, and the estimated monthly weaning rates for the Phases I and II (2020) were calculated. We then applied both multiplicative and additive models for generating the risk-adjusted p-charts, displayed in both non-segmented and segmented formats to assess whether special cause variation existed. **Results:** 737 cases were analyzed, including 503 Phase I and 234 Phase II cohorts, with average weaning rates of 59.4% and 60.3%, respectively. The *p*-chart of the crude weaning rates did not find any special cause variation. We selected eleven variables from the regression analysis to predict individual weaning probability and generate the monthly estimated weaning rates in Phases I and II (Fig 1 dotted lines). In Phase II, 91.7% of the months showed a satisfactory prediction of weaning rates (crude-estimated rated difference < 20%). For risk-adjusted *p*-charts, both multiplicative (Fig 2) and additive (Fig 3) models showed similar control chart findings without finding any evidence of special cause variations in both phases. **Conclusions:** The risk-adjusted control charts generated by a combination of multivariate logistic regression model and chart-adjustment models might provide a feasible method to assess the quality of care in the setting of PMV applying standard care and weaning protocols.

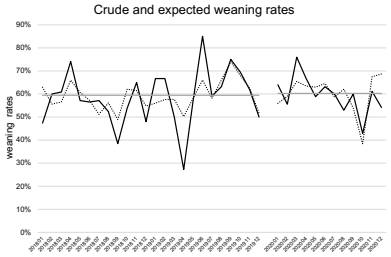

Fig 1

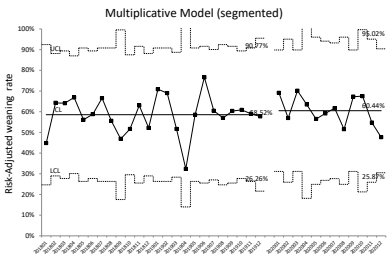

Fig 2

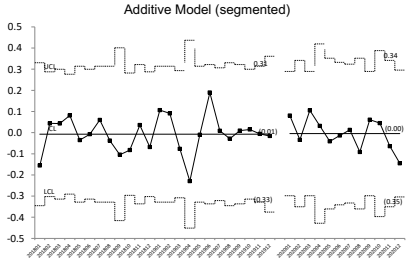

Fig 3

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

一位 49 歲女性罹患嚴重甲狀腺風暴輔以血漿置換術治療

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A 49-year-old woman received plasma exchange therapy for severe thyroid storm

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Thyroid storm is a rare but life-threatening medical emergency with significant mortality higher as 30%. Considering the rarity of this disease and efficacy of current first line treatment option, use of plasma exchange therapy is uncommon. We report a 49-year-old woman who presented with fulminant congestive heart failure and tachyarrythmia. After thorough and promptly work-up, thyroid storm induced by previous undiagnosed and Grave's disease was impressed. She developed multiple organ failure despite standard first line pharmacologic treatments, requiring therapeutic plasma exchange, concurrent renal replacement therapy and mechanical ventilation support. After successful antithyroid medication adjustment and plasmapheresis treatment, her heart failure improved and the follow-up echocardiogram disclosed profound improvement of ejection fraction. Thyroid storm is a rare emergency with high mortality. Early diagnosis and adequate multidisciplinary treatment may offer the patient good prognosis and leave the least sequelae. This case highlights the complexities in the diagnosis and management of thyroid storm, stressing the crucial role of plasmapheresis and the prompt organ support strategy. Hyperthyroidism with possible thyroid storm should always be included in the differential diagnosis when tachyarrythmia complicated with rapidly progressing heart failure in a patient with no previous known heart disease. Early recognition and appropriate treatment of thyroid storm which may include plasmapheresis is essential to improve 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)

PC09

Pirfenidone 治療一位 34 歲女性因羊水栓塞併發急性呼吸窘迫症候群之個案報告

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Pirfenidone for the treatment of post amniotic fluid embolism related acute respiratory distress syndrome in a 34-year-old female

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Introduction: Acute respiratory distress syndrome (ARDS) is often seen in Amniotic fluid embolism (AFE) patients. This critical condition usually cause high mortality rate and severe sequelae even survive the acute phase. Currently, there are limited effective medications for this situation. Owing to this predicament, we state a hypothesis as the benefit of using anti-fibrotic agents in ARDS patients.

Case Description: We report a 34-year-old female without underlying disease admitted for regular abdominal delivery. During operation, sudden collapse with bilateral lung consolidation were found. AFE was diagnosed with Extracorporeal Membrane Oxygenation use. Following ARDS made her difficult to weaning from mechanical ventilation and require ECMO support for nearly 2 months. We started pirfenidone during ICU hospitalization on the 43rd day after admission, she had success weaning from ECMO on the 56th day and extubation on the 58th day.

Discussion: We had summarized about total 43 patients around global diagnosed as ARDS and treated with anti-fibrotic agent include pirfenidone and Nintedanib. The prognosis revealed majority of regression in fibrotic changes on chest images and improved life quality. Pathogenesis of ARDS as well as pharmacology of anti-fibrotic agents were discussed. During current global COVID-19 pandemic, we might also think pirfenidone may be an effective treatment option in ARDS patients.

Conclusion: Our case suggests that anti-fibrotic agent such as pirfenidone may be an effective treatment option for 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)

PC10

病例報告: 心內膜炎併發相關膿胸

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Pulmonary complications observed in patients with infective endocarditis: A Case Report

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Case Presentation: A 44-year-old man was sent to emergency department with fever, vomiting and nausea. The patient had a past history of intravenous drug abuse. Chest computed tomography showed right lobar pneumonia with cavitation and left hydropneumothorax, suspect empyema. The chest tube was inserted for left empyema. The cardiac echo showed a large shaggy oscillating mass suspected vegetation measuring around 1.7 cm found over tricuspid valve. Blood culture showed methicillin-susceptible Staphyllococcus aureus (MSSA). Strong antibiotics were prescribed for MSSA bacteremia and pneumonia. On day 12 after admitting to intensive care unit, Chest surgeon was consulted and the video-assisted thorocoscopy (VATS) decortications was performed for left empyema . Acute renal failure with azotemia were corrected after twice hemodialysis. However, fever persisted after VATS. Cardiovascular Surgery was consulted and tricuspid valve replacement with Medtronic Hancock II porcine valve 3mm was done for infective endocarditis. The patient was successfully treated for multiple organ dysfunction and hospital discharged on day 45.

Discussion: Drug use related infective endocarditis (DU-IE) had the highest of pulmonary complications. About 40% patient have a history of intravenous drug use. However, infective endocarditis (IE) pulmonary complications are rare and may include bacterial pneumonia, lung abscess, empyema and pneumothorax. DU-IE and pulmonary complications associated with IE patients have required thoracic surgical intervention. 4.1% of tricuspid infective endocarditis valve patients require surgical intervention.

Our case demonstrates thoracic and cardiac operations are necessary for infection control with concurrent IE and empyema.

Conclusions: Infective endocarditis with pulmonary complication in patients associated with increased average lengths of stay and mortality. Early cardiac surgical and chest surgical intervention for DU-IE with pulmonary complication is associated with lower risk for mortality and decrease lengths of stay.

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

病例報告: 週邊動脈疾病經皮介入手術後併發罕見腎動脈出血性休克

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Peripheral arterial occlusive disease endovascular treatment complicated with renal artery extravasation and hemorrhagic shock: A Case Report

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Case Presentation: An 87-year-old woman was admitted because of right toes cyanosis and pain sensation for months. On examination, right dorsalis artery pulses were weak. Vascular duplex and Angiography revealed right anterior tibial artery (ATA) significant stenosis. Then she received percutaneous transluminal angioplasty to right ATA. Post-procedure showed dramatically improved flow. However, about one hour later, thirsty sensation, dizziness, and left lower abdominal fullness were complained. The blood pressure is 80/42 mm Hg, the pulse is 130 beats per minute. Under the tentative diagnosis of shock, fluid resuscitation with vasopressor was performed. Laboratory studies revealed anemia and elevated lactate levels. Bedside point-of-care ultrasound (PoCUS) revealed no pericardial effusion, neither ascites and no right upper thigh fluid accumulation. Computed tomography angiography (CTA) revealed a large left perirenal hematoma and retroperitoneal hematoma, with active contrast extravasation from left renal parenchyma. Radiologist was consulted, and transcatheter arterial embolization (TAE) to left renal artery was performed. The post-procedure course was uneventful with transient acute kidney injury only. *She was successfully discharged from the hospital without any sequelae two weeks later.*

Discussion: Peripheral arterial disease (PAD) affects approximately 371 million people worldwide, and, over two decades, has seen a global increase in the prevalence of 25%. Endovascular procedures, including balloon angioplasty and stent implantation, had been carried out widely. However, it still carried some complications, such as bleeding, infection, stroke, and so on. Many factors may contribute to producing a shock state within the post invasive procedural environment. Shock is still the leading cause of post-procedural morbidity and mortality. It is vital that how to quickly respond to shock status and rapidly differentiated causes of shock. From this case, we demonstrated the importance of bundle care and standard operating procedure (SOP) for shock management, including hemodynamic stabilization, spot physical examination, PoCUS, and incorporating advanced image study if needed.

Conclusions: Bleeding complication in patients receiving endovascular treatment is less common now but is still associated with increased mortality, even under close monitoring coagulation level during procedures. When vital artery extravasation complicated with hemorrhagic shock developed, on-site hemodynamic stabilization followed by bleeding source control is decisive. Either percutaneous or surgical routes for bleeder cessation are considerable. The overall outcome for hemorrhagic shock is great with alerted mind and quick response.

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

非侵襲性通氣有益慢性心臟衰竭患者拔管後之心臟功能

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Noninvasive positive pressure ventilation improves cardiac function in patients with chronic heart failure after extubation

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Introduction: Noninvasive positive pressure ventilation (NPPV) was significantly associated with improvement in left ventricular ejection fraction and plasma brain natriuretic peptide level in patients with chronic heart failure, and also improve respiratory disturbances, and thereafter reduce venous return, cardiac preload and pulmonary congestion.

Case Presentation: 75-year-old woman has underlying disease of hypertension without regular medication control. She has dyspnea and palpitations this time, therefore she was brought to emergency department on 2022/10/14. When arriving emergency, her consciousness was coma, emergency tracheal intubation was performed. Cardiopulmonary resuscitation was performed for pulseless electrical activity (PEA). Coronary angiography was done and showed coronary artery disease with left main and 3-vessel disease, and intervention with stenting. Intra-aortic balloon pumping (IABP) was used. Cardiac echo show left ventricular ejection fraction: 42.4%. Protocolized weaning from mechanical ventilation was done and the patient was extubated on day 5 after admission. NPPV was used after extubation. Finally the patient weaned off oxygen use and kept on cardiac rehabilitation.

Discussion: Studies have shown that prophylactic use of NPPV after extubation can reduce the reintubation rate. NPPV use in patients with chronic heart failure may improve left ventricular ejection fraction, brain natriuretic peptide level, and reduce venous blood return, cardiac preload and pulmonary congestion.

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

延長性呼吸器使用病患接受呼吸器脫離訓練之臨床和呼吸生理特性的表現型

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Phenotypes of clinical and respiratory physiologic characteristics in patients with prolonged mechanical ventilation receiving weaning trials

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Departments of [1]Internal Medicine and [3]Integrated Diagnostics & Therapeutics, [2]Center for Quality Management, National Taiwan University Hospital, Taipei, Taiwan

Purpose: Approximately 10-20% of patients in the intensive care unit who use ventilators will become chronic and severe PMV. Because of various clinical conditions, patients' responses to weaning training may vary. The weaning process courses are also often mixed, as is the clinical course of long-term weaning. In other words, these patients seem to have different clinical phenotypes.

Materials and Methods: We included patients with PMV admitted to a dedicated weaning unit at a medical center. prospective and detailed data collection of PMV for tracheostomized patients will be established to collect data including clinical characteristics, especially the status of training failures or training disorders before tracheostomy, plus the results of routine tests and vital signs monitoring data. Data on respiratory physiology measured at the weaning unit, such as indirect calorimetric oxygen uptake, weaning parameters, and end-expiratory lung volume, were analyzed. Serum samples were analyzed for the biomarkers related to chronic critical illness.

