2024 台灣胸腔暨重症加護醫學會年會
暨台灣胸腔外科醫學會、台灣胸腔及心臟血管外科學會聯合會議暨台灣胸腔暨重症加護醫學會第19屆第2次會員大會

2024 Annual Congress of Taiwan Society of Pulmonary and Critical Care Medicine, Taiwan Society of Thoracic Surgeons, Taiwan Association of Thoracic & Cardiovascular Surgery Joint Conference

Program Book

07 & 08 Dec. 2024

ICC Tainan 大臺南會展中心

2024

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

CONTENTS

理事長序

各位會員、先進及同道們：

歡迎大家參加 2024 年的年會，今年年會同時邀請台灣胸腔外科醫學會、台灣胸腔及心臟血管外科學會共同舉辦聯合會議，謹訂於於 12 月 07 日、08 日 (星期六、日) 於 大臺南會展中心辦理實體會議，會中邀請多位國內外知名醫學專家學者擔任講座或主持。

本次學術研討會特別邀請 Journal of Thoracic Oncology (IF 21) 主編 Dr. Alex Adjei 為大會進行特別演講，大會主題包含呼吸道疾病、肺部腫瘤醫學、肺感染及結核病、重症醫學、間質性肺病及罕見疾病、介入性支氣管鏡、呼吸治療、肺血管及肺高壓、肺部環境及職業醫學、胸腔外科手術治療、睡眠醫學等最新醫學進展，亦邀請多位國際知名教授學者進行演講。其中除了豐富的學術演講，也規劃「健保事務報告」，學會安排的多元精彩課程，能讓會員們掌握胸腔領域之最新知識、了解未來的發展、並促進相互交流。

感謝各委員會的精心規劃，受邀講者的用心準備，全體理監事的支持與協助，更歡迎大家熱烈參與！

會議晚宴訂於 12 月 07 日 (星期六) 晚上 6 點 30 分於大臺南會展中心一樓舉行。

陳育民

台灣胸腔暨重症加護醫學會
理事長

歡迎詞

各位會員大家好！

衷心歡迎各位蒞臨 2024 年度台灣胸腔暨重症加護醫學會年會。我們深感榮幸能在這座歷史悠久、文化底蘊深厚的台南市舉辦此次盛會，感謝大家撥冗前來參與。

本次年會匯聚了來自全國各地的頂尖專家學者。我們殷切期盼透過這個難得的交流平台，共同探討最新的研究成果、分享寶貴的臨床經驗，推動我們領域的持續進步與創新。

在這次年會中，我們特別邀請了多位國內外知名專家進行專題演講，涵蓋最新的醫療技術與研究趨勢。此外還安排了豐富的學術討論、臨床案例分析以及實務工作坊，期盼每位會員都能在這裡收穫滿滿，增進專業知識與臨床技能。

我們深信，每位與會者都能在此次年會中有所收穫，不僅增進專業知識，提升臨床技能，更能拓展人際網絡，促進未來的學術合作。

在此，我們也誠摯地邀請各位在會議之餘，抽空探索台南這座魅力無窮的城市。無論是保存完好的古蹟景點，還是令人垂涎的在地美食，相信都能為您的此行增添難忘的回憶。

張博瑞

台灣胸腔暨重症加護醫學會
副秘書長

大會籌備處暨第 19 屆理、監事名單

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監　事	謝俊民 醫師	奇美醫療財團法人奇美醫院

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執行秘書	張山岳 醫師	三軍總醫院

2024 台灣胸腔暨重症加護醫學會年會

暨台灣胸腔外科醫學會、台灣胸腔及心臟血管外科學會聯合會議
暨台灣胸腔暨重症加護醫學會第19屆第2次會員大會

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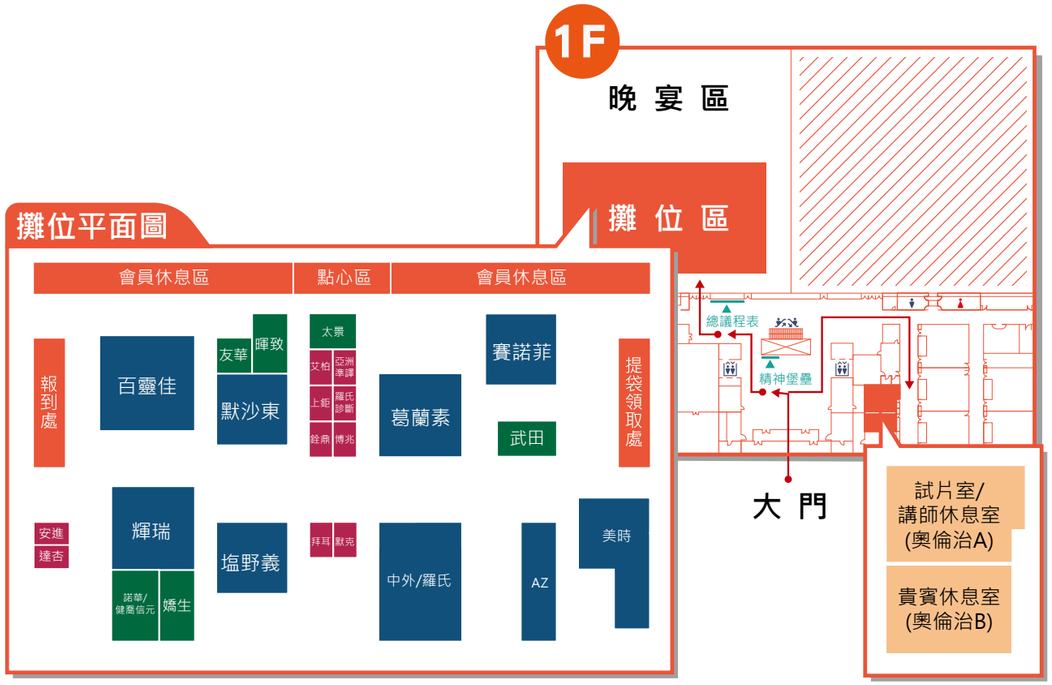
Dec. 7 (sat.)

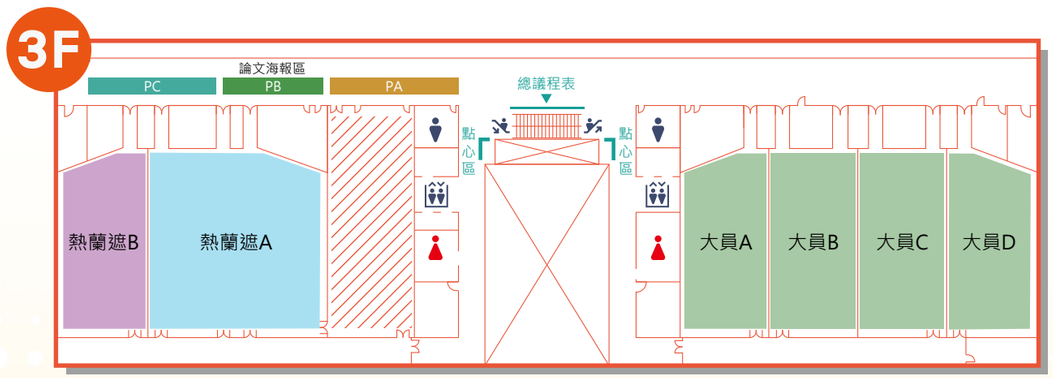
Time	熱蘭遮 A	熱蘭遮 B	大員 A	大員 B	大員 C	大員 D
08:30-	Registration					
09:00 | 09:40	Immunotherapy breakthroughs in lung cancer: bridging early and advanced stages Speaker Prof. Francesco Grossi Moderator 施金元 醫師 (Jin-Yuan Shih M.D. Ph.D.)		Phenotyping and endotyping for severe asthma: what do we have in clinical practice? Speaker 黃俊凱 醫師 Moderator 彭毅王 醫師		09:00-09:30 Awake prone positioning in acute hypoxemic respiratory failure: current evidence and future directions. Speaker Prof. Jie Li Moderator 彭忠衛 醫師 (Chung-Kan Peng M.D. Ph.D.) 09:30-09:55 Nutrition in patients with prolonged mechanical ventilation Speaker 林錞語 醫師 Moderator 林恒毅 醫師 09:55-10:20 External chest-wall compression in ARDS Speaker 丁若晨 醫師 Moderator 林恒毅 醫師	09:00-09:20 Experience of multi-specialty team in diagnosis and management of pediatric airway anomalies Speaker 曹珮真 醫師 09:20-09:40 Experience of multi-disciplinary team in pediatric respiratory tract surgical treatment Speaker 蔡昕霖 醫師 Moderator 趙盈凱 醫師 徐紹勛 醫師
09:40 | 10:20	Antibody drug conjugate treatment in advanced Non-small cell lung cancer: recent advances and future directions Speaker 郭志熙 醫師 Moderator 夏德椿 醫師	Annual report of the implementation of healthcare insurance reimbursement for thoracic medicine Speaker 周昆達 秘書長 Moderator 陳育民 理事長	The differences in the use of biological agents for treating severe asthma: type-2 high, type-2 low, and neutrophilic Speaker Prof. David Jackson Moderator 彭殿王 醫師 (Diahn-Warng Perng M.D. Ph.D.)	Speech by Young Investigator award Winners Moderator 林孟志 醫師 李毓芹 醫師		The evolution of congenital pulmonary airway malformation Speaker 顏亦廷 醫師 Moderator 鄭清源 醫師 周世華 醫師
10:20 | 10:50	Coffee break					
10:50 | 11:30	Current and future perspective in (peri-CRT) treatment of inoperable locally advanced NSCLC Speaker Prof. Hye Ryun Kim Moderator 陳育民 理事長 (Yuh-Min Chen M.D. Ph.D.)	Oral Presentation Thoracic Oncology、Intervention Bronchoscopy、Diagnosis Moderator 楊宗穎 醫師 林建中 醫師 洪仁宇 醫師	Clinical interpretation of impulse oscillometry in asthma and COPD Speaker 蕭逸函 醫師 Moderator 賴建豪 醫師	Oral Presentation Airway Disease、Sleep Medicine、Interstitial Lung Disease、Other Moderator 林恕民 醫師 賴俊良 醫師 柯信國 醫師	Oral Presentation Respiratory Tract Infections、Critical Care Medicine、Tuberculosis Moderator 古世基 醫師 陳昌文 醫師 魏裕峰 醫師	Integrating EGFR TKIs and surgical intervention: optimizing multimodal treatment strategies for advanced EGFR-mutant Non-Small cell lung cancer Speaker 鄭文建 醫師 Moderator 黃才旺 醫師 黃文傑 醫師
11:30 | 12:10	Innovative targeted therapy in SCLC in the near future Speaker Dr. Hiroki Izumi Moderator 楊政達 醫師 (Cheng-Ta Yang M.D. Ph.D.)		Early diagnosis and treatment of COPD and Asthma Speaker Prof. Shawn Aaron Moderator 徐武輝 醫師 (Wu-Huei Hsu M.D.)			Congenital tracheal and pulmonary malformations: the chimei experience Speaker 蘇英傑 醫師 Moderator 陳晉興 醫師 王秉彥 醫師
12:20 | 13:30	Lung Cancer 台灣中外製藥股份有限公司 台灣羅氏大藥廠股份有限公司 Early-stage NSCLC: adjuvant therapy reshapes treatment strategies Speaker 陳煜結 醫師 Moderator 賴俊良 醫師 Recent advances in advanced NSCLC treatment: a focus on TKIs and immunotherapy Speaker 王馨儀 醫師 Moderator 楊宗穎 醫師		Airway Disease 臺灣阿斯特捷利康股份有限公司 A deep dive into eosinophilic driven diseases, from severe eosinophilic Asthma to EGPA Speaker 曾敬閎 醫師 Prof. David Jackson Moderator 林恕民 醫師 (Shu-Min Lin M.D. Ph.D.)	Vaccine 輝瑞大藥廠股份有限公司 Advancement in pulmonary care: Protection of RSV infection for older adults Speaker Prof. Blasi Francesco Moderator 陳育民 理事長 (Yuh-Min Chen M.D. Ph.D.)	Airway Disease 荷商葛蘭素史克藥廠股份有限公司台灣分公司 Taking OCS stewardship to the next level: Improving patient outcomes in severe asthma and nasal polyps Speaker 廖信閔 醫師 Moderator 許超群 醫師	Lung Cancer 美商默沙東藥廠股份有限公司台灣分公司 Maximizing patient outcomes: perioperative immunotherapy for early stage lung cancer Speaker 李瑞英 醫師 How to maximize the patient outcome under current situation – Real world application from Italy of NSCLC PD-L1 low & negative expression. Speaker Prof. Francesco Grossi Moderator 蔡俊明 醫師
13:50 | 14:50	會員大會，頒發專科醫師證書 (熱蘭遮 A)					
15:00 | 15:40	Current progress and future perspectives of perioperative therapy for NSCLC treatment Speaker Prof. Alex A. Adjei Moderator 陳育民 理事長 (Yuh-Min Chen M.D. Ph.D.)	Asthma care and environmental sustainability: A path to healthier lives and a greener planet Speaker 傅彬貴 醫師 Moderator 林基正 醫師	Robotic-assisted bronchoscopy in diagnosing and ablating peripheral pulmonary nodules Speaker 孫加源 醫師 Moderator 何肇基 醫師	Artificial intelligence in sleep medicine, where are we now and where do we go from here? Speaker Prof. Cathy Goldstein Moderator 杭良文 醫師 (Liang-Wen Hang M.D. Ph.D.)	Current concepts of pulmonary hypertension management: from 7th WSPH and clinical practice in Japan Speaker Prof. Takahiro Hiraide Moderator 徐紹勛 醫師 (Hsao-Hsun Hsu M.D. Ph.D.)	Management of tracheal tumors: the NTUH thoracic surgery team's experience Speaker 盧照文 醫師 Moderator 許瀚水 醫師 吳怡成 醫師
15:40 | 16:10	Coffee break					
16:10 | 16:50	Real-world evidence from ISAR for severe asthma care Speaker Prof. David Price Moderator 黃明賢 醫師 (Ming-Shyan Huang M.D. Ph.D.)	Current status and prospects of mesothelioma in Taiwan Speaker 郭耀昌 醫師 Moderator 王金洲 醫師	How to improve the diagnosis of peripheral pulmonary lesions? Speaker 林敬凱 醫師 Moderator 何肇基 醫師	Important notes on the updated classification of sleep disorders (ICSD-3-TR): sleep disorders more than breathing problems Speaker 李佩玲醫師 劉景隆 醫師 Moderator 彭忠衛 醫師	Multicenter study to assess the effects of different doses of sildenafil on mortality in adults with pulmonary arterial hypertension Speaker Prof. Ronald Oudiz Moderator 徐紹勛 醫師 (Hsao-Hsun Hsu M.D. Ph.D.)	Surgery for acquired tracheal stenosis and tracheal tumors Speaker 林曜詳 醫師 Moderator 徐中平 醫師 謝明儒 醫師
17:00 | 18:10	Lung Cancer 台灣百靈佳殷格翰股份有限公司 Disparities and timing in the management of resistance in EGFR mutant NSCLC Speaker 蔡俊明 醫師 Moderator 楊政達 醫師 Sequencing is key: tailor treatment plan to improve outcomes in managing NSCLC Speaker 黃彥翔 醫師 Moderator 張基晟 醫師		Airway Disease 臺灣阿斯特捷利康股份有限公司 The effect of implementing Asthma P4P on healthcare outcomes Speaker 傅彬貴 醫師 Moderator 林慶雄 醫師 Taiwan HP COPD risk & care survey outcome: alarming for early Triple therapy in COPD Speaker 蘇剛正 醫師 Moderator 彭殿王 醫師	Airway Disease 友華生技醫藥股份有限公司 Optimization of COPD patients treatment: from clinical trials to new real-world experience Speaker 廖光明 醫師 Moderator 李政宏 醫師	RSV 荷商葛蘭素史克藥廠股份有限公司台灣分公司 Real-world evidence and clinical experience in RSV prevention Speaker 廖信閔 醫師 Moderator 陳育民 理事長	Lung Cancer 嬌生股份有限公司 The earlier the better: first-line amivantamab for EGFR exon 20 insertion in advanced NSCLC. Speaker 吳尚俊 醫師 Moderator 林建中 醫師 Beyond TKI therapy: evolving post-TKI Strategies for common EGFR mutations in NSCLC. Speaker 黃俊耀 醫師 Moderator 王金洲 醫師
18:30 | 20:00	大會晚宴 - 頒獎典禮 (東展區)					