Results: Of the 74 patients included, 49 (66%) were male, 57 (77%) had malignancy, and 44 (59.5%) were successfully weaned upon RCC discharge. Compared with the weaning failure group, the success group tended to be younger (71 vs. 77, p=0.090), but they had similar APACHE II scores upon RCC admission, ICU days, and MV days before RCC entry. The success group had higher tidal volumes (340 mL vs. 274 mL, p=0.005), lower rapid-shallow breathing index (83 vs. 114, p=0.025), and higher value of minimal respiratory quotient (0.82 vs. 0.73, p=0.025). An analysis of the serum biomarkers related to chronic critical illness showed that the weaning success group had a lower level of IL-8 (11.418±24.584 pg/mL vs. 29.390±47.526 pg/mL, p=0.037) and IL-6 (5.332±8.013 pg/mL vs. 13.529±17.928 pg/mL, p=0.009). For all patients, the APACHE II score had a weak positive correlation with the serum levels of IL-8 (R=0.148), NT-proBNP (R=0.220), and PDL-1 (R=0.140). The RQmin (minimal respiratory quotient) level generally had a weak negative correlation with the serum CCI biomarker levels, such as IL-6 (R= -0.163), NP-proBNP (R= -.0181), and PDL-1 (R= -0.211). These findings suggest that diverse factors contribute to the clinical presentation of weaning status.

Conclusions: The PMV patients at the RCC have diverse clinical, physiologic, and biomarker presentations. Detailed investigations of the clinical, physiological, and biological phenotypes warrant a deeper understanding of this patient population to provide adequate management models and processes.

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

高劑量維他命 C 能否改善敗血性休克病人的預後？病例系列報告

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Does high dose intravenous vitamin C improve the outcomes of patients with severe septic shock? A case series report

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Background: Septic shock remains a major cause of morbidity and mortality in ICU despite significant interventions. It has been known that patients with sepsis have reduced levels of antioxidants, most notably vitamin C. Preliminary data suggested that therapy with hydrocortisone, ascorbic acid and thiamine improved the outcome. However, the following randomized controlled trials revealed conflicted results.

Methods: It is a single-arm retrospective study. Patients admitted to ICU for severe septic shock and received high dose intravenous vitamin C (at a dose of 2-12 g/day) within 3 days of admission were enrolled. The primary outcomes were mortality, organ dysfunction (defined by duration of the vasopressor use and SOFA score on Day 3), and length of ICU stay among those survived.

Results: A total of 26 patients were enrolled for analysis. 12 patients received Vit.C < 6g/day and 14 patients received Vit.C ≥ 6g/day. The average SOFA score was 10.8±3.1 on Day 0. The mortality rate was 73.1%. The median duration of vasopressor use was 54.0 (IQR: 34.0-91.0) hours. There remained 92.3%, 92.3%, and 57.7% of patients using vasopressor on Day 1, 2, and 3. Despite of similar SOFA score on Day 0, those received Vit.C ≥ 6g/day had higher mortality rate (85.7%, p=0.1904) when compared to those received Vit.C < 6g/day.

Conclusions: In this study, we found that high dose IV Vit.C did not significantly improve the outcomes of patients with severe septic shock, and even deteriorated their outcomes among those received Vit.C ≥ 6g/day. There were some reductions in the duration of use of vasopressors, but none of them reached statistical significance. We concluded that the routine use of Vit.C might not be appropriate in severe septic shock 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)

PC15

胸壁負荷：急性呼吸窘迫症候群的新穎呼吸系統順應性調節物

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Chest Wall Loading : A Novel Respiratory System Compliance modifier for Acute Respiratory Distress Syndrome

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Abstract

Acute respiratory distress syndrome (ARDS) remained a life-threatening condition which conventional lung protective ventilation may not be sufficient to correct hypoxemia and prevent ventilator-induced lung injury. Alternative maneuvers, for example, prone positioning may be taken into account.

This maneuver has consistently proven capable of improving oxygenation through several mechanisms, but some of them may cause negative effects. Some investigators found that prone positioning might decrease thoraco-abdominal compliance, which may due to modified trans-pulmonary pressure through regional variations in lung and chest wall properties. It suggest application of external pressure on the chest wall may be a useful approach to improve respiratory system mechanism.

A positive effect on respiratory mechanics of local chest wall compression over the sternum or by sustained pressure applied to mid-upper abdomen (belly push) of patients with severe ARDS was reported. There may be further 20% improvement in compliance was found when chest wall loading was applied in patients in the prone position.

However, which kind of the patients would response to this maneuver remains uncertain.

We hereby reported a case of pneumocystis pneumonia patient with severe ARDS successfully managed by prone positioning and chest wall loading.

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

新型冠狀病毒預防措施對台灣偏鄉重症醫療的影響

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The impact of COVID-19 preventive measures on critical care in a rural area of Taiwan

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Background: The habits and medical behaviors of people changed significantly during the COVID-19 epidemic, which may have impacted critical care in rural areas. The purpose of the study was to investigate the impact of COVID-19 preventive measures on people in rural areas of critical care in Taiwan.

Methods: The data were obtained from a local hospital [191 beds in the general ward and 12 beds in the intensive care unit (ICU)] with an emergency department, a Chinese medical department, a dental clinic, and other medical departments. The COVID-19 epidemic began in 2020. However, there were only 3 confirmed cases in Nantou County, and none were admitted to our hospital that year.

Results: The total number of outpatient visits decreased by 6.1% (16.7% in the dental clinic, 10.3% in the emergency department, 9.0% in the Chinese medical department, and 5.0% in other medical departments, 2020 vs. 2019). The decrease in the number of hospitalized patients was slightly lower than that of the outpatient clinics. The total number of hospitalizations decreased by 5.4%. However, the number of inpatient surgeries increased by 4.6%. Furthermore, a 6.3% decrease in total ICU admissions was observed. The proportion of male patients increased from 56.9% to 61.6%. The proportion of patients admitted via the emergency department increased from 80.0% to 84.9%. Mortality increased from 2.67% to 4.03%. The rate of transfer to another hospital decreased from 14.3% to 10.4%. The average length of hospital stay decreased from 4.11 days to 3.87 days. The increasing and decreasing trends in the major admissions departments were as follows: pulmonary medicine decreased from 22.2% to 17.4%, cardiology increased from 18.9% to 19.3%, gastroenterology decreased from 12.6% to 10.6%, neurology increased from 8.5% to 10.2%, nephrology decreased from 7.2% to 7.0%, neurosurgery increased from 17.6% to 18.0%, general surgery increased from 5.8% to 8.9%, and urology increased from 2.7% to 3.5%.

Conclusion: The COVID-19 preventive measures affected medical care in the rural area of Taiwan. The decrease in total critical care admissions was 6.3%. Overall, patients admitted to the internal medicine system decreased, whereas those admitted to the surgery system increased in the ICU, while cardiology and neurology (internal medicine system) admissions trended upward.

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

使用五種不同的預測系統預測新冠肺炎住院病人的死亡率和呼吸器使用機率

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Prediction of Mortality and Ventilation of hospitalized COVID-19 infection using five different scoring systems

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Purpose: To evaluate and validate the mortality and invasive mechanical ventilation (IMV) prediction of COVID-19 patients' capability of five different scoring systems with this retrospective cohort study.

Materials and Methods: Medical records of all patients hospitalized for COVID-19 diagnosis between 2021 May to June were retrospectively analyzed. Data were collected from medical history, demographic characteristic, initial vital signs, and biological tests. Shang et al. severity score, SEIMC, IRS-NLR, inflammatory score and VICE scores were determined for all patients. Then, it was explored to determine whether highest discriminative performance to predict mortality and IMV requiring status.

Results: A total of 311 patients were enrolled in this study. The mean age was 61.5 ± 14.8 years, and 156 patients (54.7%) were male. Sixty-five patients (22.8%) were intubated with ventilator support, and twenty-five patients died with in-hospital mortality was 8.8%. The Shang COVID severity score showed the strongest prediction of mortality with AUC of 0.836. The AUCs for SEIMC score and VICE score were 0.807 and 0.804, respectively, suggesting great predictive performance of in-hospital mortality. The IRS-NLR and VICE score showed the strongest prediction of mortality with both AUC of 0.82.

Conclusions: The COVID-IRS-NLR score, Shang COVID severity score and VICE score were good models for predicting 30-day mortality, while the Shang COVID severity score having the highest AUC. As for intubation prediction, the IRS-NLR and VICE score prediction rule showed the best 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)

PC18

誤嗆柴油導致急性呼吸窘迫症候群及肺纖維化-案例報告

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Acute Respiratory Distress Syndrome And Pulmonary fibrosis Following Diesel Oil Siphonage: A case report

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Diesel aspiration can lead to severe chemical pneumonitis or even Acute respiratory distress syndrome (ARDS) either due to direct inhalation of aerosol or aspiration of liquid or aspiration of vomitus secondary to diesel oil ingestion indirectly. The aspirated diesel reaches the alveoli rapidly without evoking significant cough, but initiates an intense inflammatory response in the pulmonary parenchyma. Siphonage of diesel fuel from the fuel tanks is a typical practice seen among the developing countries. ARDS is a heterogeneous clinical syndrome comprising of severe hypoxemia and decreased lung compliance which caused by inflammatory pulmonary injury leads to increased pulmonary vascular permeability. We herein describe a 57-year-old male patient, in whom the diagnosis of aspiration pneumonia progressed to ARDS and sequelae of pulmonary fibrosis.

This patient presented with chest discomfort, shortness of breath and chillness after he tried to siphon the diesel fuel from the tank while working and choked with the diesel fuel in this evening. The symptom persisted, so he was brought to our emergency department (ER) for management. At fist, his conscious was clear and the vital signs were as below: body temperature of 37.2 degrees C, heart rate of 85 beats per minute, respiratory rate of 24 breaths per minute and blood pressures of 122/71 mmHg. Laboratory data revealed normal hemoglobin and platelet count, normal renal and liver function, normal cardiac enzyme and normal urine analysis. However, leukocytosis (WBC: 10,200 uL), lactic acidosis, elevated C-reactive protein (CRP: 62.4 mg/L) and procalcitonin (PCT: 12.6 ng/ml) were noted. Chest radiograph demonstrated infiltrations over bilateral middle and lower lungs. Acute respiratory failure developed, so endotracheal tube was inserted and mechanical ventilation was initiated. Aspiration pneumonitis with acute respiratory failure was impressed and extended- spectrum antibiotic treatment with piperacillin-tazobactam was administered intravenously, then he was transferred to intensive care unit (ICU) for further management. During admission at ICU, Blood pressure dropped and massive fluid resuscitation and vasopressor were administered. Two days later after ICU admission, chest x-ray revealed progressing of bilateral lungs infiltration and arterial blood gas showed PaO2/FiO2 ratio less than 200 and acute respiratory distress syndrome (ARDS) rapidly developed,

During admission at ICU, his ARDS improved after aggressive management. However, right pneumothorax occurred and chest tube was inserted. After his general condition improved, then he was transferred to RCC due to difficulty in weaning ventilator. More than one month after admitted to RCC, he successfully weaned from ventilator. This patient survived and discharged, but pulmonary fibrosis sequelae developed.

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

肺泡灌洗術細胞學分析於低血氧呼吸衰竭病因探究之應用

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Bronchoalveolar Lavage Fluid Analysis for etiology work-up in Patients with Hypoxemic Respiratory Failure

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Purpose: We aimed to investigate whether the cellular analysis of bronchoalveolar fluid (BALF) could be used to identify the etiology of hypoxemic respiratory failure.

Materials and Methods: Adult patients who were admitted to the ICU because of hypoxemic respiratory failure and received bronchoalveolar lavage (BAL) between March 2018 and April 2022 were retrospectively identified in a medical center in Northern Taiwan. The cases with columnar epithelial cells >10% in BALF and a time interval > 7 days between hypoxemic respiratory failure and BAL were excluded. The etiology of hypoxemic respiratory failure was determined by investigators according to clinical, laboratory, radiologic, microbiological results. Differential counts and CD4/CD8 ratios of BALF were compared between different patient groups.

Results: A total of 177 intubated patients with BALF data were screened. Of these, 68 and 23 patients were excluded because columnar epithelial cells >10% and BAL performed > 7days after hypoxemic respiratory failure, respectively. 86 patients were included in analysis. The neutrophil and lymphocyte percentages of BALF significantly differed among etiologies of hypoxemic respiratory failure (One-way ANOVA, p=0.008 for neutrophil and p=0.012 for lymphocyte). Additionally, the percentage of neutrophil in BALF was significantly higher in bacterial pneumonia (92.3%; IQR 80.0%-96.2%), as compared to fungal pneumonia (31.1%; IQR 14.7%-65.1%). The percentage of lymphocyte in BALF was significantly lower in bacterial pneumonia (1.7%; IQR 0.1%-3.1%), as compared to non-bacterial pneumonia (13.2%; IQR 0.7%-38.7%). The percentage of eosinophil in BALF and CD4/CD8 ratios did not differ among different etiologies of hypoxemic respiratory failure.