Dec. 8 (sun.)

Time	熱蘭遮 A	熱蘭遮 B	大員 A	大員 B	大員 C	大員 D
08:30-	Registration					
08:40 | 09:20	End-of-life care and time-limited trials in ICU Speaker 陳志金 醫師 Moderator 陳昌文 醫師	Application and limitation of artificial intelligence in medicine Speaker 郭律成 醫師 Moderator 蔡鎮良 醫師	Simple and safe blood biomarkers for IPF: where we are now? Speaker 黃堂修 醫師 Moderator 林鴻銓 醫師	Recent developments in the diagnosis and treatment of tuberculosis Speaker 江振源 醫師 Moderator 李世偉 醫師	Intervention bronchoscopy and image-guided tumor ablation 引言人 蔡燉煌 醫師 08:40-09:15 氣道支架的創新性應用 Speaker 柯明耀 醫師 Moderator 涂智彥 醫師 劉永恆 醫師 09:15-09:50 GGN 消融治療進展及臨床實踐 Speaker 柯明耀 醫師 Moderator 黃文傑 醫師 曾堯麟 醫師	Perioperative therapy for resectable Non–Small-Cell lung cancer Speaker 蔡秉中 醫師 Moderator 吳玉琮 醫師 黃培銘 醫師
09:20 | 10:00	Novel diagnostic tool for causative agents of severe infections Speaker 簡榮彥 醫師 Moderator 謝俊民 醫師	The AI Journey of a clinical cardiologist: a multidisciplinary collaboration Speaker 林錦生 醫師 Moderator 蔡鎮良 醫師	The Future in Pulmonary Fibrosis - Potential Novel Strategy (L. Richeldi, Rome) Speaker Prof. Richeldi Luca Moderator 林鴻銓 醫師 (Horng-Chyuan Lin M.D. Ph.D.)	Genetic evolution of antibiotic resillience in Mycobacterium tuberculosis with treatment failure Speaker Prof. Qingyun Liu Moderator 李世偉 醫師 (Shih-Wei Lee M.D.)	09:50-10:10 一站式消融合併手術治療多發性結節 Speaker 楊順貿 醫師 Moderator 顏亦廷 醫師 徐博奎 醫師	Transforming survival rates in resected NSCLC with precision medicine Speaker 李瑞英 醫師 Moderator 呂宏益 醫師 張益誠 醫師
10:00 | 10:30	Coffee break					
10:30 | 11:10	Blood purification(Oxiris) and extracorporeal carbon dioxide removal (ECCO2R) therapy for sepsis and ARDS Speaker 李承家 醫師 Moderator 陽光耀 醫師	Advancing pulmonary rehabilitation standardization in Taiwan: focusing on CPET to align with 2021 ATS guidelines Speaker 莊銘隆 醫師 Moderator 夏德椿 醫師	Insights of novel management in pulmonary fibrosis Speaker 蔡英明 醫師 Moderator 朱國安 醫師	Diagnosis and management of CPA: expert opinions in Taiwan Speaker 李孟叡 醫師 Moderator 黃崇旂 醫師	The recent advances in the treatment of pulmonary tuberculosis 10:30-11:00 台灣肺結核現況與治療演進 Speaker 樹金忠 醫師 Moderator 郭光泰 醫師 陳志毅 醫師	Advancing neoadjuvant therapies in resectable NSCLC implications for ICI treatment strategies Speaker 徐博奎 醫師 Moderator 方信元 醫師 林志銘 醫師
11:10 | 11:50	Treatment heterogeneity in sepsis Speaker 陳威志 醫師 Moderator 高國晉 醫師	Dr. 哈利斯紀念獎	To be IPF or not to be IPF: updates of diagnosis and managements of chronic fibrosing ILDs Speaker Prof. Yoshikazu Inoue Moderator 王鶴健 醫師 (Hao-Chien Wang M.D. Ph.D.)	Interpretation of molecular diagnostic tests in IPA. Speaker 潘聖衛 醫師 Moderator 黃崇旂 醫師	11:10-11:50 台灣肺結核手術的進展 Speaker 黃維立 醫師 Moderator 夏君毅 醫師 黃才旺 醫師	How to achieve better survival benefits in resectable NSCLC, from adjuvant IO therapy to neoadjuvant IO therapy Speaker 張晃智 醫師 Moderator 湯恩魁 醫師 賴吾為 醫師
12:00 | 13:30					Airway Disease 荷商葛蘭素史克藥廠股份有限公司台灣分公司 COPD Disease Stability: A New Clinical Goal Made Possible? Speaker 蔡英明 醫師 Asthma Clinical Remission in Clinical Practice: Too ideal or is it achievable? Speaker 黃偉彰 醫師 Moderator 杭良文 醫師	

會場平面圖





接駁時刻表

大會接駁				
地點	台糖長榮酒店 ⟷ 大臺南會展中心		徠·歸仁飯店 ⟷ 大臺南會展中心	
12/7(六)	08:00	08:30	08:00	08:15
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地點	台糖長榮酒店 ⟷ 大臺南會展中心		徠·歸仁飯店 ⟷ 大臺南會展中心	
12/8(日)	08:00	08:30	08:00	08:15
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12/7(六) 晚 宴 接 駁 (滿班發車)			
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	20:30		20:45
地點	大臺南會展中心	→	台糖長榮酒店
	20:30		21:00
地點	大臺南會展中心	→ 徠・歸仁飯店	→ 台糖長榮酒店
	21:00	21:15	21:45

接駁時刻表

交通資訊

｜自行開車｜

臺南出發 → 台 86 線 → 上崙交流道 (大潭出口) → 抵達大臺南會展中心

臺北、臺中、高雄出發 → 國道 1 號 / 國道 3 號 → 仁德交流道接台 86 線 → 上崙交流道（大潭出口）→ 抵達大臺南會展中心

｜搭乘高鐵｜

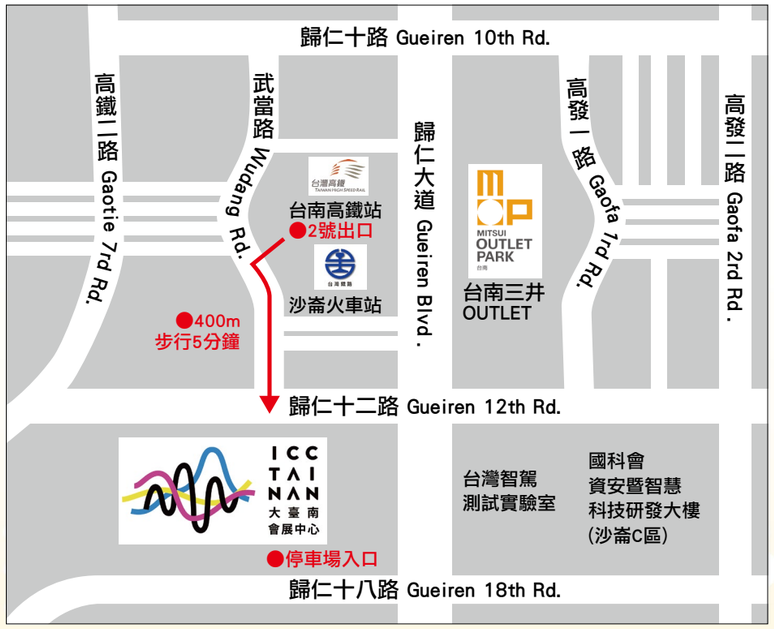
搭乘至高鐵台南站，從 2 號出口步行約 5 分鐘抵達。

｜搭乘臺鐵｜

搭乘台鐵抵達沙崙站，出車站步行約 5 分鐘抵達。

｜搭乘高鐵快捷公車｜

H31：台南市政府 → 高鐵台南站
H62：高鐵台南站 → 奇美醫院
8042：高鐵台南站 → 實踐大學
紅 14：長榮大學 → 高鐵台南站 → 關廟
紅 3：台南 → 高鐵台南站 → 關廟
綠 16：高鐵台南站 → 關廟 → 新化



演講摘要

熱蘭遮 A

Dec. 7 (sat.)