Conclusions: BALF demonstrated different cellular pattern in various etiologies of hypoxemic respiratory. Neutrophil and lymphocyte percentages in BALF can aid in distinguishing bacterial pneumonia from viral and fungal pneumonia 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)

PC20

急性呼吸窘迫症患者延遲脫離呼吸器預後存活及預後因子之回溯性研究

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Outcomes and prognostic factors of patients with ARDS and prolonged ventilator weaning: a retrospective study

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Purpose: The application of lung protective strategy improved the clinical outcome of acute respiratory distress syndrome (ARDS) in the past decades. But there was still not much study focused on weaning ARDS patients from medical ventilators and the outcome of prolonged weaning in ARDS patients. Thus we aimed to review these ARDS patients with prolonged weaning and tried to identify the predictors associated with mortality and weaning outcomes.

Materials and Methods: We analyzed a single-center patients, 163 ARDS patient data were collected from medical intensive care units from March 2021 to June 2022 retrospectively. We performed the univariate analysis and multivariate logistic regression analysis of the prognostic variables for mortality and weaning outcomes.

Results: A total of 45 patients who had prolonged weaning and received respiratory care center weaning programs were included. Among these 45 patients, 32 patients (71.1%) survived to discharge, and 27 patients (60%) had successful weaning from prolonged mechanical ventilation. In the analysis of the characteristics, the mortality group had higher frequency with a past history of malignancy, and a lower level of pre-albumin, longer ICU stay, and vasopressor used days. Factors found to be associated with mortality were history of malignancy (OR=26.35, $p < 0.05$) and ICU length of stay (OR=1.11, $p < 0.05$). Neuromuscular blocking agents and steroid usage seem no obvious effect on the survival outcome in our study.

Conclusions: The past history of malignancy and longer ICU length of stay are associated with the mortality of prolong weaning 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)

PC21

在急性呼吸窘迫症候群之恢復期比較間接能量儀測定與預測性營養公式估算之能量消耗相關性 -

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Comparison of Indirect Calorimetry and Predictive Equation in Estimating Resting Energy among Acute Respiratory Distress Syndrome (ARDS) Patients

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Purpose: Indirect calorimetry (IC) is the golden standard for measuring the energy expenditure (EE) of critically ill patients. However, we usually use predictive equations (Pes) for the estimation of EE clinically, which may lead to very inadequate estimation and result in high probability of patient malnourishment. We aimed to investigate the correlation of EE between PEs estimation and IC measurement among acute respiratory distress syndrome (ARDS) patients.

Materials and Methods: We prospectively enrolled patients who was admitted to medical ICU because of ARDS and was recovering from the disease for IC measurement from July 2021 to July 2022. Inclusion criteria were as follows: ≥20 years, diagnosis of ARDS, received mechanical ventilation more than 48 hrs. Exclusion criteria were as follows: hemodynamic instability, tracheostomized patients, PaO2/FiO2 ratio still less than 150. While EE was measured by IC, estimated EE was calculated on the same day by an independent dietician who was blind to clinical outcome by using Harris-Benedict (HB) predictive equation and simple weight-based equation (kcal/kg/d).

Results: During the study period, a total of 130 patients fulfilled the study criteria received IC measurement were analyzed. The mean BMI and measured EE of subjects were 23.0±4.4kg/m2 and 1536.0±39.1kcal/d. The estimated EE using HB equation was 1239.9±273.5kcal/d, meanwhile, simple weight-based equation reported 1218.0±268.3kcal/d to 1542.9±324.4kcal/d applying 20-25 kcal/kg/d. The HB equation and 20kcal/kg simple weight-based equation underestimated EE while the 25kcal/kg simple weight-based equation provided better approximation of EE. Nevertheless, there was only moderate correlation between the 25kcal/kg simple weight-based equation and the IC measured EE (Pearson correlation coefficient, $r=0.465$, $p<0.001$)

Conclusions: The predictive energy expenditure equations are generally not in accordance with IC results for ARDS patients in the present study. Indirect calorimetry should be utilized rather than predictive equations to provide accurate energy targets for critically ill 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)

PC22

運用快速多重聚合酶鏈式反應系統偵測加護病房中的肺炎病原菌和細菌抗藥性

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Using Rapid Multiplex PCR System for Pathogens and Bacterial Resistant Gene Detection on Pneumonia in the Intensive Care Unit

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Purpose: Empirical treatment by broad-spectrum antibiotics for critically ill patients is recommended by most of the current guidelines. However, multi-drug resistant organisms (MDRO) are rapidly rising in the intensive care unit (ICU). A rapid and accurate diagnostic method is essential to ensure the timely administration of targeted antibiotics treatment, as well as to decrease inappropriate antibiotic use in the ICU.

Materials and Methods: A retrospective study was conducted in the medical ICU of a tertiary referral hospital in Taiwan between November 2019 and October 2021. Eligible patients who were admitted to the ICU with a diagnosis of pneumonia were enrolled. On top of conventional microbiological testing, the multiplex PCR system, FilmArray® pneumonia panel (FilmArray PP, BioFire Diagnostics) was used for pathogens and bacterial-resistant gene detection.

Results: A total of 168 patients were included in the final analysis. The FilmArray PP detected at least one potential pathogen in 119 of 168 patients (70.8%), while the conventional sputum culture detected only 45 of 168 patients (26.9%). The most common pathogen detected by Filmarray PP is *Pseudomonas aeruginosa* (46.2%), followed by *Klebsiella pneumoniae* (KP) (38.7%), and *Acinetobacter calcoaceticus-baumannii* complex (37.8%). Multiple pathogen detection (≧ 2 pathogens, including virus) was obtained by Filmarray PP in 72 of 168 patients (42.9%). Drug-resistant genes were detected in 47.8% of the gram-negative bacteria. Among the KP isolate, high concordance of resistant pattern between Filmarray PP and conventional drug sensitivity test was noted.

Conclusions: Multiplex PCR system–FilmArray pneumonia panel offer a targeted PCR-based diagnostic test for pathogens with a higher yield rate than conventional methods, as well as timely and accurate detection of the bacterial-resistant gene among *Klebsiella pneumoniae* isolates.

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

模仿支氣管痙攣之晚發型重症肌無力-案例報告

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Late-onset myasthenia gravis mimicking bronchospasm–A Case Report

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Introduction: Myasthenia gravis is autoimmune disease of neuromuscular junction that often occur in young but uncommon in elderly. Late-onset myasthenia gravis (age > 65 years old) has increasing in the incidence and more frequency in men. Herein, we present a case with late-onset myasthenia gravis.

Case presentation: A 72-year-old woman, with a past history of hypertension, visited the emergency department complained of progressive dyspnea for one week. She has chest tightness and dyspnea on exertion, but denied fever, chills, severe cough, nausea, vomiting or diarrhea. The enhanced chest computed tomography revealed fibrosis and subsegmental atelectasis in the left lingual lobe and bilateral lower lungs without evidence of pulmonary embolism or thymic lesion. After enhanced CT performance, she could not lie down and worsening shortness of breath. After admission, the breath sounds diminished in both lungs. Under the impression of suspected contrast induced bronchospasm, hydrocortisone and bronchodilator inhalation were administrated. But she has progressive tachypnea, dyspnea and orthopnea even under non-rebreathing mask. The blood gas was pH: 7.270, pCO2:52.9 mmHg, pO2: 101.2 mmHg, HCO3: 23.8 mmol/L. Then non-invasive positive pressure ventilator(NIPPV) was used followed by ICU transferal. However, she could not be tolerance without NIPPV and complain hand weakness. The ACh-antibody was 6.86 nmol/L(positive $\geq$ 0.5 nmol/L). The myasthenia gravis was diagnosed. After treatment with methylprednisolne and pyridostigmine, the dyspnea improved and limbs weakness recovered. Finally, we successfully weaned the NIPPV and discharged.

Discussion: Life-threatening respiratory weakness, call myasthenic crisis, occurs in approximately 15% of patients. The symptoms might be similar to bronchospasm or asthma. Late-onset myasthenia gravis is associated with higher rate of seropositive anti-acetylcholine receptor antibodies(AChR). However, the risk of mortality increased in hospitalized elder patient with myasthenia gravis. Otherwise, high incidence of treatment-induced side effects in the elderly was reported. The patients of late-onset myasthenia gravis are more prone to severity and more co-morbidity.

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

透過風險管理策略模型避免嚴重新冠肺炎病人置放氣管內管及呼吸器使用

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Avoidance of Intubation for the severe COVID-19 ARDS Patient via Risk Management Strategy Model: A Case Report.

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A 60-year-old man with known history of DM and HTN was brought to emergency room. He felt tired and have no appetite, cough for 3 days before presentation. Fever (38.5'C) and chest tightness were also experienced. On his arrival, tachypnea, and desaturation (SpO2 was 88% under room air) were recognized. The CXR showed diffuse infiltrates and consolidation in both lower lungs. The nasal swab RT-PCR of COVID-19 was positive. Severe COVID pneumonia was impressed and he was admitted to isolation facility. Initial management included redemesivir, dexamethasone, tocilizumab, enoxaparin and empirical antibiotics. Oxygen therapy was started from 4 L/min via nasal prong to maintain SpO2 above 90%. His risk of intubation was evaluated as high according to VICE score calculation (quintile 5, 90.2%), and the mortality risk was moderate in DICE score (quintile 4, 25.7%). On the 2nd day, his oxygenation deteriorated. Nasal prong was replaced by high flow nasal cannula with flow rate: 50L, and FiO2: 50% setting. The PF ratio was 194 after using HFNC for 2 hours. The calculated ROX index of 2-hour, 6-hour, and 12-hour after HFNC start were 7.19, 9, and 10.56. Patient looked well during this day. Unfortunately, his P/F ratio dropped from 194 to 164 in the following day. His ROX index dropped to 4.29 but the VICE was now in quintile 4 (estimated intubation rate: 66.3%). Since patient refused intubation, awake prone positioning was recommended to him. Two hours after his prone, the ROX index raised to 5.7, and the pulse oximeter read value reached 99-100%. The patient kept using HFNC with flow rate: 60L/min, FiO2: 50%, and awake prone position. The duration of one prone positioning lasted for 2 hours, four times a day, and more than 8 hours per day. On the 7th day, his PF ratio was 253 under HFNC with flow rate: 35 L/min, and FiO2: 40%. We discontinued his awake prone session, and switch his oxygen supply from high flow nasal cannula to nasal prong on the 9th days. Patient was discharged to his home on the 17th hospital day in stable condition without oxygen needed.

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

流感重症併發急性呼吸窘迫症候群病人延長呼吸器使用的危險因素:一項多中心觀察性研究

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Risk factor for required Prolonged Mechanical Ventilation in critically ill patients with influenza-related acute respiratory distress syndrome: a multicenter observational study

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Background: Patients with influenza-related acute respiratory distress syndrome (ARDS) are critically ill and usually received invasive mechanical ventilation (MV). Prolonged MV is often seen in these patients and has negative impact on their outcome. This study aims to investigate the risk factors for prolonged MV and weaning failure in these patients.

Methods: This retrospective cohort study was conducted by eight medical centers in Taiwan. From January 1 to March 31 in 2016, all patients in the ICU with virology-proven influenza-related ARDS requiring invasive MV were included. Demographic data, critical-illness data and clinical outcomes were collected and analyzed.

Results: There were 263 patients with influenza-related ARDS requiring invasive MV enrolled during the study period. Seventy-eight patients had prolonged MV. Final weaning rate is 68.8%. Risk factors for prolonged MV were body mass index > 25 (kg/m^2) [odds ratio (OR) 2.13; 95% confidence interval (CI) 1.03-4.39], extracorporeal membrane oxygenation (ECMO) use (OR 6.65; 95% CI 2.47-17.88), combined bacteria pneumonia (OR 4.11; 95% CI 1.97-8.58) and neuromuscular blocker use (OR 3.48; 95% CI 1.60-7.57). In addition, risk factors for weaning failure were ECMO (OR 5.05; 95% CI 1.75-14.58) use and sepsis (OR 3.91; 95% CI 1.20-12.69).