09:00-09:40 P13 Immunotherapy breakthroughs in lung cancer: bridging early and advanced stages
Francesco Grossi, M.D.

09:40-10:20 P14 Antibody drug conjugate treatment in advanced Non-small cell lung cancer: recent advances and future directions
郭志熙 醫師

10:50-11:30 P15 Current and future perspective in (peri-CRT) treatment of inoperable locally advanced NSCLC
Hye Ryun Kim, M.D., Ph.D.

11:30-12:10 P16 Innovative targeted therapy in SCLC in the near future
Hiroki Izumi, M.D., Ph.D.

12:20-13:30 P18 **Lung Cancer**
Satellite Symposium_ 台灣中外製藥股份有限公司 / 台灣羅氏大藥廠股份有限公司
Early-stage NSCLC: adjuvant therapy reshapes treatment strategies
陳焜結 醫師
Recent advances in advanced NSCLC treatment: a focus on TKIs and immunotherapy
王馨儀 醫師

15:00-15:40 P20 Current progress and future perspectives of perioperative therapy for NSCLC treatment
Alex A. Adjei, M.D., Ph.D., FACP., FASCO.

16:10-16:50 P21 Real-world evidence from ISAR for severe asthma care
Prof. David Brendan Price

17:00-18:10 P22 **Lung Cancer**
Satellite Symposium_ 台灣百靈佳殷格翰股份有限公司
Disparities and timing in the management of resistance in EGFR mutant NSCLC
蔡俊明 醫師
Sequencing is key: tailor treatment plan to improve outcomes in managing NSCLC
黃彥翔 醫師

Dec. 8 (sun.)

08:40-09:20 P24 End-of-life care and time-limited trials in ICU
陳志金 醫師

09:20-10:00 P25 Novel diagnostic tool for causative agents of severe infections
簡榮彥 醫師

10:30-11:10 P26 Blood purification(Oxiris) and extracorporeal carbon dioxide removal (ECCO2R) therapy for sepsis and ARDS
李承家 醫師

11:10-11:50 P27 Treatment heterogeneity in sepsis
陳威志 醫師

Francesco Grossi, M.D.

Associate Professor in Medical Oncology, University of Insubria.
Director of the Medical Oncology Unit, ASST of the Seven Lakes, Varese, Italy

Immunotherapy breakthroughs in lung cancer: bridging early and advanced stages

Immunotherapy has emerged as a transformative approach in the treatment of lung cancer, offering new hope for patients across all disease stages. This abstract provides an overview of the pivotal role of immunotherapy in bridging the gap between early and advanced stages of lung cancer.

In the early-stage setting, traditional treatments for lung cancer have limitations, and the integration of immunotherapy as an adjuvant or neoadjuvant therapy has shown promising results in several clinical studies. Furthermore, the landscape of advanced-stage lung cancer is being reshaped by immunotherapy, circumventing the challenges associated with traditional treatments and leading to notable clinical successes.

However, the development of resistance to immunotherapy presents a significant obstacle. Addressing this challenge requires a nuanced understanding of resistance mechanisms and the exploration of combination therapies to enhance efficacy. Ongoing research holds promise for overcoming resistance and further improving outcomes for patients.

Looking to the future, personalized immunotherapy approaches and collaborative research efforts are poised to revolutionize lung cancer treatment. Ethical considerations and patient-centric care remain integral as the field advances, emphasizing the importance of equitable access and informed decision-making for patients.

In conclusion, immunotherapy breakthroughs in lung cancer are reshaping the treatment landscape, offering a bridge between early and advanced disease stages. The continued progress in research and innovation holds the potential to significantly impact patient outcomes and survival rates, ultimately redefining the standards of care for lung cancer.

郭志熙 Chih-Hsi Kuo, M.D.

Professor, Department of Thoracic Oncology and Interventional Bronchoscopy, Chang Gung Memorial Hospital, Chang Gung University

Antibody drug conjugate treatment in advanced Non-small cell lung cancer: recent advances and future directions

Antibody-drug conjugates (ADCs) represent a rapidly evolving class of oncology therapeutics that merge the targeting ability of monoclonal antibodies with the cytotoxic potency of chemotherapeutic agents, aiming to minimize systemic toxicity by specifically targeting cancer cells. Despite advancements in non-small cell lung cancer (NSCLC) treatment, it remains a significant unmet need for effective therapies in advanced stages. Key ADCs such as trastuzumab deruxtecan (T-Dxd) and datopotamab deruxtecan (Dato-Dxd) are emerging as promising options, especially for refractory or relapsed disease. T-Dxd, targeting HER2, has shown significant clinical efficacy in the DESTINY-Lung01 trial, and Dato-Dxd, targeting TROP2, has demonstrated robust antitumor activity in the TROPION-PanTumor01 and TROPION-Lung 01 trials. Both ADCs have manageable safety profiles, though interstitial lung disease (ILD) remains a concern. Future directions include combination therapies with immune checkpoint inhibitors, targeted therapies, and anti-angiogenic agents, as well as the development of next-generation ADCs with improved specificity and novel payloads. Ongoing research is crucial to refining these therapies, managing adverse effects, and expanding their applications through innovative strategies. This topic will review current ADC development, mechanism of action, and clinical trials to optimize future treatment.

Hye Ryun Kim, M.D., Ph.D.

Associate Professor, Department of Medical Oncology, Yonsei Cancer Center, Korea

Current and future perspective in (peri-CRT) treatment of inoperable locally advanced NSCLC

Purpose To investigate the frequency and the prognostic role of fibroblast growth factor receptor 1 (FGFR1) amplification in patients with surgically resected squamous cell carcinoma of the lung (SCCL) and the association between smoking and FGFR1 amplification.

Patients and Methods Gene copy number of FGFR1 was investigated in microarrayed tumors from 262 patients with SCCL who had tumor tissue as well as smoking and survival data available. Gene copy number was evaluated by fluorescent in situ hybridization, and an FGFR1-amplified tumor (FGFR1 amp+) was prespecified as a tumor with nine or more copies of FGFR1.

Results Among 262 patients, the frequency of FGFR1 amp+ was 13.0%. Patients with FGFR1 amp+ had significantly shorter disease-free survival (DFS; 26.9 v 94.6 months; P < .001) as well as shorter overall survival (OS; 51.2 v 115.0 months; P = .002) than those without FGFR1 amp+. Multivariate modeling confirmed that patients with FGFR1 amp+ had a significantly greater risk of recurrence and death than those without FGFR1 amp+ after adjusting for sex, smoking status, pathologic stage, and adjuvant chemotherapy (DFS: adjusted hazard ratio [AHR], 2.24; 95% CI, 1.45 to 3.45; P < .001; OS: AHR, 1.83; 95% CI, 1.15 to 2.89; P = .01). The frequency of FGFR1 amp+ was significantly higher in current smokers than in former smokers and never-smokers (28.9% v 2.5% v 0%; Ptrend < .001). As the smoking dosage increased, so did the incidence of FGFR1 amp+ (Ptrend = .002).

Conclusion FGFR1 amplification is an independent negative prognostic factor in surgically resected SCCL and is associated with cigarette smoking in a dose-dependent manner. FGFR1 amplification is a relevant therapeutic target in Asian patients with SCCL.

Hiroki Izumi, M.D., Ph.D.

Staff Physician, Department of Thoracic Oncology, National Cancer Center Hospital East, Japan

Innovative targeted therapy in SCLC in the near future

Small cell lung cancer (SCLC) constitutes 10-15% of all lung cancer, with an aggressive phenotype and poor prognosis. Although cytotoxic chemotherapy has been the only standard of care for over decades, the addition of anti-PD-L1 antibodies to conventional chemotherapy prolongs the overall survival of patients with extended-disease SCLC. Although most patients respond to frontline therapy, including platinum-based chemotherapy with or without anti-PD-L1 antibody, current second-line treatment options show limited efficacy with short duration of response (3-5 months).

In recent years, novel treatment approaches including DLL3-targeting bispecific T cell engager and antibody-drug conjugates (ADCs) targeting protein overexpressed on cell surface of SCLC (B7H3, SEZ6, and TROP2 etc) have been extensively investigated demonstrate encouraging efficacy with manageable toxicity.

In this talk, novel promising target therapy which will be implemented into the clinic near future will be summarized and discussed.

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陳焜結 Kun-Chieh Chen, M.D., Ph.D.

Division of Pulmonary Medicine, Department of Internal Medicine, Chung Shan Medical University Hospital

Early-stage NSCLC: adjuvant therapy reshapes treatment strategies

Satellite Symposium_ 台灣中外製藥股份有限公司 / 台灣羅氏大藥廠股份有限公司

王馨儀 Hsin-Yi Wang, M.D.

Department of Internal Medicine, National Taiwan University Hospital, Yunlin Branch

Recent advances in advanced NSCLC treatment: a focus on TKIs and immunotherapy

Total Solution Symposium: Personalized Approaches for NSCLC Patients

This presentation will detail recent pivotal advances in the treatment of non-small cell lung cancer (NSCLC), focusing on both early and advanced stages of disease across ALK-positive and wild-type genetic landscapes. We will examine key findings from the key trials for alectinib and atezolizumab, offering an integrated view of evolving therapeutic strategies.

Early and Adjuvant NSCLC Therapy:
The ALINA trial evaluates the efficacy of Alectinib as adjuvant therapy in surgically resected ALK-positive NSCLC, highlighting its role in extending disease-free survival. Simultaneously, IMPower010 explores the benefits of adjuvant Atezolizumab in PD-L1-positive NSCLC, setting the stage for immunotherapy post-surgical intervention.

Advanced NSCLC Management:
For advanced stages, the ALEX and ALESIA trials assess the effectiveness of Alectinib in ALK-positive NSCLC, focusing on its superiority in controlling disease progression compared to standard chemotherapy. The IMPower150 study extends the discussion to late-stage NSCLC patients including wild-type cohorts, showcasing the success of combining Atezolizumab with Bevacizumab and chemotherapy to improve survival across diverse NSCLC subtypes.

This session will also incorporate insights from the latest WCLC and ESMO meetings, emphasizing the impact of sequential therapy strategies and the importance of early intervention. The goal is to refine treatment approaches for enhancing long-term outcomes in both ALK-positive and wild-type NSCLC.

Alex A. Adjei, M.D., Ph.D., FACP., FASCO.

Chairman, Taussig Cancer Institute, Cleveland Clinic, Cleveland OH, USA

Current progress and future perspectives of perioperative therapy for NSCLC treatment

Alex A. Adjei, MD, PhD, FACP, FASCO, is Chief of Cleveland Clinic Cancer Institute, overseeing cancer care and research across all Cleveland Clinic locations in Ohio, Florida, Abu Dhabi, and London. He is also the director of the Taussig Cancer Center in Cleveland, Ohio and the M. Frank Rudy and Margaret D. Rudy Distinguished Chair in Translational Cancer Research at Cleveland Clinic.

Dr. Adjei graduated with his medical degree from the University of Ghana Medical School in Accra, Ghana and received his PhD from the University of Alberta in Edmonton, Canada. He went on to complete his residency and was Chief Resident at Howard University. Following that, Dr. Adjei went on to complete a Clinical and Research Fellowship in Oncology at John Hopkins University School of Medicine and Hospital.

Previously, Dr. Adjei served as Professor of Oncology and Professor of Pharmacology and Director of Early Cancer Therapeutics at Mayo Clinic and Mayo Clinic College of Medicine and Science in Rochester, Minnesota. Prior to this role, Dr. Adjei was the Senior Vice President of Clinical Research, Chairman of the Department of Medicine, and Professor of Oncology at the Roswell Park Cancer Institute in Buffalo, New York. He was also Academic Scholar in Medicine and Professor of Medicine at the State University of New York, Buffalo.