Conclusions: Patients with influenza-related ARDS were very difficult to be weaned from MV. Overweight, ECMO use and combined bacterial pneumonia were risk factors for prolonged MV. Besides, ECMO use and sepsis predicted weaning 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)

PC26

台灣東部非結核分枝桿菌之初步資料統計及分析

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The Preliminary data of Nontuberculosis Mycobacterium (NTM) in Eastern Taiwan

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Purpose: In recent years, nontuberculosis mycobacterium (NTM) increased percentage in mycobacterium laboratory cultures. Different species of NTM may cause different length of clinical course, which could be differentiated by rapidly growing mycobacterium (RGM) and slowly growing mycobacterium (SGM). In addition, different countries may have different distribution species of NTM. It had been available data of predominant NTM species in Northern, Central, and Southern Taiwan. It had been lack of data from Eastern Taiwan. We aim to clarify the epidemiology of NTM from multiple medical institutions in Eastern Taiwan, including Northern Hualien, Southern Hualien, and even in Taitung.

Materials and Methods: We used MALDI-TOF (matrix-assisted laser desorption ionization-time of flight) mass spectrometry with the MBT Mycobacteria IVD Module as solution for laboratories. The MBT Mycobacteria IVD Library v7.0 covers 178 of the currently known 201 mycobacteria species. Cultivation of mycobacteria is performed in liquid and on solid media in parallel. Both a liquid (MGIT™) and a solid (mainly Loewenstein-Jensen) medium were used for the cultivation of reference strains. Mass spectra of cultures grown in both media were compared to each other. Cultivation data were reviewed retrospectively by case manager.

Results: We collected specimens, including sputum, mycobacteria growth indicator tube (MGIT), pus, tissue, bronchial alveolar lavage (BAL), L-J agar from multiple medical institutions in Eastern Taiwan. Totally, we collected 243 patients in three months, ranging from July, 2022 to October, 2022. *Mycobacterium chimera intracellulare* (58.2%, n=58) and *Mycobacterium fortuitum* (48.2%, n=48) were the most frequently detected species, followed by *M. abscessus* (26.1%, n=26), *M. gordonae* (23.9%, n=23), and others.

Conclusions: In Eastern Taiwan, Mycobacterium avium complex (MAC), such as *Mycobacterium chimera intracellulare*, *Mycobacterium fortuitum,* and *M. abscessus* (Mabs) are three of the mostly common group of NTM as other countries in Taiwan. More data was needed to make more comprehensive analysis and comparison to other countries. Hopefully, more analysis of NTM in clinical aspect might be expected after subsequent drug susceptibility test (DST) data.

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

長期使用呼吸器病人使用全面性肺部復健運動實證案例報告

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Patients with long-term mechanistic ventilation undergo comprehensive pulmonary rehabilitation exercises: Evidence-based practice of critical care

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Objectives: Prolonged of use mechanism ventilation can resulting in ventilator-induced diaphragm dysfunction, and difficulties in weaning. Literature research reveals intervention comprehensive lung rehabilitation exercise can strengthen the muscle strength and muscular endurance, thereby increasing the rate of ventilation weaning. We herein report a patient with using mechanism ventilation for six weeks and difficult weaning, because he could not cooperate with the routine training which bed bicycle. The patient had been successfully weaning mechanism ventilation with comprehensive lung rehabilitation exercise.

Methods: Evidence-based practice of critical care. Searches were conducted in databases including: PubMed, Cochrane Library, CINAHL, MEDLINE, and Airiti Library. Keywords that were used included:「mechanical ventilation」、「exercise」、「rehabilitation therapy」、「pulmonary rehabilitation」、「weaning ventilator」. Search focuses on articles published within 10 years. After screening, there are two articles with randomized controlled trail were extracted.

Results: The results found that comprehensive lung rehabilitation exercise, which can improve the strength of respiratory muscles and effectively improve ventilation weaning rate. Applying the results to this case, Pimax had been significantly increased (Pimax -15 cmH_2O to Pimax -40 cmH_2O). The patient can change position, eat, sit by himself.

Implications for Practice: Comprehensive lung rehabilitation exercise can effectively increase the rate of ventilator weaning and restore the function of independent activities of patients, thereby improving the quality of life.

Key Words: Lung rehabilitation exercise, Weaning, Ventilator-induced diaphragm dysfunction, Evidence-based practice

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

機械能在嚴重新冠肺炎合併急性呼吸衰竭患者的角色

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The role of mechanical power in patients with severe COVID-19 pneumonia and acute respiratory failure

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Purpose: Mechanical power (MP) represents the energy delivered to the respiratory system by the mechanical ventilation (MV). The predictive value for mortality of MP has been demonstrated in critical ill patients receiving invasive MV. The aim of this study was to evaluate the role of MP in patients with severe coronavirus disease 2019 (COVID-19) pneumonia and acute respiratory failure.

Methods: This was a retrospective observational study conducted in a medical center in northern Taiwan. Patients admitted to intensive care units (ICU) with virology-proven severe COVID-19 pneumonia and acute respiratory failure between May and June in 2021 were eligible for the study. We collected and analyzed their demographics, critical ill data and outcomes. The primary outcome was in-hospital mortality. Secondary outcomes were ventilator-free days at day 28 and ICU length of stay.

Results: Forty eight patients were included during the pandemic period. In-hospital mortality was 27%, mean ventilator-free days at day 28 was 6.04, median hospital length of stay was 40 days, median ICU length of stay was 22.5 days. The median MP at the first 24 hour (19.75 vs 16.23 J/min, $p = 0.047$) was higher in non-survivors. The median MP at the first 24 hour (19.17 vs 15.54 J/min, $p = 0.031$) and the third 24 hour (19.28 vs 14.86 J/min, $p = 0.024$)were both higher in patients died within 28 days. Higher MP at the third 24 hour was associated with 28-day mortality(adjusted odds ratio 1.207; 95% confidence interval [CI], 1.008-1.444). MP was not associated with in-hospital mortality, ventilator-free days and ICU length of stay.

Conclusions: Higher MP at the first day and the third day was associated with in-hospital mortality and 28-day mortality in patients with severe COVID-19 pneumonia and acute respiratory 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)

PC29

個案報告：嚴重特殊傳染性肺炎誘發急性呼吸衰竭病人在機械通氣下產生之氣壓傷

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Case Report: Barotrauma in COVID-19-related Acute Respiratory Failure Patient with Mechanical Ventilation

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Purpose: Coronavirus disease 2019 (COVID-19) is recognized as a global pandemic since March 2020. As the disease progresses, it may lead to respiratory failure and require mechanical ventilation. The aim of this report focus on the occurrence of barotrauma, an important complication of mechanical ventilation, to COVID-19 patients.

Materials and Methods: We describe a retrospective case series of the COVID-19 patient who require invasive mechanical ventilation and with occurrence of barotrauma between January 15, 2021 and August 30, 2021 in Linkou Chang Gung Memorial Hospital.

Results: In our case series, we introduce three males whose age are above 65 years old, which is within higher risk age group of developing ARDS in patients infected with COVID-19. Their underlying comorbidities, including hypertension, diabetes, tumor and cardiovascular disease, are also associated with severity of illness in COVID-19 infection. Furthermore, their APACHE II score are respectively 29, 24, and 28. It may imply almost half of mortality rate. In the first patient, he had 60 years smoking history which is the main risk of COPD. Lung disease such as chronic obstructive pulmonary disease (COPD), which mainly manifest itself as emphysema, is a predisposing factor with developing barotrauma. In the second patient, we speculate that inadequate sedation may cause higher occurrence of self-inflicted lung injury (SILI). Due to decreased lung compliance and severe hypoxemia with hypercapnia, the third patient was under higher ventilator pressure which may increase the risk of barotrauma.

Conclusions: We noticed that the higher incidence of barotrauma in COVID-19 patients despite the patients with only pneumonia or mild ARDS. Applying of lung protective strategy with sedative agents to those in less severe pulmonary condition is controversial; However, they may develop barotrauma under conventional ventilator management and the cause is still needed further study. It is crucial to keep a close observation of clinical presentation and arrange necessary examination, focusing on assessment of potential associations which might lead to barotrauma.

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

一位類風溼性關節炎個案罹患腹膜結核病以類似腹膜轉移癌為臨床表現和腹膜壞死性肉芽腫性病變為病理表現

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A case of rheumatoid arthritis had peritoneal tuberculosis with clinical presentation mimicking peritoneal carcinomatosis and with necrotizing granulomatous inflammation of the omentum in pathology

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Peritoneal tuberculosis incidence accounts for 0.1-0.7% of all tuberculosis cases, and it is challenging to be distinct from peritoneal carcinomatosis clinically. It needs further differentiation with rheumatoid nodules, while the pathology yields necrotizing granulomatous inflammation if the patient has rheumatoid arthritis. Here we presented a 69-year-old woman with rheumatoid arthritis who experienced general malaise and abdominal distention for two weeks, accompanied by loss of appetite and body weight loss for one month. She visited our hospital for a second opinion due to no definite diagnosis. The abdominal and pelvic CT in the other hospital revealed massive ascites with omental cake, multiple paraaortic lymphadenopathies, multiple splenic cystic lesions, and equivocal small cystic lesions at the bilateral adnexa. Pseudomyxioma peritonei (malignancy) or peritonitis were considered after consultation with a radiologist. Besides, elevated CA-125 was found. The general surgeon was consulted to perform a laparoscopic omentum biopsy, and the operative finding showed many whitish spots on the abdominal wall. Pathology revealed necrotizing granulomatous inflammation, which could not be distinct from tuberculosis and rheumatoid nodules. After discussion with the pathologist for the differential diagnosis, rare acid-fast positive bacilli were found in the sections for repeated acid-fast stains. Further TB PCR of mediastinal lymph node and pleural effusion showed positive and traced detected separately. The patients then received standard therapy for disseminated pulmonary tuberculosis. After three months of treatment, clinical symptoms and body weight were improving, and following CT revealed diminished omental cake, ascites, pleural effusion, and 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)

PC31

乙醯胺酚中毒後合併心碎症候群

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Takotsubo Cardiomyopathy following Acetaminophen Intoxication

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Introduction: Acetaminophen is a widely used analgesic agent and the leading cause of drug-induced hepatic failure. Encephalopathy and kidney injury were well-known for clinician; however, its cardiotoxicity is less reported. We presented a case with acetaminophen intoxication-induced hepatic failure and renal failure, accompanied with Takotsubo cardiomyopathy, a rare but severe complication.

Case presentation: A 43-year-old Caucasian male presented to emergency department for his conscious disturbance and progressive dyspnea for one day. He received antipsychotic medications regularly for major depressive disorder, including Zolpidem, Trazodone, Lorazepam, Escitalopram, Pregabalin and Tramadol/acetaminophen. Nausea, vomiting, and dyspnea were noted several hours after taking a large amount of the above medicine. A physical examination showed comatose status and bilateral lung crackles. Arterial gas analysis showed pH: 7.2, PCO2: 80mmHg, HCO3: 24.3 mmol/L and PF ratio: 30mmHg. Laboratory data demonstrated elevation of alanine aminotransferase (5518U/L), aspartate aminotransferase (4340 U/L), ammonia (402 ug/dL), Troponin-I (0.23 ng/mL), NT-proBNP (1984 pg/mL), and elevated acetaminophen level. Chest X ray showed bilateral alveolar pattern. Electrocardiogram revealed sinus tachycardia with low voltage. Bedside ultrasound showed consolidation over right side, bilateral diffuse B-line, hypokinesia over mid segment and apical area of heart, and decreased diameter of inferior vena cava. Tentative diagnosis were acute hepatic failure, heart failure, and right aspiration pneumonia with acute respiratory distress syndrome. He received emergent intubation and was admitted to the intensive care unit.

Antibiotics therapy, acetylcysteine infusion, lung protection strategy ventilation with prone positioning were done. The cardiac enzymes (maximum Troponin-I: 18.9685 ng/mL) and serum creatinine (maximum creatinine: 10.76 mg/dL)elevated progressively on the following days and a transient pulseless ventricular tachycardia occurred once. Cardiac catheterization showed patent coronary artery but apical hypokinesia, suspected Takotsubo cardiomyopathy. Hemodialysis was initiated for worsening renal function and fluid retention. After the antidote use, infection control, and dialysis, the hemodynamic status became stable. The patient was clear and tolerated with weaning program. He got extubation on day 10 and discharged on day 20.