Dr Adjei has served on a number of US National Cancer Institute (NCI) and National Institute of Health (NIH) committees. He was Chair of the NIH Study Section NCRR Clinical Research Review Committee, reviewing CTSAs, member of the Clinical Oncology Study Section (CONC), and NCI IRG Subcommittee A, reviewing Cancer Centers. He was co-chair of the Thoracic Malignancies Steering Committee of NCI from 2015 to 2022. Dr Adjei has served on the Committee on Diagnosing and Treating Adult Cancers of the US National Academies of Sciences, Engineering and Medicine, tasked with providing a report on this topic to the US government (Social Security Administration), and the NIH Center for Scientific Review Blue Ribbon Panel Evaluating Quality in Review by Oncology Study Sections. Previously, he was President of the Minorities in Cancer Research Council of the American Association for Cancer Research, as well as a member of the Board of Directors of the International Association for the Study of Lung Cancer. He is currently a member of the NCI Board of Scientific Counselors.

Among numerous awards and honors, Dr. Adjei has received the Adi F. Gazdar Merit Award from the International Association for the Study of Lung Cancer for Distinguished Achievement in Lung Cancer Research and Mentorship, the ESMO Lifetime achievement award, and the ASCO Drug Development Research Professorship for his work in drug development, regulatory science and for his mentorship.

Dr. Adjei has focused his research on experimental therapeutics, regulatory science and clinical drug development. Other research interests include health disparities, global oncology, and pharmacogenetics. He has published over 300 peer-reviewed articles. He is editor-in-chief of the *Journal of Thoracic Oncology and was the inaugural editor-in- chief of JTO Clinical and Research Reports.*

Prof. David Brendan Price

Professor, Department of Primary Care Respiratory Society, University of Aberdeen, UK

Real-world evidence from ISAR for severe asthma care

The International Severe Asthma Registry (ISAR) was established in 2017 to advance the understanding of severe asthma and its management, thereby improving patient care worldwide. ISAR was the first global registry for adulthood severe asthma and enabled individual registries to standardize and pool their data, creating a harmonized dataset with sufficient statistical power to address key research questions. Today, ISAR is the largest repository of real-world severe asthma data, curating data on more than 30,000 patients from 28 countries worldwide, and is a leading player in severe asthma research.

ISAR has provided valuable insights on the characteristics of severe asthma, its burdens and risk factors, real-world treatment effectiveness, and barriers to specialist care, which are informing improved management. ISAR data revealed that many patients with severe asthma are not referred promptly for specialist care and are not prescribed biologics despite being eligible; furthermore, there are marked inequalities in accessibility to biologics worldwide. Initiating biologics improves key outcomes (exacerbations, lung function, control, long-term oral corticosteroid exposure), and earlier initiation predicts remission. Nevertheless, some biologic initiators respond sub-optimally, highlighting persisting unmet treatment needs.

ISAR quality improvement initiatives are also advancing severe asthma care. In 2024, ISAR refined key variables to enhance data quality and launched a web-based data processing system – QISAR – which integrates data collection with consultations and enables longitudinal data visualization at patient, center, and population levels.

ISAR envisions a future in which the right patients receive the right treatment at the right time and are managed in the right way.

Satellite Symposium_ 台灣百靈佳殷格翰股份有限公司

蔡俊明 Chun-Ming Tsai, M.D.

台北榮總腫瘤醫學部教授級教職特約醫師

Disparities and timing in the management of resistance in EGFR mutant NSCLC

The management of resistance in EGFR-mutant NSCLC presents significant challenges and disparities. This speech will explore the various factors contributing to these disparities, including differences in access to healthcare, variations in treatment protocols, and the timing of intervention. We will delve into the latest research on resistance mechanisms and discuss how early detection and timely management can improve patient outcomes. Additionally, the speech will highlight the importance of personalized treatment plans and the role of emerging therapies in overcoming resistance. By addressing these critical issues, we aim to shed light on the path towards more equitable and effective management of EGFR-mutant NSCLC.

Satellite Symposium_ 台灣百靈佳殷格翰股份有限公司

黃彥翔 Yen-Hsiang Huang, M.D., Ph.D.

Attending Physician of Division of Chest Medicine, Department of Internal Medicine, Taichung Veterans General Hospital, Taichung, Taiwan

Sequencing is key: tailor treatment plan to improve outcomes in managing NSCLC

Effective management of NSCLC hinges on the strategic sequencing of treatments. This speech will emphasize the importance of personalized treatment plans that adapt to the evolving nature of the disease. By tailoring the sequence of therapies, we can address the unique genetic and molecular profiles of each patient, thereby improving outcomes. The discussion will cover the latest advancements in targeted therapies, the role of biomarkers in guiding treatment decisions, and the impact of timely intervention. We will also explore case studies that highlight the success of customized treatment sequences in extending patient survival and enhancing quality of life. Ultimately, this speech aims to underscore the critical role of sequencing in the fight against NSCLC.

陳志金 Che-Kim Tan, M.D.

Director of Sleep Center, Deputy Director of Center for Quality Management, Attending Physician of ICU, Chi-Mei Medical Center, Tainan, Taiwan.

End-of-life care and time-limited trials in ICU

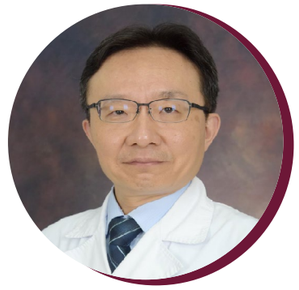
In the ICU, we are treating the most critically ill patients. Unfortunately, despite our best efforts and the advances in medicine, out of every ten patients, one or two are beyond recovery.

In the past, we considered the loss of these patients as a "failure" for the team, leading to deep sadness and grief. Over time, the ongoing stress and frustration cause some to choose a different career path, leaving the ICU. Those who stay may view it as just a job, feeling that it is unnecessary to dwell in sadness and attempt to "isolate" their emotions, but the patient's family may perceive this as indifference.

Is there no third option? When facing patients we cannot save, let's not forget that we can still help their families. We can assist family members in coping with the loss of their loved one, helping them to relieve their feelings of guilt and self-blame. Our compassionate act can provide the family with a memory of solace amid their grief when they reflect back on this moment next year.

When families face difficult decisions and there is disagreement among them, we can invite them to participate in "Shared Decision-Making (SDM)." Many decisions in these situations do not have an absolute right or wrong answer; each family has its own considerations. The focus should be on respecting the patient's “MVP: what Matters to the patient, his/her Values, and Preferences." After thorough understanding and communication, the family can make a decision that they will not regret later. If consensus cannot be reached, or if the prognosis remains unclear, we can also implement "Time-Limited Trials" and revisit the discussion later until a new consensus is reached.

In the treatment of critically ill patients at the end of life, our goal is not only to ensure patient comfort and a dignified passing but also to alleviate the family's guilt, regret, and sorrow. When we can no longer save the patient, let's not forget to save the family.



簡榮彥 Jung-Yien Chien, M.D., Ph.D.

Clinical Professor, Department of Internal Medicine, National Taiwan University Hospital

Novel diagnostic tool for causative agents of severe infections

PCR-based diagnosis is a rapid and sensitive method for detecting specific pathogens by amplifying their DNA or RNA, making it essential for timely diagnosis of infectious diseases. Metagenomic next-generation sequencing (mNGS) offers a broader approach by simultaneously analyzing multiple pathogens in a sample without prior knowledge of which infections may be present. While PCR excels in specificity and speed for known pathogens, mNGS provides comprehensive insights into diverse microbial communities, including emerging and rare infections. Together, these techniques enhance the accuracy and efficiency of infectious disease diagnosis, facilitating better patient management and treatment strategies.

李承家 Cheng-Chia Lee, M.D.

林口長庚醫院腎臟科加護腎臟科主任

Blood purification(Oxiris) and extracorporeal carbon dioxide removal (ECCO2R) therapy for sepsis and ARDS

Treating severe sepsis and septic shock remains challenging due to the complex interplay of pro-inflammatory and anti-inflammatory responses, leading to rapid organ dysfunction and high mortality rates. oXiris combines hemodialysis, endotoxin adsorption, and cytokine removal in one membrane, targeting harmful mediators that drive the inflammatory response in sepsis.

Low blood flow ECCO2R system can remove 50% of typical VCO2, allowing for lower ventilatory pressures and tidal volumes, thereby minimizing further lung injury during management of ARDS. It can use as rescue therapy to maintain lung protective ventilation and potentially improve the chance of lung recovery.

陳威志 Wei-Chih Chen, M.D., Ph.D.

Director, Respiratory Care Center, Taipei Veterans General Hospital, Taiwan

Treatment heterogeneity in sepsis

Treatment heterogeneity in sepsis is a significant challenge due to the diverse nature of the condition. Sepsis encompasses a broad spectrum of infections, organisms, and host responses, leading to varied treatment outcomes. Studies highlight that while immediate antibiotic therapy is crucial for patients with septic shock, its benefits are less clear for those with milder forms of sepsis. Delaying antibiotics beyond three hours increases mortality in septic shock, and patients with multiple organ failures, but may not be as critical for less severe cases. Moreover, research shows that adding fludrocortisone to hydrocortisone improves outcomes in septic shock patients compared to hydrocortisone alone.

Recent guidelines emphasize the need for stratification based on the certainty of infection and severity of illness, advocating for early antibiotics in high-risk cases and more diagnostic clarity in uncertain infections. Machine learning approaches suggest that some patients might even be harmed by early antibiotics due to misdiagnosis or organ damage. This represents the complexity of sepsis management and the need for more refined strategies to tailor treatment to individual patient profiles.

熱蘭遮 B

Dec. 7 (sat.)

09:40-10:20 P29 Annual report of the implementation of healthcare insurance reimbursement for thoracic medicine
周昆達 秘書長

15:00-15:40 P30 Asthma care and environmental sustainability: A path to healthier lives and a greener planet
傅彬貴 醫師

16:10-16:50 P31 Current status and prospects of mesothelioma in Taiwan
郭耀昌 醫師

Dec. 8 (sun.)

08:40-09:20 P32 Application and limitation of artificial intelligence in medicine
郭律成 醫師

09:20-10:00 P33 The AI Journey of a clinical cardiologist: a multidisciplinary collaboration
林錦生 醫師

10:30-11:10 P34 Advancing pulmonary rehabilitation standardization in Taiwan: focusing on CPET to align with 2021 ATS guidelines
莊銘隆 醫師

周昆達 Kun-Ta Chou, M.D., Ph.D.

Head, Division of Clinical Respiratory Physiology, Department of Chest Medicine, Taipei Veterans General Hospital,Taipei, Taiwan.
Secretary General, Taiwan Society of Pulmonary and Critical Care Medicine.

Professional Experience: Chief, Division of Clinical Respiratory Physiology & CEO., Center of Sleep Medicine, Taipei VGH

Annual report of the implementation of healthcare insurance reimbursement for thoracic medicine

傅彬貴 Pin-Kuei Fu, M.D., Ph.D.

Director, Interstitial Lung Disease Integrated Care Center, Taichung Veterans General Hospital

Asthma care and environmental sustainability: A path to healthier lives and a greener planet

Asthma management and environmental sustainability are increasingly interconnected in the pursuit of healthier communities and a cleaner planet. As climate change and pollution exacerbate asthma symptoms and respiratory conditions, there is a growing need for healthcare strategies that not only improve patient outcomes but also minimize environmental impact. This paper explores the link between asthma care and sustainable practices, emphasizing the importance of eco-friendly inhalers, reduced emissions, and environmentally conscious healthcare policies. By integrating green initiatives into asthma management, we can protect both individual health and the environment, paving the way for a future where well-being and sustainability go hand in hand.

郭耀昌 Yau-Chang Kuo, M.D., Ph.D.

Assistant Professor, College of Medicine, National Cheng Kung University, Taiwan

Current status and prospects of mesothelioma in Taiwan

Pleural mesothelioma, a rare and aggressive cancer primarily linked to asbestos exposure, presents unique challenges in Taiwan due to its industrial history and ongoing environmental factors. This presentation aims to provide a comprehensive overview of the current epidemiology of pleural mesothelioma in Taiwan, highlighting incidence trends and potential occupational risks.

Epidemiological data suggests that the incidence of pleural mesothelioma in Taiwan, while lower than in Western countries, is gradually increasing due to past asbestos exposure in industries such as construction and shipbuilding. This has led to growing concern among healthcare professionals and researchers.

The presentation also explores recent advances in the diagnosis and treatment of pleural mesothelioma. Current therapeutic options, including surgery, chemotherapy, immunotherapy, and emerging multimodal approaches, will be discussed. While survival rates remain low, innovative treatments have shown promise in improving patient outcomes.