Discussion: Takotsubo cardiomyopathy is a syndrome of transient cardiac dysfunction because of catecholamines release in stress conditions. Although cardiac injury is a rare complication of acetaminophen intoxication, oxidative stress and ATP depletion-induced cell damage have been reported. A case-based review observed that heart damage is more common in patients with acetaminophen-induced encephalopathy, like this case. Acetylcysteine may have a protective effect on them. In conclusion, acetaminophen overdose can have impacts on multiple organs, not only on the liver and kidney but also on the heart.

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

IL-40 在敗血症中的角色

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The role of IL-40 in sepsis

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Purpose: Interleukin 40 (IL-40) is the latest known human cytokine, which was found in 2017, and it is known to be secreted mainly by fetal liver, bone marrow, and activated B cells. There are no studies that explored the role of IL-40 in sepsis. In this study, we try to demonstrate the relationship between IL-40 and sepsis.

Materials and Methods: The serum IL-40 of healthy subjects, ICU non-sepsis patients, and ICU sepsis patients was analyzed by the "Human Protein IL-40 (C17orf99) ELISA Kit". The clinical information of those subjects was also collected. We studied the serum IL-40 between the three study groups and the correlations between serum IL-40 and comorbidities, clinical severity, laboratory tests, and clinical outcomes (including 14-day mortality, 21-day mortality, and 30-day mortality) in the sepsis patients.

Results: There was no significantly difference of serum IL-40 between healthy subjects (n = 10), non-sepsis (n = 11), and sepsis patients (n = 51) (*p* value: 0.204). However, elevated serum IL-40 concentrations (≥ 1.0 ng/ml) were almost exclusively seen in ICU sepsis patients. For ICU sepsis patients with "SOFA score ≥ 8" and "serum IL -40 ≥ 1.0 ng/ml" had significantly higher "21-day mortality" rate (*p* value: 0.009) and "30-day mortality" rate (*p* value: 0.016) by Kaplan-Meier estimator. In addition, by the Cox regression model with backward variable selection method, "serum IL -40 ≥ 1.0 ng/ml" is still a significant risk factor of "21-day mortality" (adjusted HR: 29.257, 95% CI: 3.301-259.319, *p* value: 0.002) and "30-day mortality" (adjusted HR：8.316，95% CI：1.541-44.876，*p* value：0.014).

Conclusions: Based on our study, the elevated serum IL-40 concentration (≥ 1.0 ng/ml) on the first day after ICU admission was only found in sepsis patients among the critically ill patients who were not immunocompromised. For ICU sepsis patients with "SOFA score ≥ 8", "serum IL-40 ≥ 1.0 ng/ml" is a significant risk factor for "21-day mortality" and "30-day 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)

PC33

探究新冠肺炎住院病人需求氧氣的影響因子

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Factors related to oxygen requirement in hospitalized COVID-19 patients

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Abstract

Purpose Coronavirus disease 2019 (COVID-19) has become a great impact on the human health and the society in the globe since November 2019. The patients infected with COVID-19 may present mild to severe respiratory symptoms. We analyzed factors related to oxygen requirement in hospitalized COVID-19 patients.

Methods The patients admitted to the Taichung hospital due to COVID-19 infection from March 1, 2020 to April 30, 2022 were enrolled. We extracted their medical records after obtaining the approval of the institutional review board. The outcome variable was the need of oxygen supplement during hospitalization. We used logistic regression to estimate the risk (odds ratio [OR]) of oxygen supplement in patients infected with COVID-19.

Results The 436 patients (220 male and 216 female) were admitted due to COVID-19 infection between March 1, 2020 and April 30, 2022. Among them, 62 patients with original wild-type strain, 46 patients with alpha variant, 101 patients with delta variant, and 227 patients with omicron variant were enrolled. The need of oxygen supplement was 1.6% for original wild-type strain, 32.6% for alpha variant, 2% for delta variant, and 2,6% for omicron variant, respectively. Multi-logistic regression analysis showed that alpha variant (OR = 22.247, $P = 0.007$), age (OR = 1.106, $P < 0.001$), and diabetes mellitus (OR = 8.564, P = 0.012) were independent risk factors of oxygen requirement in hospitalized COVID-19 patients.

Conclusion The current study indicated that older age, diabetes mellitus, and alpha variant infection were risk factors of oxygen requirement in hospitalized COVID-19 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)

PC34

疫苗無效論？COVD-19 疫苗在確診住院病人中的困境

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The Challenge of COVID-19 Vaccination in Real-World Hospitalized Situation, A Retrospective Cohort Study

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Purpose: With the emergence of Omicron variant of SARS-CoV-2, Taiwan has encountered the greatest COVID-19 pandemic since 2022 spring, causing over 6 million confirmed cases and over 10 thousand deaths. In this study, we analyzed the characteristic, vaccination and outcome of hospitalized COVID-19 patients under quarantine in dedicated ward.

Materials and Methods: This retrospective study enrolled hospitalized COVID-19 patients in dedicated wards of the district hospital in southern Taiwan from May 2022 to July 2022. Patients with and without vaccination were matched by propensity scores based on Charlson comorbidity index (CCI), gender, quick Sequential Organ Failure Assessment score (qSOFA), absolute lymphocyte count, and therapies. We assessed the in-hospital mortality, hospital length of stay (LOS) and dedicated ward LOS.

Results: From 209 COVID-19 patients admitted to dedicated ward, the overall in-hospital mortality rate was 23.9%, the mean hospital LOS was 7.06 days, and mean dedicated ward LOS was 5.74 days. After matching (n = 63 per group), the in-hospital mortality rate were 25.4% and 27.0% (p = 0.839) in patients with and without vaccination. The hospital LOS and dedicated ward LOS also had no statistical significance.

Conclusions: COVID-19 vaccination had insufficient effect on hospitalized COVID-19 patients with multiple comorbidities.

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

新冠肺炎 Omicron 變異株對肺移植病患的影響

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Impact of COVID-19 Omicron Variant in Lung Transplantation Patients

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Background: The lung transplantation patients with the diagnosis of COVID-19 had a high mortality rate that up to 55% in previous studies. However, the impact of the Omicron variant in lung transplantation patients was not well known. In this study, we investigated the clinical presentation and pulmonary function in lung transplantation patients with the diagnosis of the COVID-19 Omicron variant.

Methods: In this single-center retrospective study, we collected all the lung transplantation patients with the diagnosis of COVID-19 from Jan. 2020 to Jun. 2022. We collected the patient's demographic data, laboratory data, and pulmonary function data from the electrical medical record. The pre-COVID-19 pulmonary function test was got from the closest routine test and the post-COVID-19 test would be arranged after being released from quarantine.

Results: There were 15 patients diagnosed with COVID-19 during this period. Seven patients (46.7%) were female, and the average age was 51.1±13.6 years. The average duration from lung transplantation to the diagnosis of COVID-19 was 18.2 months. The most common symptom was cough (93.3%), and fever was detected in 6 patients. Three patients were admitted to the general ward for treatment and observation, and only 1 patient needed an oxygen supplement. No mortality or long-term complication was noted. There was no significant change in forced vital capacity (FVC), forced expiratory volume in the first second (FEV1), or the distance of 6 minutes walking test comparing pre-COVID-19 and post-COVID-19 examination. The change of FEV1 was significantly correlated to pre-COVID-19 steroid dose, tacrolimus serum level, and the doses number of vaccination.

Conclusions: The lower rate of mortality or critical condition of the COVID-19 Omicron variant comparing to wild type or other variant was also seen in lung transplantation patients. The immunosuppressant dose and the dose number of vaccination were significantly correlated to the change in pulmonary function test.

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

游離 DNA 甲基化程度在區別活動性結核與潛伏結核感染之可能角色

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The potential value of global cell free DNA methylation in differentiating active tuberculosis and latent tuberculosis infection: a prospective study

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Purpose: Useful biomarkers that can differentiate active tuberculosis (TB) from latent tuberculosis infection (LTBI) remain rare. Although patients with TB may have increased methylation of genomic DNA, implying *Mycobacterium tuberculosis*-related immune suppression, it remains unknown if the methylation level of cell-free DNA (cfDNA) differs between TB patients and individuals with LTBI.

Materials and Methods: TB patients and close contacts were enrolled during 2016-2021 at Taipei Veterans General hospital. Contacts were classified into those with LTBI and uninfected ones based on results of interferon gamma (IFN-γ) release assay. The percentage of global methylation of plasma cfDNA was measured by 5-methyl cytosine (5mC) DNA enzyme-linked immunosorbent assay kit (5mC%). Factors associated with TB were analyzed by logistical regression.

Results: 133 participants were enrolled, including 50 (37.6%) TB patients, 54 (40.6%) contacts with LTBI and 29 (21.8%) uninfected ones. The 5mC% were higher in TB (8.96±6.38) group than in LTBI (4.92±1.73) and uninfected ones (5.32±1.92) (both P<0.001). A receiver operating characteristic curve analysis revealed that the optimal cutoff point for 5mC% to differentiate TB from LTBI was 6.6% (area under the curve: 0.711; 95% CI, 0.608-0.815; P<0.001). Sensitivity and specificity of using 5mC >6.6% to identify patients with TB were 60.0% and 87%, respectively. Of note, CRP level was positively correlated with 5mC% (r = 0.290, P =0.003) in overall population. In a multivariate analysis, the independent factors for TB were 5mC%>6.6% (OR, 7.771; 95% CI, 2.729-22.129; P <0.001), and CRP (OR, 4.582; 95% CI, 1.286-16.327; P = 0.019). In a sensitivity analysis with further adjustment for both TB-specific and non-specific IFN-γ, 5mC%>6.6% remained an independent factor for TB disease (OR, 6.718; 95% CI, 1.475-30.594; P = 0.014).

Conclusions: Global methylation level of cfDNA was higher in active TB group than in the LTBI and uninfected groups. It was an independent factor for differentiating TB from LTBI and associated with CRP level, probably suggesting a compensatory hypermethylation of genomic DNA in response to elevated inflammatory status. Further investigations were deserved to assess its clinical value on helping identify TB patients among TB suspects.

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

一位 78 歲因膿胸惡化導致之急性化膿性心包膜炎

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A 78-year-old woman suffered from acute purulent bacterial pericarditis caused by uncontrolled empyema

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Abstract

Acute purulent bacterial pericarditis is a rare medical emergency in the modern antibiotic era, which may deteriorate rapidly and lead to devastating outcome. Prompt diagnosis and early surgical intervention is a cornerstone of treatment. We report a 78-year old man who presented with cough, chest pain and effort breathing. Initially, pneumonia with empyema was impressed, however, tube thoracotomy drainage failed due to loculated organized empyema. Despite the strong recommendation of surgical decortication, the patient and his family requested for conservative medical treatment rather than operation. Broad-spectrum antibiotics was prescribed with good clinical improvement at the beginning; thus the patient was scheduled to accept prolong antimicrobial therapy in the general ward. However, abrupt onset of shock with clinically low cardiac output was observed. Physical examination revealed high fever, pericardial rub, and jugular vein engorgement. Immediate echocardiogram and chest computed tomography found local effusion in the pericardium, causing by preexisted empyema direct invasion. Emergent video-assisted thoracoscopic pericardiectomy and decortication surgery was performed, the patient's hemodynamic status stabilized after the operation. Afterward, the debrided tissue bacterial culture yield Staphylococcus aureus and the patient received prolonged definite antimicrobial treatment. Follow-up echocardiogram showed improved ejection fraction and there was no restrictive pericarditis sequalae observed, the patient was discharged three weeks after the surgery. Acute purulent pericarditis can rapidly progress into cardiac tamponade, systemic toxicity and cardiac dysfunction that led to almost 100% mortality if left untreated. In this case, timely diagnosis and successful source control results a favorable outcome and minimize the long term complication.

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

COVID-19 引發呼吸衰竭拔管後使用經鼻高流量氧氣之照護

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High flow nasal cannula use in a severe COVID-19 patient after extubation

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Introduction: The common initial presentation of coronavirus disease 2019 (COVID-19) is dry cough, fever, and sorethroat. The disease progresses with acute respiratory failure in some patients. After treatment and ventilator weaning off, high flow nasal cannula (HFNC) can be used. HFNC can provide continuous high concentrated, humidified oxygen. It decreases the discomfort of drying throat and helps sputum expectoration.

Case Presentation: 62-year-old man is a case of lung adenocarcinoma with multiple bone and brain metastases, cT4N0M1c, stage IV. He was admitted to intensive care unit this time for confirmed COVID-19 and acute respiratory failure. Tracheal intubation with mechanical ventilator was used for his respiratory failure. Chest film showed right side massive pleural effusion. Tube thoracostomy was done for pleural effusion. After medication use and ventilator support, the pneumonia resolved. The ventilator was weaned off and extubation was performed on day 5 after admission. After extubation, HFNC was used for his poor sputum expectoration. Improved cough ability was noted after HFNC use. On day 7, HFNC was successfully shifted to nasal cannula use.