Looking forward, the future of pleural mesothelioma management in Taiwan will likely involve greater emphasis on early detection, personalized medicine, and enhanced public health policies to reduce asbestos exposure risks.

郭律成 Lu-Cheng Kuo, M.D.

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

Application and limitation of artificial intelligence in medicine

Artificial intelligence has rapid evolution in recent years and its application in healthcare is growing. There are two classes of AI: classic and generative. Classic AI uses various machine learning algorithms to make predictions. It could be used in decision support systems, such as disease classification, outcome prediction, image interpretation, etc. Generative AI (large language model, LLM), such as ChatGPT, can create texts or other data types based on pre-existing knowledge. Clinically, text processing tasks, such as chatbot, summary notes, could be accomplished.

Because the training data of AI were based on existing old data, the accuracy of AI prediction will change over time. Clinicians must know the limitation of such AI products. From the point of governance, all implementation of AI product must follow the regulation of Software as Medical Device (SaMD) and should be supervised all the time.

Additional issues about AI applications include patient data privacy, cybersecurity, ethical and legal aspects and influence on medical education. These topics will be addressed and discussed during the presentation.

林錦生 Chin-Sheng Lin, M.D., Ph.D.

Professor, School of Medicine, National Defense Medical Center

The AI Journey of a clinical cardiologist: a multidisciplinary collaboration

Electrocardiography swiftly identifies cardiac disorders, spanning structural anomalies, arrhythmias, and myocardial ischemia. Since 2016, I have collaborated with Professor Lin, an AI algorithm and data analysis expert, to conduct our AI-ECG projects. Our team pioneered an integrated AI-enabled ECG platform, leveraging extensive annotated data and cutting-edge deep learning techniques. This innovative system accurately identifies over 50 conditions, encompassing both acute cardiac crises and chronic ailments, through a single 12-lead ECG. Through interdisciplinary collaboration, we successfully deployed this system in real-world settings, revolutionizing emergent healthcare from in-hospital to out-of-hospital scenarios, thereby promptly aiding numerous patients experiencing myocardial infarction or severe dyskalemia. Due to the scarcity of real-world evaluation and underrepresentation in cardiology, the AI RCTs provide less clinically meaningful evidence for application in cardiovascular healthcare. We conducted pragmatic RCTs, identifying high-risk patients necessitating intensified management. Results demonstrated significantly reduced mortality rates, and expedited door-to-balloon times for STEMI patients in the intervention group compared to controls. Collectively, our AI-ECG system signifies a paradigm shift towards comprehensive and superior patient care within our healthcare institution.

In this talk, I focus on the development of our AI system for cardiovascular healthcare, highlighting the key factors essential for the success of our projects. My aim is to inspire young physicians to pursue AI-driven initiatives in healthcare.

莊銘隆 Ming-Lung Chuang, M.D.

Professor, Chung Shan Medical University.

Advancing pulmonary rehabilitation standardization in Taiwan: focusing on CPET to align with 2021 ATS guidelines

Pulmonary rehabilitation (PR) has been implemented in Taiwan for many years, but CPET (cardiopulmonary exercise testing) is rarely performed by the respiratory and thoracic medical community in Taiwan. This divergence from the 2021 ATS (American Thoracic Society) guidelines on pulmonary rehabilitation is a significant issue.

The 2021 ATS pulmonary rehabilitation guidelines outline 13 essential items. The definition of essential is "indispensable and not sufficient in itself." Therefore, all 13 items are indispensable, with the second item being the exercise test.

CPET is one of exercise tests where the subject performs physical activity while the examiner measures (1) exercise capacity, (2) oxygen intake, (3) carbon dioxide output, (4) ventilation, (5) blood pressure, (6) heart rate, and (7) oxyhemoglobin saturation and changes. The exercise mode usually follows an (1) incremental pattern until the maximum symptom is reached and (2) constant work-rate pattern.

CPET can aid PR by (1) ensuring the safety of exercise training, (2) measuring the anaerobic threshold to quantify personalized exercise intensity, thereby improving training effectiveness and efficiency, (3) selecting a dose for the endurance constant-work exercise test to evaluate training effects, and (4) expanding into group therapy, which maintains economic scale and sustainability. However, CPET is rarely performed by the respiratory and thoracic medical community in Taiwan; it is more commonly performed by rehabilitation departments. In fact, during the training process of rehabilitation physicians, CPET is a required course and a necessary subject for specialist examinations. However, rehabilitation physicians rarely receive patients with thoracic diseases, preventing these patients from benefiting from CPET. In the United States, cardiopulmonary rehabilitation and respiratory therapy have been recognized as a partnership.

In contrast, the six-minute walk test (6MWT) is more commonly performed by the respiratory and thoracic medical community in Taiwan and is the third item among the 13 essential items, being one of the field tests. The implementation of the 6MWT should follow ATS standards for standardization. In brief, the corridor used should ideally be 30 meters long with cones at both ends, free of disturbances during the test, with the tester's instructions being neutral and calm, and the subject walking as much as possible, with rest allowed if necessary, without pausing the timer. The test should be completed at least twice with a minimum interval of 30 minutes between tests, and the longer walking distance among the trials should be used for evaluation. Only data obtained following these standards can be used for prognosis assessment. Additionally, the 6MWT is a submaximal exercise test and should not be used to assess maximal exercise capacity.

CPET is the core of the 13 essential items. CPET's standardized scientific data can be easily interpreted through the "nine-panel plot," making it very clear and straightforward. The core of CPET is our leader in pulmonary rehabilitation planning. This leader must understand exercise physiology and starting with CPET is an excellent approach to be able to plan and adjust exercise training programs. The integrity and effectiveness of pulmonary rehabilitation cannot be compromised. The pulmonary rehabilitation team must be certified through professional society audits in exercise training planning to provide comprehensive and effective in-hospital pulmonary rehabilitation and to effectively promote home pulmonary rehabilitation.

The Taiwan CPET group holds a case discussion session via webinar on the fourth Thursday of every month to mutually improve their skills. They have also published a Chinese CPET textbook, which will help members of our respiratory and thoracic community (especially the younger generation) to learn CPET together. This aligns with the 2021 ATS guidelines to provide safe, effective, and sustainable exercise training, benefiting patients with thoracic diseases.

大員 A

Dec. 7 (sat.)

09:00-09:40 P37 Phenotyping and endotyping for severe asthma: what do we have in clinical practice?
黃俊凱 醫師

09:40-10:20 P38 The differences in the use of biological agents for treating severe asthma: type-2 high, type-2 low, and neutrophilic
David Jackson, Ph.D.

10:50-11:30 P39 Clinical interpretation of impulse oscillometry in asthma and COPD
蕭逸函 醫師

11:30-12:10 P40 Early diagnosis and treatment of COPD and Asthma
Shawn David Aaron, M.D.

12:20-13:30 P42 **Airway Disease**
Satellite Symposium_ 臺灣阿斯特捷利康股份有限公司
A deep dive into eosinophilic driven diseases, from severe eosinophilic Asthma to EGPA
曾敬閔 醫師
David J. Jackson, Ph.D.

15:00-15:40 P44 Robotic-assisted bronchoscopy in diagnosing and ablating peripheral pulmonary nodules
孫加源 醫師

16:10-16:50 P45 How to improve the diagnosis of peripheral pulmonary lesions?
林敬凱 醫師

17:00-18:10 P46 **Airway Disease**
Satellite Symposium_ 臺灣阿斯特捷利康股份有限公司
The effect of implementing Asthma P4P on healthcare outcomes
傅彬貴 醫師
Taiwan HP COPD risk & care survey outcome: alarming for early Triple therapy in COPD
蘇剛正 醫師

Dec. 8 (sun.)

08:40-09:20 P48 Simple and safe blood biomarkers for IPF: where we are now?
黃堂修 醫師

09:20-10:00 P49 The Future in Pulmonary Fibrosis - Potential Novel Strategy (L. Richeldi, Rome)
Richeldi Luca, M.D., Ph.D.

10:30-11:10 P50 Insights of novel management in pulmonary fibrosis
蔡英明 醫師

11:10-11:50 P51 To be IPF or not to be IPF: updates of diagnosis and managements of chronic fibrosing ILDs
Yoshikazu Inoue, M.D., Ph.D.

黃俊凱 Chun-Kai Huang, M.D.

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

Phenotyping and endotyping for severe asthma: what do we have in clinical practice?

Severe asthma is a heterogeneous condition, meaning it can present differently across patients, making treatment and management challenging. Over recent years, advancements in understanding asthma have led to the development of phenotyping and endotyping approaches to better characterize this disease. A phenotype refers to observable characteristics of asthma, such as symptoms, triggers, or lung function, while an endotype identifies the underlying biological mechanisms driving the condition. Both concepts play an essential role in guiding personalized treatment plans for severe asthma patients.

Treatable traits focus on identifying specific, measurable characteristics of an individual's asthma that can be directly targeted by therapy. These traits often emerge from the detailed classification provided by phenotyping and endotyping. the concept of treatable traits incorporates both phenotyping and endotyping as essential elements for a more personalized and precise approach to asthma management. These approaches offer a more holistic view of the patient, allowing for tailored therapies that address both the symptoms and the underlying causes of asthma.

- Phenotypes provide the starting point for understanding how a patient's asthma manifests.
- Endotypes provide insight into the molecular and cellular drivers of the disease.
- Treatable traits then identify specific, modifiable features within these frameworks that can be targeted for treatment.
-

In this session, we will discuss the combined role of phenotyping, endotyping, and treatable traits, as well as their respective meanings. We will also discuss how we currently evaluate patients with severe asthma in clinical practice using existing care methods and tools.

David J. Jackson, Ph.D.

Professor, Department of Respiratory Medicine Faculty of Life Sciences & Medicine, King's College London, UK

The differences in the use of biological agents for treating severe asthma: type-2 high, type-2 low, and neutrophilic

Severe asthma is a complex and heterogeneous condition, with distinct underlying inflammatory pathways that require personalized treatment approaches. The advent of biologic therapies has transformed the management of severe asthma, but the selection of the appropriate agent depends on the specific asthma phenotype.

In type-2 high severe asthma, the predominance of type-2 inflammation, driven by elevated cytokines like IL-4, IL-5, and IL-13, is associated with eosinophilic airway inflammation. Biologics targeting the type-2 axis have demonstrated remarkable efficacy in this patient population. Anti-IL-5 therapies have been shown to not only reduce exacerbations and symptoms but also improve lung function by attenuating airway remodeling processes.

Conversely, type-2 low severe asthma is characterized by non-type-2 inflammatory pathways, including neutrophilic inflammation. The management of this phenotype is more challenging, as the underlying mechanisms are not as well-understood. Neutrophilic severe asthma, defined by predominant neutrophilic airway inflammation, is associated with more severe disease, reduced responsiveness to corticosteroids, and progressive airway remodeling. Currently, there are no approved biologic therapies specifically targeting the neutrophilic inflammatory pathway in severe asthma, and ongoing research is exploring the potential of targeting cytokines to address both the inflammatory and remodeling aspects of this phenotype.

In conclusion, the selection of biologic therapies for severe asthma requires a deep understanding of the underlying asthma phenotype and its associated inflammatory and remodeling processes. By tailoring the treatment approach to the specific inflammatory profile, clinicians can not only improve symptom control and reduce exacerbations but also positively impact lung function through the modulation of airway remodeling. This personalized approach to severe asthma management is crucial in optimizing patient outcomes and reducing the long-term burden.

蕭逸函 Yi-Han Hsiao, M.D., Ph.D.