Discussion: HFNC can provide gas of 37˚C and 100% relative humidity and it may help airway clearance of secretion. It also generates positive airway pressure (3-5 cmH2O) in nasopharynx. So HFNC is useful to decrease the re-intubation rate after waning ventilator from acute hypoxic respiratory 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)

PC39

兒童新冠病毒感染合併急性腦炎與呼吸衰竭之照護經驗

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A child with COVID-19 infection complicated with acute encephalitis and respiratory failure: a case report

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Introduction: Children infected with the new coronavirus are mainly mild or asymptomatic. However, several cases of complicated acute encephalitis have been found in Taiwan. The course of the disease changes rapidly and the risk of death is high. We present a case in children with novel coronavirus infection complicated with acute encephalitis and respiratory failure.

Case Presentation: The case is a 6-year-old boy with a history of allergic rhinitis and asthma. He got the new coronavirus due to a family cluster. He had fever, decreased activity, and seizure-like movement. He sought emergency medical treatment. In the emergency department, he presented with high fever (BT:42) and hypotension. He was intubated with ventilator support. He was treated with Remdesivir and anti-inflammatory immunoglobulin (IVIG). Abnormal biochemical test revealed after admission day 2: ALT> 5000 (U/L), AST> 5000 (U/L), Ammonia N: 398 (μmol/L), PLT: 60 (K/μL), Fibrinogen:93.6 (mg/dl), D-Dimer> 35 (mg/L FEU). Acute hepatic failure and disseminated intravascular coagulation were suspected. Continuous veno-venous hemodialysis (CVVH) and plasmapheresis were performed. Intracranial pressure detector was also placed for monitoring and 24-hour electroencephalogram was used. He received fifth plasmapheresis and consciousness improved. He was successfully weaned off ventilator on day 18 and transferred to general ward for further rehabilitation.

Discussion: Acute encephalitis in children infected with the new coronavirus will increase the risk of death. In addition to the use of antiviral and anti-inflammatory medication, biochemical tests are also used to evaluate whether it develops into multiple organ dysfunction. Acute encephalitis requires close monitor to neurological changes and early intervention. Appropriate ventilator support to respiratory failure is also needed.

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

Doripenem 治療院內感染肺炎的療效和安全性：統合分析

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Doripenem in the Treatment of Patients with Nosocomial Pneumonia: A Meta-Analysis

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Purpose: Introduction: Clinically, doripenem therapy for nosocomial pneumonia remains a serious concern. The purpose of this meta-analysis was to explore the efficacy and safety of doripenem therapy for nosocomial pneumonia in comparison with other antimicrobial agents

Materials and Methods: Studies were eligible for inclusion only if they directly compared the clinical effectiveness of doripenem and other antimicrobial agents therapy for nosocomial pneumonia in adult patients between January 1, 2000 and April 30, 2022. All studies were included if they reported one or more of the following outcomes: clinical cure rate, microbiological cure rate, all-cause mortality, and adverse events.

Results: Six randomized controlled trials and three retrospective studies were included in the meta-analysis. There were 952 patients in the doripenem group and 1183 patients in the comparator group. The comparator antimicrobial agents included imipenem/cilastatin, meropenem, and piperacillin/tazobactam. Seven studies had a high risk of bias. Doripenem therapy for nosocomial pneumonia had a microbiological cure rate, clinical cure rate, all-cause mortality, and adverse events similar to those of comparators.

Conclusions: The efficacy and safety of doripenem therapy for nosocomial pneumonia were comparable with those of comparators. Randomized controlled trials are needed to confirm the role of doripenem in nosocomial pneumonia 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)

PC41

DHPS 基因變異對非 HIV 患者肺囊蟲肺炎的臨床影響

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Clinical outcomes and the impacts of dihydropteroate synthase gene mutation in Pneumocystis pneumonia among non-HIV-infected patients

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Background: The *Pneumocystis jirovecii* is one of the most important pathogen that cause pneumonia in immunocompromised patients. The clinical manifestations are different between HIV-infected and non-HIV-infected patients. The definite treatment and prophylaxis is the use of sulfamethoxazole and trimethoprim combination. It is a sulfa drug, and it inhibits dihydropteroate synthase (DHPS), which is a key enzyme in the folate synthesis pathway of bacteria. Mutations in the DHPS gene of *Pneumocystis jirovecii* increases because of prior exposure to sulfa drugs or transmission. However, the clinical implications are still uncertain.

Methods: This multicenter retrospective cohort study was conducted in the three tertiary referral hospitals in Taiwan between November 2016 and June 2020. Patients with positive *Pneumocystis jirovecii* polymerase chain reaction were included. Patients with invalid DHPS mutation analysis, chronic respiratory failure, HIV infection or *Pneumocystis jirovecii* colonization were excluded. It aims to describe the DHPS mutation on non-HIV-infected patient outcomes.

Results: A total of 391 patients were screened, and 273 patients were included in the study. 98 (35.9%) patients with DHPS mutation, and 175 (64.1%) patients without DHPS mutation. There were no differences in mechanical ventilation use rate, 30-day mortality rate and hospital mortality rate between the wild type and DHPS mutant group. Besides, 85 (31.1%) patients died within 30 days. There were more solid tumor (51.8 % vs. 26.6 %, p <0.001) and thrombocytopenia (51.8 % vs. 34.6 %, p =0.007) patients in the non-survivors compared with survivors. LDH (451 vs. 356 U/L, p =0.010) and CRP level (13.92 vs. 8.54 mg/dL, p =0.002) were both significantly higher in the non-survivor group. Almost every patient received combination with sulfamethoxazole and trimethoprim, but the patients receiving glucocorticoid after *Pneumocystis jirovecii* pneumonia had worse outcome (Hazard ratio =1.655, 95% confidence interval =1.018 – 2.689, p =0.042). After adjustment for important confounders, the LDH higher than 500 U/L (Adjusted hazard ratio =2.710, 95% confidence interval =1.611 – 4.557, p <0.001) and having solid tumor (Adjusted hazard ratio =2.204, 95% confidence interval =1.211 – 4.009, p =0.010) were still associated with higher mortality.

Conclusions: In non-HIV infected patients with *Pneumocystis jirovecii* pneumonia, we found that a higher LDH level and having solid tumor were associated with higher mortality. DHPS mutations did not relate to worse 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)

PC42

延長型呼吸器使用之氣切病人在不同氧氣提供模式的自主呼吸器脫離訓練的氣道微粒散佈

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Aerosol particle dispersion in different modes of oxygen delivery during the spontaneous breathing training in tracheostomized subjects with prolonged mechanical ventilation

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Purpose: Liberation from mechanical ventilation in tracheostomized patients almost always involves the connection between ambient air and the environment and the use of humidified air. However, the emerging pandemic such as COVID-19 has raised the concern. The use of oxygen devices might result in additional risk to the exhaled breath aerosol induced by normal breathing, partly due to the increased humidification by the devices accompanying the provision of oxygen. The aim of this study was to investigate the probability of aerosol particles spreading during the care of tracheostomized patients undergoing weaning.

Materials and Methods: This prospective observational study was conducted at the dedicated weaning unit at a university-affiliated medical center in Taiwan. We continuously measured the number of ambient aerosol particles at twelve locations surrounding the subjects, while they received the weaning attempts of spontaneous breathing with different oxygen support methods.

Results: Of the nine participating subjects, eight (89%) were successfully liberated from the ventilator, with a mean length of stay of 17.3 days at the weaning unit. The aerosol particle numbers of the measurement points surrounding the subjects were variable among the subjects. However, the particle numbers were markedly increased during the sessions of nebulization therapy, whereas different methods of oxygen support devices exerted similar numbers of ambient particles.

Conclusions: Nebulization therapy carries a higher risk for aerosol dispersion into the ambient environment of tracheostomized subjects on prolonged mechanical ventilation. The difference in particle dispersions among various methods of oxygen support was not significant.

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

肺盤尼西林黴菌感染

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Pulmonary Penicilliosis

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Purpose: A case of pulmonary penicilliosis in an immunocompetent patient with chronic obstructive pulmonary disease was reported with no underlying systemic immunosuppression and travel history before.

Materials and Methods: Case :Report: A 79-year-old man had COPD without smoking. His respiratory s/s got progressively worsened with repeated acute exacerbation. CT was performed showed Rt middle lobe and Lt lingual lobe lesion. There was no fever, weight loss, malaise, lymphadenopathy, or skin lesions. Human immunodeficiency virus (HIV) serology was not checked. Patient displayed no sign of any systemic immunosuppressive condition. On the basis of BAL culture localized pulmonary penicilliosis was diagnosed.

Results: The patient was treated with fluconazole for 3 months. He showed satisfactory treatment tolerance.

Conclusions: Penicillium is a dimorphic fungus, transmission way n to humans remains unclear. Cases of penicilliosis in non-HIV patients are rare and often associated with other conditions such as malignancy, organ transplants, or autoimmune illness, can also be found without underlying disease. The patient was immunocompetent, but his lung immunity was probably impaired because of COPD aging may also have participated in impaired immunity. The first-line treatment fluconazole can be used alone for 10 to 12 weeks in mild or moderate forms of the disease. Isolation of Penicillium in BAL fluid samples where it had not been found before. In summary, we report a case of pulmonary infection by ***P.*** in an immunocompetent patient 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)

PC44

致命的感染症肺非典型分支桿菌合併肺麴菌覆發

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Highly lethal opportunistic co-infection with Aspergillus and NTM

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Purpose: Aspergillosis carry a poor prognosis while with large aspergilloma, pleural disease and cavity lung. Co-infection by NTM was shown to be an independent factor of mortality. This may represent lung damage caused by both infection

Materials and Methods: The 70-year-old man was admitted due to ground like sputum and then visit Chest OPD. He has past history of 1) old pulmonary tuberculosis s/p complete treatment 2) GU 3) bronchiectasis 4) NTM under RIF+EMB+clarithromycin treatment.5)recurrent aspergillosis of lung The patient was regular CM OPD follow up due to bronchiectasis and NTM. After the patient received treatment in the clinic, brown sputum did not improve, he then came to our OPD. Under the impression of 1.Bronchiectasis with secondary infection, 2.NTM, the patient was admitted for further management., the impression 1.Bronchiectasis with secondary infection 2.NTM, Arrange bronchoscopy because continued hemoptysis cause to be further investigated if fungus ,malignancy or others. BAL checked over LUL cavity with bleeding site for analysis with aspergillus antigen positive.

Discussion: Antifungal therapy had limited effectiveness. Patients with localized infections (e.g., aspergilloma) were often treated by surgical procedures,TAKEDA *et al*. recently found that the non-treatment of CPA in NTM co-infected patients led to a higher mortality, suggesting that the driving death was the CPA, not the NTM infection. the importance of early establish diagnosis, commence treatment and prevent further lung tissue destruction and life-threatening manifestations such as hemoptysis. Delayed or inadequate antifungal therapy is associated with progression, whereas sustained clinical response is usually associated with long-term antifungal therapy surgery, prevention of antifungal resistance and alternative antifungal options for those fail to azole therapy.

Results: After treatment, the patient condition stable and symptoms improved but expired 4day later

Conclusions: Studies have examined the relationship between NTM and CPA, showing that in patients with NTM, CPA is an independent predictor of mortality. invasive aspergillosis remains a highly lethal opportunistic infection. Severe underlying conditions that predispose patients to aspergillosis, it is difficult to separate deaths due to aspergillosis from those associated with the underlying disease. Recently, a study that evaluated the efficacy of Itraconazole against *Aspergillus* reported a correlation between in vitro resistance and clinical 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)

PC45

膿腫分枝桿菌肺病的持續痰培養陽性角色研究: 探討盛行率、及其預測因子與造成臨床惡化之影響程度

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Microbiological persistence in patients with *Mycobacterium abscessus* complex lung disease: The prevalence, predictors and the impact on clinical progression

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Background: Persistent growth of *Mycobacterium abscessus* complex (MABC) in the respiratory specimen may indicate continuous infection of MABC lung disease (MAC-LD), but its prevalence and clinical significance has not been investigated. We therefore aimed to evaluate the clinical characteristics and predictors of persistent culture-positivity for MABC (MABC-PP) and the its impact on progression in MABC-LD.