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

Clinical interpretation of impulse oscillometry in asthma and COPD

Impulse Oscillometry (IOS) is gaining traction as a valuable tool in the respiratory field for its noninvasive assessment of lung function, particularly in asthma and Chronic Obstructive Pulmonary Disease (COPD) patients. In this presentation, I will review the clinical relevance of IOS in the diagnosis and monitoring of asthma and COPD, highlighting its advantages over conventional spirometry. IOS measures lung impedance through oscillations applied via a mouthpiece, enabling detection of peripheral airway resistance—a critical factor often overlooked by traditional spirometric indices. Asthma and COPD, being obstructive respiratory conditions mostly involved in the small airways, exhibit specific patterns on IOS that reflect changes in airway resistance and reactance at various frequencies. The utility of IOS is underscored in scenarios where spirometry is challenging, such as in pediatric, elderly, or severely ill patients. Recent studies demonstrate that IOS can distinguish between asthma and COPD by identifying unique oscillatory impedance patterns associated with each condition. Furthermore, IOS has been shown to be sensitive in detecting early disease changes that are not apparent in spirometry, thus allowing for earlier intervention and management adjustments. This presentation reviews literature that supports the integration of IOS into routine clinical practice for respiratory diseases, discusses methodological considerations, and suggests directions for future research. By providing a comprehensive understanding of IOS's capabilities, we advocate for its broader application in the clinical setting to enhance the diagnosis, treatment, and monitoring of asthma and COPD patients, ultimately improving patient outcomes.

Shawn David Aaron, M.D.

Attending Physician, Department of Medicine, Division of Respiratory Medicine, The Ottawa Hospital, USA

Early diagnosis and treatment of COPD and Asthma

Background: Many individuals with chronic obstructive pulmonary disease (COPD) or asthma remain undiagnosed, and they suffer from respiratory symptoms that remain largely untreated. Our objective was to determine if early diagnosis and treatment of COPD or asthma reduces healthcare utilization for respiratory illness and improves health outcomes.

Methods: A multi-center case-finding study was coupled to a randomized, controlled trial. Adults with respiratory symptoms without diagnosed lung disease were recruited using random digit-dialing. Participants underwent pre- and post-bronchodilator spirometry. Individuals found to have undiagnosed COPD or asthma were randomized to the intervention arm, consisting of evaluation by a pulmonologist and asthma/COPD educator instructed to initiate guideline-based care, or to usual care by the primary-care practitioner. The primary outcome was the annual rate of patient-initiated healthcare utilization events for respiratory illness (outpatient or emergency department visits or hospitalizations for respiratory illness). Secondary outcomes included one-year changes in quality of life, symptoms, and FEV1.

Results: Among 38,353 individuals interviewed, 595 had undiagnosed COPD or asthma. 508 participated in the trial; 253 were randomized to intervention and 255 to usual care. Participants in the intervention arm had fewer patient-initiated healthcare utilization events for respiratory illness; 0.53 events/patient/year vs 1.12 events/patient/year, IRR= 0.48, 95% CI: 0.36-0.63, P<0.001. The St George Respiratory Questionnaire, which measures disease specific quality of life, and has a minimal clinically important change within individuals over time of -4 points, improved -10.2 points in the intervention group and -6.8 points in the usual care group (difference -3.5 points, 95% CI: -6.0 - -0.9). The COPD Assessment Test which measures the impact of symptoms on daily activities and health status and has a minimal clinically important change within individuals over time of -2 points, improved -3.8 points in the intervention group and -2.6 points in the usual care group (difference -1.3 points, 95% CI: -2.4 - -0.1). The FEV1 improved 119 ml in the intervention group and 22 ml in the usual care group (difference 94 ml, 95% CI: 50-138). Frequencies of adverse events were similar between the 2 study groups.

Conclusion: A strategy to discover community-dwelling adults with undiagnosed asthma or COPD coupled with pulmonologist-directed treatment reduced subsequent patient-initiated healthcare utilization events for respiratory illness.

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曾敬閔 Ching-Min Tseng, M.D.

Attending Staff, Division of Chest Medicine, Department of Internal Medicine, Cheng-Hsin General Hospital, Taipei, Taiwan

The hidden bomb: uncovering the threats of eosinophilic inflammation in severe asthma

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David J. Jackson, Ph.D.

Professor, Department of Respiratory Medicine, Faculty of Life Sciences & Medicine, King's College London, UK

EGPA: Investigating the cause of the problem and the latest advances in management

A deep dive into eosinophilic driven diseases, from severe eosinophilic Asthma to EGPA

Eosinophils, when present in high numbers in the airways, can drive various mechanisms that contribute to severe asthma, including airway remodeling, excessive mucus production, and epithelial cell dysfunction. Airway remodeling, characterized by structural changes, leads to airway obstruction and reduced lung function. Eosinophils release cytokines, growth factors, and pro-fibrotic mediators that promote these remodeling processes.

Understanding the pivotal role of eosinophils in severe asthma pathogenesis is crucial for developing targeted therapies and optimizing patient management strategies. By unveiling the hidden threats of eosinophilic inflammation, this session will provide valuable insights into the complex mechanisms underlying severe asthma.

The second session will shift the focus to Eosinophilic Granulomatosis with Polyangiitis (EGPA), a rare and complex eosinophilic-driven disease characterized by eosinophilia, vasculitis, and multi-organ involvement.

The session will delve into the etiology of EGPA, examining the underlying mechanisms that drive the disease and the factors that contribute to its development. Understanding the root causes of EGPA is crucial for improving disease management and identifying potential therapeutic targets. Notably, this session will feature a special presentation by Professor David Jackson, a renowned expert in eosinophilic-driven diseases. Professor Jackson will share the latest clinical trial results on the use of benralizumab, a monoclonal antibody targeting the IL-5 receptor, in the treatment of EGPA. Benralizumab has shown promise in reducing eosinophil levels and improving clinical outcomes in EGPA patients, offering a potential breakthrough in the management of this rare and debilitating condition.

孫加源 Jia-Yuan Sun, M.D., Ph.D.

Chief Physician, Department of Respiratory and Critical Care Medicine, Shanghai Chest Hospital, Shanghai Jiao Tong University, China

Robotic-assisted bronchoscopy in diagnosing and ablating peripheral pulmonary nodules

The speaker will introduce the characteristics, advantages and disadvantages of existing robotic-assisted bronchoscopy systems (mainly including Ion, Monarch, and Galaxy), and the research progress of the robotic-assisted bronchoscopy in the diagnosis and treatment of peripheral pulmonary nodules. In addition, the speaker will share the key points of robotic-assisted bronchoscopy in the diagnosis and treatment of peripheral pulmonary nodules with typical cases based on his own operational experience. Finally, the speaker will discuss the application prospect of robotic-assisted bronchoscopy in the diagnosis and treatment of peripheral pulmonary nodules.

林敬凱 Ching-Kai Lin, M.D., Ph.D.

Clinical Assistant Professor, Department of Internal Medicine, NTUCC

How to improve the diagnosis of peripheral pulmonary lesions?

With the increasing use of low-dose computed tomography (CT) for lung cancer screening, peripheral pulmonary lesions (PPLs) are more easily exposed. For suspected malignant PPLs, an accurate diagnosis is an essential step in devising an ap-propriate treatment plan. The transthoracic approach with CT-guided biopsy traditionally is the first choice due to its having the highest diagnostic accuracy. However, because of its high complication rate, which may lead to patient morbidity and mortality, the use of bronchoscopic techniques has gradually increased. Endobronchial ultrasound-guided transbronchial biopsy (EBUS-TBB) is now widely used for the diagnosis of PPLs. In previous publications, the diagnostic accuracy of EBUS-TBB alone has ranged from 60-70%. Combined use with other methods, such as fluoroscopy, virtual bronchoscopic navigation or rapid on-site cyologic evaluation, has been attempted to improve diagnostic accuracy. However, these techniques have their limitations or disadvantages, so a more effective system is required to assist EBUS-TBB procedures.

Cone-beam CT (CBCT) is a newer CT modality that can provide both real-time 2-dimensional (2D) fluoroscopy and 3D CBCT scans. With dedicated software, the tar-get can be contoured, and be projected onto live fluoroscopy images, termed augmented fluoroscopy (AF). This system provides real-time information for interventional radiologists and surgeons in many advanced procedures. CBCT-AF can also guide the bronchial route for navigation, and confirm the location of target PPLs, thereby improving diagnostic accuracy during EBUS-TBB. Traditionally, most TBB procedures employed standard biopsy forceps, which frequently obtained small, crushed tissue samples that might affect the molecular analysis for further cancer management. Therefore, a better biopsy device is needed. Collecting larger and highly-quality histologic specimens is required.

Cryobiopsy is performed using compressed gas, followed by decompression to create a cooling (Joule-Thomson) effect, that freezes surrounding tissue, and then extracts a larger tissue specimen with preserved internal structure. It has been commonly used to diagnose of interstitial pulmonary diseases, endobronchial tumors and pleuroscopy procedure. Transbronchial cryobiopsy (TBC) was also performed recently. In addition, TBC provide ample tissue for gene analysis and for dividing histolologic subtype, which assist physician to guide further cancer treatment. Some reports also revealed a relative low complication rate. Cryobiopsy should be wisely applied in this gene guided therapy era.

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傅彬貴 Pin-Kuei Fu, M.D., Ph.D.

Director, Interstitial Lung Disease Integrated Care Center, Taichung Veterans General Hospital

The effect of implementing Asthma P4P on healthcare outcomes

In Taiwan, the Asthma P4P program has been operational since 2001, aiming to assess its effects on healthcare outcomes, with a focus on prescription trends and results across different levels of healthcare accreditation.

Through the efforts of the TSPCCM Airway Committee, a HP-based survey was conducted on over 500 asthma patients regarding their current medication and follow-up appointment compliance. This survey aimed to highlight risk factors associated with under-compliance, including ER visits and hospitalization rates.

To further address the gap, it is important how to influence medication compliance among both P4P and non-P4P asthma patients by follow up reminders, with the goal of improving asthma care in Taiwan.

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蘇剛正 Kang-Cheng Su, M.D., Ph.D.

Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan

Taiwan HP COPD risk & care survey outcome: alarming for early Triple therapy in COPD

COPD has been Top 3 cause of death worldwide, as No.9 cause of death in Taiwan, as the risk & care outcome of Taiwan COPD patient still unknown.

By TSPCCM Airway Committee's effort, Taiwan HP COPD risk & care surveyed over 1000 COPD patient with current disease outcome & care satisfaction, to highlight the under awareness risk factor including significant airway symptoms & cardiopulmonary comorbidity.

To further tackle the gap, early Triple FDC may stand a critical position for those at risk COPD patient, cooperation between subspecialty for COPD care may also raise COPD care quality in advance.

黃堂修 Tang-Hsiu Huang, M.D., Ph.D.

Attending physician / Clinical assistant professor, Division of Chest Medicine, Department of Internal Medicine, College of Medicine, National Cheng Kung University, Tainan, Taiwan

Simple and safe blood biomarkers for IPF: where we are now ?

Idiopathic pulmonary fibrosis (IPF) is a relentlessly progressive lung disease with an unpredictable course and a generally poor prognosis. Significant advancements have been made in understanding the pathogenesis, diagnosis, and treatment of IPF over the past two decades. However, clinicians and researchers worldwide are still seeking optimal biomarkers for monitoring and prognosticating IPF. Commonly used markers, such as spirometric volume measurements, carbon monoxide diffusion capacity, and radiographic changes on serial CT images, have their limitations. Numerous studies have evaluated the use of circulating blood macromolecules or cells as biomarkers, but no definitive conclusions have been reached thus far. This session will provide a concise review of the current evidence and progress regarding the clinical applications of potential blood biomarkers for IPF.

Richeldi Luca, M.D., Ph.D.

Chair of the Division of Pulmonary Medicine and CEMAR (Respiratory Disease Center), Fondazione Policlinico Universitario Agostino Gemelli IRCCS , Rome, Italy

The Future in Pulmonary Fibrosis - Potential Novel Strategy (L. Richeldi, Rome)

Luca Richeldi is a member and the secretary of the "Infections and Tuberculosis" group of the Cochrane Collaboration.

He serves as Associate Editor for the European Respiratory Journal and he is a Member of the Editorial

Board of the American Journal of Respiratory and Critical Care Medicine.

He is also a Member of the Clinical Problems Assembly program committee of the American Thoracic Society. He has been part of the panels in charge of the production of the international guidelines on diagnosis and management of idiopathic pulmonary fibrosis and on consensus classification of the idiopathic interstitial pneumonia: these documents have been endorsed by the major international respiratory scientific societies, including the American Thoracic Society and the European Respiratory Society.

蔡英明 Ying-Ming Tsai, M.D., Ph.D.

高醫岡山醫院胸腔科主任

Insights of novel management in pulmonary fibrosis

Pulmonary fibrosis (PF) affects millions of people worldwide with irreversible progression and impairs quality of life. PF consists of diverse group of conditions characterized by inflammation and fibrosis in the lung with poor clinical outcomes.

The pathological mechanisms are known to culminate in fibroblast activation, proliferation, and differentiation into myofibroblasts with extracellular matrix proteins deposition characterized the fibrosis. In recent years, an increase in the understanding of the interrelated processes that drive fibrosis progression in PF. Novel pathological mechanisms have been identified, which represent new targets for drugs currently in clinical development which including phosphodiesterase 4b inhibitors and other molecules that act on intracellular signaling, as well as inhibitors of the autotaxin-lysophosphatidic acid axis. More novel treatment strategies are available.

Here, I will review current knowledge and recent developments regarding their underlying process of progressive fibrosis and the potential therapeutic targets.

Yoshikazu Inoue, M.D., Ph.D.

Osaka Anti-Tuberculosis Association, Osaka Fukujuji Hospital / Clinical Research Center, National Hospital Organization Kinki-Chuo Chest Medical Center, Osaka, Japan

To be IPF or not to be IPF: updates of diagnosis and managements of chronic fibrosing ILDs

Idiopathic pulmonary fibrosis (IPF) is a chronic, fibrosing interstitial pneumonia of unknown cause that is associated with radiological and histologic features of usual interstitial pneumonia (UIP). IPF is a representative pulmonary fibrosis and the most important interstitial lung disease (ILD). IPF is generally a progressive disease with poor prognosis. In various non-idiopathic UIP, an IPF-like outcome is often observed, despite standard management is used. Radiological and/or pathologic UIP pattern is considered to be one of the most crucial risks factors of poor prognosis or mortality of patients with various ILDs, and the various forms of UIP could be considered as a stand-alone biologic entity. Diagnosis of IPF or not, or UIP or not is generally important for the decision of treatment and management of chronic fibrosing ILDs (CFILDs). Although the accurate diagnosis and appropriate approach of patients with ILDs are important, the diagnostic agreements of each ILDs between were poor, resulting requirements of multidisciplinary discussion (MDD) and ontological evaluation.

Recent clinical studies for IPF, progressive fibrosing ILD (PF-ILD), or progressive phenotype of CFILDs using anti-fibrotic drugs had opened a new era of en-block approach of CFILDs.

Recently an official ATS/ERS/JRS/ALAT updated the guideline of IPF and addressed the progressive pulmonary fibrosis (PPF) other than IPF. Now there are two widely cited definitions of PPF and PF-ILD. Recent, on-going and future clinical trials with pirfenidone, nintedanib, and other novel drugs have targeted both IPF and/or PPF, but most of them use the criteria of PF-ILD. More data and evidences should be accumulated for optimal managements of patients with CFILDs. In this lecture, updates of diagnosis and managements of IPF vs CFILDs other than IPF will be presented.

大員 B

Dec. 7 (sat.)

12:20-13:30 P53 **Vaccine**
Satellite Symposium_ 輝瑞大藥廠股份有限公司
Advancement in pulmonary care: Protection of RSV infection for older adults
Francesco Blasi, M.D.

15:00-15:40 P54 Artificial intelligence in sleep medicine, where are we now and where do we go from here?
Cathy Goldstein, M.D., M.S.

16:10-16:50 P56 Important notes on the updated classification of sleep disorders (ICSD-3-TR): sleep disorders more than breathing problems
李佩玲 醫師
劉景隆 醫師

17:00-18:10 P58 **Airway Disease**
Satellite Symposium_ 友華生技醫藥股份有限公司
Optimization of COPD patients treatment: from clinical trials to new real-world experience
廖光明 醫師

Dec. 8 (sun.)

08:40-09:20 P59 Recent developments in the diagnosis and treatment of tuberculosis.
江振源 醫師

09:20-10:00 P60 Genetic evolution of antibiotic resillience in Mycobacterm tuberculosis with treatment failure
Qingyun Liu, Ph.D.

10:30-11:10 P61 Diagnosis and managemnt of CPA: expert opinions in Taiwan
李孟叡 醫師

11:10-11:50 P62 Interpretation of molecular diagnostic tests in IPA.
潘聖衛 醫師

Satellite Symposium_ 輝瑞大藥廠股份有限公司

Francesco Blasi, M.D.

Professor, Department of Respiratory Medicine, Pathophysiology and Transplantation, University of Milan, Italy

Advancement in pulmonary care: Protection of RSV infection for older adults

Streptococcus pneumoniae is an important pathogen which can cause deadly infection disease, known as pneumococcal disease, which is more common among children, elderly and those with chronic underlying diseases. After PCV13 get implemented into National Immunization Program (NIP) for child since 2015, overall invasive pneumococcal disease burden had decreased significantly, and the herd immunity was observed in adult population as well. But the serotype replacement was observed after NIP implementation, non-PCV13 serotypes started to be main source of infection, including 15B, 15C, 23A etc. Currently, new generation 20-valent pneumococcal conjugated vaccine was available in multiple country, and it was licensed in Taiwan in November this year. 7 additional serotypes, 8, 10A, 11A, 12F, 15B, 22F and 33F, were included in PCV20, and 15C can be cross protected according to immunology data. Additional protection of pneumococcal infection can be expected after the implementation of PCV20 in Taiwan.

Current recommendation of US CDC and EMA recommended single dose of PCV20 for adult over 65 y.o. and 18-64 y.o. with underlying medical condition. Comparing to previous recommendation of PCV+PPV, single shot of PCV20 will be easier solution for pneumococcal prevetion. Without requirement of sequential administration of PCV+PPV, it will be more convenient for patients to be fully vaccinated.

Cathy Goldstein, M.D., M.S.

Professor, Neurology at the University of Michigan Sleep Disorders Center, USA

Artificial intelligence in sleep medicine, where are we now and where do we go from here?

Cathy Goldstein, M.D. is a Professor of Neurology at the University of Michigan Sleep Disorders Center and faculty lead of the Eisenberg Family Depression Center Mobile Technologies Core and the University of Michigan Mobile Technology Research Innovation Collaborative (MeTRIC).

Dr. Goldstein's research uses consumer facing sleep tracking devices and mathematical modeling to assess sleep patterns and circadian rhythms in the ambulatory, day-to-day setting to determine their role in health and disease (including in women's reproductive health, multiple sclerosis, and gastrointestinal conditions). Her international expertise in sleep tracking technology is highlighted by her role as one of the lead authors of the 'State of the Science and Recommendations for Using Wearable Technology in Sleep and Circadian Research' from the Sleep Research Society (SRS) and as a member of the task force for Consumer Sleep Tracker Guidelines by the World Sleep Society (WSS).

She serves the sleep community as one of the senior editors of the sleep field's sentinel text, Principles and Practice of Sleep Medicine, and additionally, holds editorial roles for UpToDate and the Journal of Clinical Sleep Medicine. She was previously the chair of the American Academy of Sleep Medicine (AASM)'s Artificial Intelligence in Sleep Medicine Committee and speaks internationally in this area.

Dr Goldstein educates a variety of learners including training physicians, peer groups, University of Michigan athletes (and athletic staff), and the public via numerous media outlets (CNN, New York Times, Time) and podcasts.

In her work at the U-M Sleep Disorders Center, she cares for patients with various sleep conditions. She is the sleep department's physician champion for virtual care and Epic, and the billing and compliance officer for Neurology

李佩玲 Pei-Lin Lee, M.D., Ph.D., FAASM

Clinical Associate Professor, School of Medicine, National Taiwan University

Important notes on the updated classification of sleep disorders (ICSD-3-TR): sleep disorders more than breathing problems

劉景隆 Ching-Lung Liu, M.D., Ph.D.

Director, Respiratory Care Center, MacKay Memorial Hospital Tamsui Branch, New Taipei City

Important notes on the updated classification of sleep disorders (ICSD-3-TR): sleep disorders more than breathing problems

Important notes on the updated classification of sleep disorders (ICSD-3-TR): sleep disorders more than breathing problems

The International Classification Sleep Disorder 3 text revision (ICSD-3-TR) published by American Academic Sleep Medicine (AASM) in 2023 incorporates the new information and correction of existing factual errors or omissions into the ICSD-3 text. It provides comprehensively updated diagnostic criteria for sleep disorders based on the well-established scientific basis and strong group consensus.

1. Central disorders of Hypersomnolence
   - 1.1 Narcolepsy type I
   - 1.2 Narcolepsy type 2
   - 1.3 Idiopathic Hypersomnolence
   - 1.4 Hypersomnolence associated with a medical disorder
2. Circadian rhythm sleep-wake disorder
   - 2.1 Delayed sleep-wake phase disorder
   - 2.2 Advanced sleep-wake phase disorder
   - 2.3 Irregular sleep/wake rhythm
3. Parasomnias
   - 3.1 NREM-related parasomnia
   - 3.2 REM-related parasomnia
4. Sleep related movement disorders
   - 4.1 Restless legs syndrome
   - 4.2 Periodic limb movement disorder
   - 4.3 Sleep related bruxism

Key points for changes in sleep-related breathing disorders are as follows:

1. Obstructive sleep apnea disorders
   - 1.1 Obstructive Sleep Apnea (Adult)
2. Central sleep apnea disorders
   #Snoring has been removed as a symptom criterion in all central sleep apnea disorders.
   - 2.1 Central sleep apnea with Cheyne-Stokes breathing
   - 2.2 Central sleep apnea due to a medical disorder without Cheyne-Stokes breathing
   - 2.3 Central sleep apnea due to high-altitude periodic breathing
   - 2.4 Central sleep apnea due to a medication or substance
   - 2.5 Treatment-emergent central sleep apnea
     #The presence of associated signs or symptoms is now required to estab¬lish this diagnosis.
3. Sleep-related hypoventilation disorders
   - 3.1 Obesity hypoventilation syndrome
   - 3.2 Congenital central alveolar hypoventilation syndrome
   - 3.3 Idiopathic central alveolar hypoventilation
   - 3.4 Sleep-related hypoventilation due to a medication or substance
   - 3.5 Sleep-related hypoventilation due to a medical disorder
4. Sleep-related hypoxemia disorder
   - 4.1 Sleep-related hypoxemia
     #The diagnosis is now intended, as the criterion states, for "hypoxemia not due to hypoventilation."
5. Isolated symptoms and normal variants
   - 5.1 Catathrenia

Satellite Symposium_ 友華生技醫藥股份有限公司

廖光明 Kuang-Ming Liao, M.D., Ph.D.

Associate Professor, Pulmonary Medicine, Department of Internal Medicine, Chi Mei Medical Center, Chiali, Tainan, Taiwan

Optimization of COPD patients treatment: from clinical trials to new real-world experience

Chronic obstructive pulmonary disease (COPD) treatment strategies emphasize a personalized approach tailored to patient needs, focusing on alleviating symptoms, enhancing health status and exercise tolerance, and mitigating future exacerbation risks. For patients at higher risk of exacerbations, the Global Initiative for Chronic Obstructive Lung Disease (GOLD) recommends triple therapy, incorporating inhaled corticosteroids (ICS) alongside LAMA and LABA.

Recent data from randomized controlled trials, indicate that triple therapy significantly reduces exacerbation risks and Triple inhaler therapy can be administered via multiple inhaler triple therapy (MITT) or single inhaler triple therapy (SITT). While MITT has been commonly used, it often leads to poor compliance due to the complexity of using multiple inhalers. In contrast, SITT simplifies the treatment regimen, potentially enhancing adherence and reducing inhaler technique errors.

Patients in double-blind randomized controlled trials tend to have higher treatment adherence than those in clinical practice; in addition, such patients have fewer comorbidities to limit the implication of competing risks. The effectiveness of treatment as evaluated in the real world can supplement results from conventional randomized controlled trials by providing a broad overview of therapy in a usual clinical practice setting.

Real-world data indicate higher patient adherence with single inhaler triple therapy compared to free combinations. Patients switched to single inhaler fixed triple therapy achieved better results in terms of symptomatic control and quality of life improvement compared to those on free triple combination therapy.

江振源 Chen-Yuan Chiang, M.D., Ph. D.