Methods: The present study was conducted in 2 medical centers in northern Taiwan, National Taiwan University Hospital (NTUH) and Far Eastern Memorial Hospital (FEMH). From January 2011 to December 2019 at NTUH, and from January 2010 to December 2019 at FEMH, we enrolled patients with MABC-LD and investigated the prevalence and predictors of MABC-PP. Furthermore, we analyzed the association between MABC-PP and the radiographic or clinical deterioration.

Results: Among 208 patients with MABC-LD, 68 (32.7%) were in the MABC-PP group. Independent predictors for MABC-PP included the radiographic score (adjusted odds ratio [aOR], 1.133; 95% confidence interval [CI], 1.037-1.238 per 1-point increment), the highest acid-fast stain (AFS) of strong positivity (3 – 4+) at the initial diagnosis (aOR, 2.391; 95% CI, 1.063-5.377, compared with negative AFS). MABC-PP was independently associated with MABC-LD progression (adjusted hazard ratio [aHR],1.60; 95% CI, 1.085-2.349, p=0.018) by multivariable Cox proportional hazard regression. In addition, the multivariable model for the clinical progression of MABC included the highest AFS in group (aHR, 1.815 [1.172-2.809] for AFS: trace-2+, and 3.118 for AFS: 3-4+ [1.943-5.002] compared with patients with negative AFS, p<0.001) and radiographic score (aHR, 1.053 [0.998-1.110] per 1-point increment; p=0.060).

Conclusions: MABC-PP accounted 32.7% and was predicted by initial AFS titer and radiographic score. Patients with MABC-PP, high AFS titer and radiographic score might have disease progression and should be carefully managed.

Keywords: nontuberculous mycobacteria (NTM); *Mycobacterium abscessus* complex (MABC); predictor; microbiological persistence; 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)

PC46

執行氣囊漏氣測試於新冠肺炎使用呼吸器病人拔管成功預測之分析

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Cuff leak test and extubation outcome in critically ill COVID-19 patients with acute respiratory failure

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Background: Cuff leak test (CLT) is recommended to predict post-extubation stridor (PES) in high-risk patients. The impact of CLT and extubation outcome in severe COVID-19 patients were analyzed.

Methods: CLT was performed in severe COVID-19 patients with endotracheal intubation. The results were compared with that in patients with severe non-COVID community-acquired pneumonia (CAP). CLT results were also compared in COVID-19 patients with or without pre-extubation corticosteroid therapy.

Results: This study includes 34 severe COVID-19 and 42 severe non-COVID CAP patients. 21 of 34 COVID-19 patients had CLT before extubation. The percentages of positive CLT were comparable in COVID-19 and non-COVID CAP patients (9.5% vs. 14.3%, P=0.593). The cuff leak volumes (307.80±118.58 ml vs. 272.30±148.98 ml, P=0.346) and cuff leak percentages (50.49±17.24% vs. 45.94±22.02%, P=0.412) were not different significantly between the two groups. All the COVID-19 patients were extubated successfully without PES irrespective of the results of CLT. Only 1 in 6 CLT-positive non-COVID CAP patients had PES but was managed well without re-intubation. Multivariate analysis revealed female gender and the duration of endotracheal intubation are positively correlated to positive CLT.

Conclusions: The rate of positive CLT in severe COVID-19 patients is no higher than that in severe non-COVID CAP. The results of CLT and extubation outcomes in COVID-19 patients are comparable to non-COVID CAP patients. Like in other patients with endotracheal intubation, CLT would be performed in severe COVID-19 patients with a higher risk of PES, especially in females and those with a longer duration of endotracheal intubation.

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

分枝桿菌肺病於加護重症對影響死亡率與呼吸器使用之重要性

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The impact of mycobacterial lung disease in critically ill patients: significance for survival and ventilator use

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Purpose: This study aims to explore the clinical significance and the prognostic impact of mycobacterial lung disease, including tuberculosis (TB) and nontuberculous mycobacterial lung disease (NTM-LD), in critically ill patients.

Materials and Methods: This study used a de-identified clinical data from January 2006 to December 2020, retrieved from National Taiwan University Hospital-integrative Medical Database (NTUH-iMD). We enrolled critically ill patients admitted to intensive care units (ICU) and analyzed the association of TB/NTM-LD and 30-day mortality after ICU admission and mechanical ventilation-free survival at 30 days if patients newly received invasive mechanical ventilation. The death information was collected from the national death reporting system of Taiwan.

Results: During the study period, a total of 5,548 ICU-admitted patients with body mass index and smoking status were included. It contained 5,11 patients with TB and 1,62 patients with NTM-LD. The overall 30-day mortality was 21.47%. In the multivariable Cox proportional hazard regression model for 30-day mortality, the adjusted hazard ratio (aHR) was 1.43 (95% CI, 1.19-1.73, p=0.021) and 1.46 (95% CI, 1.06-2.01, p<0.001) for patients with TB and NTM-LD, respectively, comparing with ICU patients with negative sputum mycobacterial culture. The aHR of ESRD and active cancer were 3.15 (95% CI, 2.24-4.42, p<0.001) and 2.54 (95% CI, 2.26-2.86, p<0.001) respectively. In the model of multivariable Cox regression for mechanical ventilation-free survival at 30 days in patients newly receiving invasive mechanical ventilation, NTM-LD predicted unfavorable mechanical ventilation-free survival with aHR 0.71 (95% CI, 0.56-0.92, p<0.001) but TB did not. Acute respiratory failure itself predicted unfavorable outcome for 30-day mortality (aHR 1.35, 95% CI 1.2-1.53, p<0.001) and mechanical ventilation-free survival at 30 days (aHR 0.75, 95% CI 0.7-0.82, p<0.001).

Conclusions: TB and NTM-LD were not uncommon in ICU but both NTM-LD and TB correlated with increasing 30-day mortality in ICU patients. Patients with NTM-LD also showed unfavorable outcome for mechanical ventilation-free survival at 30 days.

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

COVID-19 合併急性呼吸窘迫症候群呼吸照護經驗

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Experience of Care in COVID-19 Pneumonia with Acute Respiratory Distress Syndrome

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Introduction: When a patient infected with COVID-19 suffered from severe acute respiratory failure, was intubated and transferred to an intensive care unit for treatment, this highly infectious disease frequently brought about severe acute respiratory distress syndrome (ARDS). Protective measures with isolation and ARDS respiratory treatment measures should be used in this clinical scenario. Therefore I hoped to share this respiratory care experience with this case.

Case Presentation: A 74-year-old female with a past medical history of hypertension, diabetes and mild obesity (BMI: 28), joined a tour group to return to China on March 14th 2020, coughed slightly on the plane, and then got a fever with body temperature>38 C after getting off the plane. She was transferred to the isolation ward for positive 2019-nCoV test on March 15th. In terms of difficult breathing and desaturation (SpO2 <90%), she was early intubated and transferred to the intensive care unit with iNO applied for poor oxygenation on March 24th. Inhaled NO was stopped on April 6th. Thanks to better oxygenation with P/F Ratio: 218, the weaning training was performed on April 8th. After the low pressure support training, on April 13rd, P/F ratio improved to 269 and RSBI (rapid shallow breathing index) 55, the endotracheal tube was removed and oxygen nasal canula was used instead.

Discussion: Patients with highly infectious diseases combined with severe acute respiratory distress syndrome should be cared under the the principles of ARDS mechanical ventilation protocol. The caregivers should also overcome psychiatric stress and pay more attention to self-protection. Weaning from mechanical ventilation should be performed as soon as possible after oxygenation has stabilized. Subsequent treatment with high-dose sedatives and muscle relaxants in the acute phase should be tapered off to strengthen physical training and effective coughing after the patient's ventilator was weaned off, so that the patient can return to normal life as soon as 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)

PC49

吸入性抗黴菌藥使用於新冠肺炎後之侵襲性肺部麴菌感染的病例報告

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A case report of inhaled liposomal amphotericin-B used in the patient with post-COVID invasive pulmonary Aspergillosis

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Abstract: Bacterial or virus co-infections with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have been reported in many studies. *Aspergillus* spp. Can also cause co-infections in patients with COVID-19, especially in severe/critical illness, and lead to poor prognosis. According to trials and case series, early diagnosis and treatment may improve survival. Voriconazole was the first line medication for invasive pulmonary aspergillosis. However, Inhaled liposomal amphotericin-B had been recommended to using as a prophylactic treatment for COVID-19-associated pulmonary aspergillosis/aspergillus tracheobronchitis. But only few cases reported inhaled liposomal amphotericin-B as a therapeutic treatment for invasive pulmonary aspergillosis.

A 78-year-old female with the history of poor controlled diabetes presented with hemoptysis, dyspnea, and fever for one week duration. Sever COVID infection with acute respiratory failure was diagnosed at emergency department. The endotracheal tube intubation and mechanical ventilation were done at emergency department. She was transferred to medical intensive care unit for further treatment. However, progressive desaturation and mild fever were still noted even after isolation were discontinued. Sputum culture yielded Aspergillus niger. Serum aspergillus antigen test also revealed positive. The bronchoscopy which was arranged for bronchial alveolar lavarge reported aspergillus trachea-bronchitis. Intravenous voriconazole was prescribed for invasive pulmonary aspergillosis. After 3 weeks, the clinical condition and image did not improve while sputum culture still yielded aspergillus app. Inhaled liposomal amphotericin-B was added for invasive pulmonary aspergillosis and aspergillus trachea-bronchitis. After 3 week, the clinical condition and image both improved. The bronchoscopy was repeated and reported improvement of tracheobronchitis. The weaning program was also started.

While intravenous/oral voriconazole was recommended as gold-standard treatment for invasive pulmonary aspergillosis, inhaled liposomal amphotericin-B still had no position in this field. However, the efficacy of the add-on inhaled liposomal amphotericin-B for post-COVID invasive pulmonary aspergillosis was noted in this case. Therefore, a larger number clinical trial should be taken into consideration for the proof of the efficacy.

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

藥物敏感結核延長治療之影響因素-單一中心個案對照研究

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Factors Associated With Extended Treatment Duration for Drug Susceptible Tuberculosis – A Single Center Case-Control Study

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Purpose: Standard treatment duration for tuberculosis (TB) without drug resistance is 6 months. However, treatment duration is extended due to various reasons or conditions. We aim to explore and identify the factors associated extended treatment course .

Materials and Methods: We conducted a case control study from the TB registry of National Taiwan University Hospital. From Jan. 2018 to Dec. 2020, there were 80 patients who had extended TB treatment more than 6 months. These patients had confirmed drug-susceptible TB infection. Another 141 age and gender matched TB patients were enrolled for comparison. Underlying comorbidities, laboratory data, disease extent of TB, adverse drug event, treatment interruption and its reason were collected for analysis. These factors were compared between the extended duration and control group. Logistic regression model was created for independent factors associated with extended treatment.

Results: The mean treatment duration was 302.9±55.5 days for extended treatment group and 186.5±9 days for control group. Higher proportion of hepatitis B infection (12.5% vs 5%, p=0.043), treatment for cancer within 3 months (17.5% vs 8.5%, p=0.046) were observed in the extended treatment group. Fifteen percent of patient presented with extrapulmonary TB in the extended group, as compared with 3% in control group (p=0.002). Adverse drug events were more prevalent in the extended group (grade 3 or more symptoms 26.3% vs 11.3%, p=0.008), and treatment interruption was observed more frequently in the extended group (46.3% vs 18.4%, p<0.001). Pyrazinamide was the most reported offending medication in both groups. Logistic regression model showed that presence of extrapulmonary disease (AOR 39.7, p=0.001), hepatitis B infection (AOR 2.1, P=0.003), recent treatment for cancer (AOR 3.56, P=0.021) and treatment interruption (AOR 3.5, p=0.002) were independent factors associated with extended treatment duration.

Conclusions: Host factors, adverse drug reactions, as well as disease extent correlated with extended duration treatment for TB in our observation.

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

清冠一號在預防 COVID-19 住院病患接受氣管內插管及呼吸器使用的效果：以傾向分數配對研究

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Traditional chinese medicine performance in preventing mechanical ventilation use among hospitalized COVID-19 patients: a propensity score matched analysis

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Purpose: We aimed to clarify the clinical efficacy of traditional chinese medicine, NRICM101, on hospitalized COVID-19 patients.

Methods: A retrospective observational research was conducted to evaluate the characteristics and outcome, including : mortality, hospitalization days, mechanical ventilation support and oxygen support, of hospitalized COVID-19 patients during May to June 2021. A propensity score matched analysis with multiple covariates was used to reduce the possible confounding factors.

Result: 309 patients were recruited for analysis with a 1 : 2 propensity score matched analysis which included age, gender, BMI, a scoring system of COVID-19 as covariates. 68 patients treated with usual clinical care and add-on NRICM101 was analyzed as group A, while, 136 patients treated with usual clinical care was analyzed as group B. A significant lower probability of intubation and mechanical ventilation was seen at group A, comparing to that at group B (12/68(17.6%) v.s. 33/136(24.3%), odds ratio= 0.026, p=0.018). There were no significant differences between mortality (7/68(10.3%) v.s. 22/136(16.2%), p=0.054), time to intubation(median days: 4 (2-5) days v.s. 1(0-2) days, p=0.15), and hospitalization days (median days: 12 (9-22) days v.s. 12 (9-21.3) days, p=0.136). There was also a lower rate of oxygen support in group A (54/68 (79.4%) v.s. 109/136 (80.1%), p<0.001) while there was no significant different length of oxygen use between 2 groups (median days: 6.25 (11-15) days v.s. 9 (5-18) days, p=0.785).

Conclusion: The traditional chinese medicine, NRICM101, had a potential effect on preventing mechanical ventilation use amoung hospitalized COVID-19 patients, while, there was no significant benefit of mortality, time to intubation and hospitalization days.

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

末期腎衰竭病人卡介苗對潛伏性肺結核感染的預防效果以及嗜中性球與淋巴球的比率對潛伏性肺結核感染的影響

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The protective effect of BCG and neutrophil-to-lymphocyte ratio on latent tuberculosis of end stage renal failure

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Purpose: BCG has been reportedly protective from latent tuberculosis infection (LTBI) and diseases, especially in disseminated diseases of infant and children. But the protective effect of BCG on adult patients with end stage renal disease (ESRD) is not clearly.

Materials and Methods: Patients aged ≥ 20 years with ESRD who received hemodialysis (HD), peritoneal dialysis (PD) or kidney transplant from January 2012 to December 2019 in a medical center and a regional hemodialysis center. Patients with active tuberculosis (TB), prior history of TB, active immunosuppressant therapy or human immunodeficiency virus infection were excluded. LTBI status was determined by QuantiFERON-TB Gold In-tube (QFT-GIT)

Results: After excluding indetermined results of QFT-GIT, 517 subjects were enrolled and 97 (18.8%) were determined as LTBI. LTBI was older than non-LTBI (55.1 ± 11.4 vs. 48.5 ± 14.6, p <0.001). Compared with HD, PD and transplant groups, LTBI participants had significantly higher proportion receiving HD than non-LTBI (70.1% vs. 56.7%, ANOVA p = 0.033). BCG vaccination was more in non-LTBI (94.8%) than LTBI group (81.4%, p < 0.001) . The proportion of high neutrophil-to-lymphocyte ratio (NLR) (≧ 2.68) was significantly more in LTBI than non-LTBI groups (62.8% vs. 45.5%, p = 0.019). By multi-variable logistic regression analysis, BCG and high NLR were independent protective factors of LTBI (adjusted OR: 0.190 [0.063-0.577, p = 0.003 and 0.515 (0.284 – 0.936, p = 0.029)].

Conclusions: LTBI is as high as 18.8%. BCG have protective effect on LTBI in patients with renal failure or transplant. High NLR might have additional positive impact to decrease LTBI .

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

抗結核藥物引發急性腎損傷的發生率與危險因子:一個前瞻性研究以及文獻回顧

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Incidence of and risk factors for acute kidney injury during antituberculosis treatment: A prospective cohort study and literature review

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Purpose: Acute kidney injury (AKI) is occasionally detected in patients receiving antituberculosis (TB) treatment. This prospective cohort study is the first to investigate the true incidence, risk factors, and renal outcomes.

Materials and Methods: This study was conducted from January 1, 2016, to May 31, 2018, and patients with a new diagnosis of TB and receiving standard anti-TB treatment were enrolled; the patients received regular laboratory monitoring. AKI was defined according to the Kidney Disease: Improving Global Outcome (KDIGO) criteria. Urinalysis, measurements for blood erythrocyte morphology and the fractional excretion of sodium, and renal ultrasonography were performed at AKI onset. Anti-TB drugs were adjusted by the primary physician. Risk factors for AKI were identified using a Cox regression analysis.

Results: In total, 106 patients were recruited (mean age: 52.6 years, 71.7% men). Eleven (10.3%) patients experienced AKI. An increase in serum uric acid and hemoglobin levels was noted at AKI onset. All patients with AKI exhibited renal function recovery and completed rifampin-containing anti-TB treatment. Age (hazard ratio (HR): 1.06 [1.02–1.11]), a higher baseline estimated glomerular filtration rate (eGFR; HR: 1.04 [1.02–1.06]), and a blood eosinophil count >350 (109/L) (HR: 10.99 [2.28–53.02]) were associated with AKI development during anti-TB treatment. **Conclusions:** Under regular pharmacovigilance monitoring, the incidence of renal function impairment during anti-TB treatment was higher than expected. AKI frequently occurred in older patients with a higher eGFR and blood eosinophil count. However, the complication had no influence on anti-TB treatment completion, and no permanent renal impairment occurred.

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

新冠肺炎對肺結核診斷的衝擊---以某區域醫院為例

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Impact of COVID-19 on tuberculosis diagnosis--- An experience of a regional hospital

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Purpose: The coronavirus disease 2019 (COVID-19) has caused global pandemic since 2019. People around the world express anxious in various behaviors. Studies on impact of COVID-19 on the diagnosis and management of tuberculosis (TB) patients are limited. We compared patients with TB diagnosis before and after COVID-19 pandemic at a regional hospital of the central Taiwan.

Materials and Methods: We enrolled patients with TB identified at a regional hospital of the central Taiwan from 2017 to 2021. We excluded patients notified with extrapulmonary TB and migratory labors with TB. The severity of chest X-ray, three sputum examinations for acid fast bacilli (AFB) smear and culture were collected. Chi-square and independent student *t* tests were used to estimate the differences of TB patients between 2017-2019 and 2020-2021.

Results: In total, 200 TB patients (129 male and 71 female) in 2017-2019 and 103 TB patients (75 male and 28 female) were enrolled. No significant difference of sex and age was present for these 2 groups. No significant difference of positive AFB (52.0% in 2017-2019 vs 49.5% in 2020-2021, $P = 0.682$) existed for these 2 groups. We also did not find significant difference of cavitation at chest X-ray (16.0% in 2017-2019 vs 9.7% in 2020-2021, $P = 0.133$) for these 2 groups.

Conclusions: The current study indicated that the COVID-19 pandemic did not influence TB patients diagnosed and identified at the regional hospital in the central Taiwan.

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

免疫檢查點基因 PD-1、CTLA-4 與 TIM-3 基因多型性與肺結核易感的關聯性

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The association of genetic polymorphism of immune checkpoint genes PD-1, CTLA-4 and TIM-3 with susceptibility to tuberculosis

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Objective: Tuberculosis (TB) is a global disease infected by various strains of mycobacteria, especially *Mycobacteria tuberculosis* (*Mtb*). The immune cell-mediated immune responses majorly determined and controlled the host defenses against *Mtb*. Immune checkpoint molecules are inhibitory receptors expressed on immune cells that trigger immunosuppressive signaling pathways. Previous study indicated that T cell exhaustion and immune checkpoint proteins play an important role in host resistance to *Mtb*. However, the association between immune checkpoint genes and TB susceptibility is not yet fully understood. In the study, we evaluated the difference in genotype frequencies of eleven single nucleotide polymorphisms (SNPs) in three immune checkpoint genes between subjects with and without TB infection.

Subjects and Methods: 555 adult subjects (including 285 patients with TB and 270 controls without TB infection) were enrolled in this study. After extraction of genomic DNA from swab or blood samples, we performed the genotyping analysis to evaluate the difference in genotype distribution of eleven SNPs in PD-1, CTLA-4, and TIM-3 genes between two groups.

Results: No significant difference in the frequencies of different genotypes in eleven SNPs between the non-TB and TB groups was detected. We used logistic regression to test the effect of interactions of gender and genotype, and found that the p values generated by logistic regression was significant in rs13170556 of TIM-3 gene. When the patients were stratified by gender, significant differences in genotype frequencies at TIM-3 rs13170556 in men was found. OR analysis showed that the TC rs13170556 genotype in TIM-3 was associated with increased risk of TB. In women, the AG rs231775 and AC rs231779 genotypes in CTLA-4 was associated with reduced TB risk. Our results indicated that one haploblock was identified at PD-1 and another at CTLA-4. Haplotype analysis showed that, in comparison with the most common haplotype (G-C-T) of rs231775-rs231777-rs231779 in the CTLA-4 gene, the A-C-C haplotype was associated with reduced risk for TB in women.

Conclusion: Our study indicates that rs13170556 in TIM-3 is associated with increased TB susceptibility in men, and that the CTLA-4 haplotype protects women from TB.

Keywords: Single nucleotide polymorphism; immune checkpoint gene; susceptibility; 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)

PC56

血液游離去氧核糖核酸在結核病接觸者的角色及動態變化

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The potential role and dynamic change of circulating cell-free DNA in TB contacts with LTBI

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Purpose: Human cell-free DNA (cfDNA) may serve as a useful biomarker for infectious processes. We investigated the potential role and dynamics of nuclear-cfDNA and mitochondrial cfDNA in close contacts of TB cases to determine if cfDNA helps identify persons with latent TB infection (LTBI).

Materials and Methods: Contacts of TB patients were enrolled at Taipei Veterans General Hospital between 2018-2021. Interferon gamma (IFN-γ) release assay (IGRA) were performed to differentiate LTBI persons and healthy contacts (HC). The copy numbers of nuclear- and mitochondrial cfDNA were estimated by qPCR. HC and LTBI persons were 1:1 matched by age (±5 years) and sex. A logistic regression was used to assess factors associated with LTBI and a Wilcoxon signed-ranks test was used to compare the cfDNA levels in persons with LTBI before and after preventive therapy.

Results: 32 persons with LTBI and 32 age- and sex-matched HC were selected from 110 TB contacts (60 LTBI and 50 HC). LTBI persons had lower median levels of nuclear-cfDNA (78.6 [IQR 6.1-398.9] vs 1365.0 [174.8-2649.1] [K-copy/μl-plasma], p<0.001) and mitochondrial cfDNA (18.0 [IQR 1.5-84.7] vs 108.9 [35.6-186.2] [M-copy/μl-plasma], p=0.004) than the matched HC. Overall, nuclear-cfDNA, but not mitochondrial cfDNA, was negatively associated with TB-specific IFN-γ response (n=64, Pearson's r= -0.250, p=0.046). The areas under ROC curves for using nuclear-cfDNA and mitochondrial cfDNA to differentiate LTBI from HC were 0.807 (95% CI 0.680-0.934) and 0.709 (0.568-0.849). Using <1000 K-copy/μl-plasma as a cut-off value for nuclear cfDNA, a multivariate analysis disclosed that nuclear cfDNA <1000 K was significantly correlated to a 90-fold increased possibility of having LTBI (adjusted OR 90.160 [95% CI 9.020-901.173], p<0.001). In original LTBI group, mitochondrial cfDNA level, but not nuclear-cfDNA, was correlated with sputum smear of the index cases (n=60, Spearman's rho =-0.256, p=0.048). Among 30 (50%) LTBI persons with follow-up data, nuclear-cfDNA levels significantly increased 2 months after preventive therapy (from 28.4 [IQR 2.9-302.3] to 138.4 [19.7-622.1] [K-copy/μl-plasma], Wilcoxon signed-ranks test p=0.008) and mitochondrial cfDNA did with a certain trend toward significance (from 5.0 [IQR 0.8-83.5] to 33.7 [1.8-140.0] [M-copy/μl-plasma], p=0.073).

Conclusions: Nuclear-cfDNA levels depressed in persons with LTBI compared with matched HC and it increased 2 months after prevented therapy for LTBI. It warrants further study to investigate the value of using nuclear-cfDNA depression in identifying contacts at high risk of TB development.

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Safety Information：常見不良反應包括聲音嘶啞、發聲障礙、肌肉痙攣、關節痛。

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.

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通報電話: (02)23126836，通報網址:oax40892@gsk.com

僅供專業醫護人員使用

北市衛藥廣字第110070105號

PM-TW-FPS-LBND-210003 Date of preparation - May 2021

台灣胸腔暨重症加護醫學會

Taiwan Society of Pulmonary and
Critical Care Medicine

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