Vice Superintendent, Wanfang Hospital; Distinguished professor, Taipei Medical University

Recent developments in the diagnosis and treatment of tuberculosis

In a pragmatic trial, presumptive tuberculosis (TB) patients with nucleic acid amplification (NAA) test as a frontline test were classified as group A. Those without frontline NAA test were randomized in a 1:1 ratio into group B frontline NAA test as intervention, and group C usual care. The interval from submitting sputum to treatment initiation, overdiagnosis of TB by Xpert MTB/RIF assay, and treatment outcomes were evaluated. Furthermore, incremental yield of serial sputum examinations was assessed. We found that the use of Xpert MTB/RIF test as the initial diagnostic test was associated with shorter diagnostic delay of TB among those with a higher pretest probability of TB, but not among those with a lower pretest probability of TB. Furthermore, the expected incremental yield from a third culture was 8.4%, and the number of third cultures required to detect one additional TB case was 394 (95% credibility interval 231-670). The incremental yield of the third sputum smear was negligible. It may be reasonable to perform NAA, smear and culture on the first specimen and culture alone on the second.

Regarding treatment of tuberculosis, WHO recommended that patient with isoniazid-resistant, rifampicin-susceptible tuberculosis (HrRs-TB) may be treated with ethambutol, rifampicin, pyrazinamide and levofloxacin with or without isoniazid for 6 months. A study in Taiwan revealed that the proportion of HrRs-TB with unfavorable treatment outcomes was not statistically significantly different that of soniazid-susceptible, rifampicin-susceptible tuberculosis (HsRs-TB). However, the proportion of patients with acquired rifampicin resistance in HrRs-TB was significantly higher than that in HsRs-TB. WHO's Recommendations on the management of multidrug-resistant TB (MDR-TB) have been evolving. Recently, WHO recommended that the 6-month BDLLfxC regimen (bedaquiline, delamanid, linezolid (600 mg), levofloxacin, and clofazimine) can be initiated without delay in case of unknown fluoroquinolone (FQ)-resistance at time of diagnosis of RR-TB (and may be continued with both levofloxacin and clofazimine if FQ-DST results cannot be obtained); BDLLfx is continued for FQ-sensitive TB;BDLC for FQ-resistant TB. Furthermore, different combinations of bedaquiline, levofloxacin or moxifloxacin (M), linezolid, clofazimine, delamanid, and pyrazinamide have been assessed. WHO recommended that BLMZ, BLLfxCZ, and BDLLfxZ may be effectively and safely used instead of the longer (≥18 months) regimens.

Qingyun Liu, Ph.D.

Assistant Professor, Department of Genetics, Microbiology and Immunology, The University of North Carolina at Chapel Hill, USA

Genetic evolution of antibiotic resillience in Mycobacterium tuberculosis with treatment failure

Dr. Qingyun Liu is an assistant professor in Genetics at UNC-Chapel Hill. Dr. Liu's research focuses on the evolution and transmission dynamics of bacterial pathogens, particularly Mycobacterium tuberculosis and Mycobacterium abscessus. Dr Liu's research combines computational and experimental methods to uncover the genetic factors driving transmissibility and drug resistance. Through innovative approaches like population genomics and high-throughput bacterial phenotyping, his work aims to elucidate the molecular mechanisms underlying bacterial evolving traits that affect clinical outcomes.

李孟叡 Meng-Rui Lee, M.D., Ph.D.

Attending Physician, National Taiwan University Hospital

Diagnosis and management of CPA: expert opinions in Taiwan

Chronic pulmonary aspergillosis (CPA) represents a spectrum of progressive respiratory conditions caused by Aspergillus species, primarily affecting patients with structural lung diseases. Despite its significant impact on patient outcomes, diagnostic and treatment approaches vary widely in clinical practice, highlighting the need for standardized management guidelines adapted to local contexts. The Taiwan Society of Tuberculosis and Lung Diseases convened expert meetings to establish comprehensive consensus recommendations addressing this clinical challenge. The consensus focuses on the following aspects: identifying high-risk populations and clinical manifestations, standardizing diagnostic approaches including radiological and mycological criteria, and optimizing treatment strategies.

Expert recommendations were developed through systematic review of current evidence and clinical expertise, providing guidance on diagnostic workup, choice of antifungal therapy, treatment duration, the role of surgical intervention and follow-up. Particular attention was given to defining appropriate diagnostic criteria combining imaging findings and mycological evidence, as well as establishing treatment and follow-up protocols that balance efficacy with practical considerations in the Taiwanese healthcare context. This consensus document represents a comprehensive, locally adapted approach for CPA management in Taiwan, aiming to standardize clinical practice and improve patient outcomes through evidence-based recommendations for both diagnosis, treatment and follow-up.

潘聖衛 Sheng-Wei Pan, M.D., Ph.D.

Department of Chest Medicine, Taipei Veterans General Hospital.

Interpretation of molecular diagnostic tests in IPA

Invasive pulmonary aspergillosis (IPA) poses a significant threat to immunocompromised individuals. The high-risk groups experience high mortality rates when IPA occurs, making early diagnosis and treatment crucial. PCR molecular diagnostic technology, which detects Aspergillus DNA, serves as a sensitive and specific tool for diagnosing IPA. The 2019 EORTC/MSG diagnostic criteria incorporated PCR into the microbiological standards, significantly enhancing the sensitivity of IPA diagnosis, especially for patients without obvious traditional risk factors.

In practice, the use of PCR has led to the reclassification of some cases previously identified as possible IPA to probable IPA. Cases with lower Ct values (indicating higher fungal loads) identified through PCR have higher mortality rates, suggesting that PCR is valuable for identifying more severe infections and aiding clinicians in making informed decisions. Notably. PCR demonstrates extremely high sensitivity in bronchoalveolar lavage (BAL) fluid, capable of detecting very low fungal loads, while GM testing in serum and BAL can produce false positives. Therefore, combining both tests can significantly improve diagnostic accuracy and reduce the likelihood of false positives.

Beyond traditional immunocompromised patients, PCR is particularly important in viral-associated pulmonary aspergillosis (e.g., influenza and COVID-19). Incorporating PCR into the diagnostic process for these patients allows for timely detection and early intervention, which is crucial for reducing the high mortality rates. Additionally, PCR is also valuable in diagnosing chronic pulmonary aspergillosis (CPA), aiding in the early detection of disease and reducing the burden on patients. This presentation offers a comprehensive overview of the application and interpretation of Aspergillus PCR in diagnosing pulmonary aspergillosis.

大員 C

Dec. 7 (sat.)

09:00-09:30 P65 Awake prone positioning in acute hypoxemic respiratory failure: current evidence and future directions.
Jie Li, Ph.D., RRT., RRT-ACCS., RRT-NPS., FAARC., FCCM.

09:30-09:55 P66 Nutrition in patients with prolonged mechanical ventilation
林錞語 醫師

09:55-10:20 P67 External chest-wall compression in ARDS
丁若晨 醫師

12:20-13:30 P68 **Airway Disease**
Satellite Symposium_ 荷商葛蘭素史克藥廠股份有限公司台灣分公司
Taking OCS stewardship to the next level: Improving patient outcomes in severe asthma and nasal polyps
廖信閔 醫師

15:00-15:40 P69 Current concepts of pulmonary hypertension management: from 7th WSPH and clinical practice in Japan
Takahiro Hiraide, M.D., Ph.D.

16:10-16:50 P70 Multicenter study to assess the effects of different doses of sildenafil on mortality in adults with pulmonary arterial hypertension
Ronald J. Oudiz, M.D.

17:00-18:10 P71 **RSV**
Satellite Symposium_ 荷商葛蘭素史克藥廠股份有限公司台灣分公司
Real-world evidence and clinical experience in RSV prevention
廖信閔 醫師

Dec. 8 (sun.)

08:40-09:15 P72 氣道支架的創新性應用
柯明耀 醫師

09:15-09:50 P73 GGN 消融治療進展及臨床實踐
柯明耀 醫師

09:50-10:10 P74 一站式消融合併手術治療多發性結節
楊順貿 醫師

10:30-11:00 P75 台灣肺結核現況與治療演進
樹金忠 醫師

11:10-11:50 P76 台灣肺結核手術的進展
黃維立 醫師

12:00-13:30 P77 **Airway Disease**
Satellite Symposium_ 荷商葛蘭素史克藥廠股份有限公司台灣分公司
COPD Disease Stability: A New Clinical Goal Made Possible?
蔡英明 醫師
Asthma Clinical Remission in Clinical Practice: Too ideal or is it achievable?
黃偉彰 醫師

Jie Li, Ph.D., RRT., RRT-ACCS., RRT-NPS., FAARC., FCCM.
Professor, Department of Cardiopulmonary science, Rush university, Chicago, IL, USA

Awake prone positioning in acute hypoxemic respiratory failure: current evidence and future directions.

Awake prone positioning (APP) has emerged as a potential strategy in managing acute hypoxemic respiratory failure, particularly during the COVID-19 pandemic. This non-invasive intervention aims to improve oxygenation by leveraging the physiological benefits of prone positioning, previously well-established in mechanically ventilated patients with ARDS. While APP offers a promising approach, the existing evidence remains mixed, especially its long-term benefits and optimal use in non-intubated patients require further investigation.

This lecture will provide a comprehensive review of the current evidence surrounding APP in the treatment of acute hypoxemic respiratory failure. We will explore its mechanisms, clinical outcomes, and applicability across various patient populations. In addition, this session will highlight key trials, and meta-analyses that have contributed to our understanding of APP's role in respiratory management.

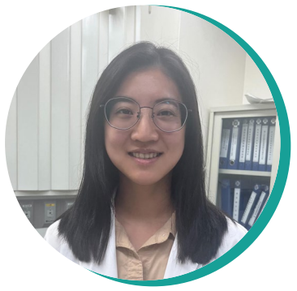
The discussion will also delve into the future directions for APP, including ongoing research and areas of uncertainty. Participants will gain insights into practical considerations, patient selection criteria, and the potential for APP to reduce the need for intubation and mechanical ventilation.

林錞語 Chun-Yu Lin, M.D.

林口長庚紀念醫院胸腔內科 9A 病房 病房主任

Nutrition in patients with prolonged mechanical ventilation

Critical illness is associated with marked proteolysis and muscle loss, which is associated with ICU acquired weakness and lead to prolonged mechanical ventilation. The majority of critically ill patients do not tolerate adequate nutritional intake according to guideline targets, even under chronic ICU phase. Adequate energy targets and protein intake are still under debate for intensive care (ICU) patients. Many studies showed conflicting results on nutritional support during ICU stay. Overall low protein intake is associated with the highest mortality risk. However, high protein intake during the first 3 to 5 days of ICU stay is also associated with increased long-term mortality. Nevertheless, high protein delivery in early ICU phase may had lower ICU mortality, while energy overfeeding may be associated with higher ICU mortality. In general, the amount of protein provided to most ICU patients is usually less than the loss. The optimal timing of protein intake also remain unclear. Timing of high protein intake may be quite relevant in determining outcomes, especially in the anabolic phase. Physical activity may improve the beneficial effects of nutritional therapy. Higher protein/caloric targets may be provided preferably combined with exercise with the potential benefit in weaning from ventilator. Energy and protein intake should be guided by indirect calorimetry and/or monitor nitrogen balance in chronic ICU phase.



丁若晨 Juo-Chen Ting, M.D.

Attending Physician, Department of Division of Pulmonary Medicine, Mackay Memorial Hospital

External chest-wall compression in ARDS

In patients with ARDS, maintaining adequate oxygenation while avoiding ventilator-induced lung injury is crucial but can be difficult to achieve, especially in those with poor lung compliance. Recent observations in patients with severe ARDS have revealed that chest wall compression over the sternum or abdomen leads to a paradoxical increase in lung compliance. This may be due to a reduction in end-tidal hyperinflation in the non-dependent lung, resulting in a more homogeneous lung. These findings suggest that chest wall compression could play a role in a protective ventilatory strategy for patients with severe ARDS. Whether this management can lead to clinical benefits requires further investigation.

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

廖信閔 Xin-Min Liao, M.D., Ph.D.

Physician, Department of Division of Pulmonary Medicine, National Cheng Kung University Hospital

Taking OCS stewardship to the next level: Improving patient outcomes in severe asthma and nasal polyps

Among patients with severe asthma, comorbidities such as chronic rhinosinusitis with nasal polyps (CRSwNP), gastroesophageal reflux disease (GERD), depression, anxiety, and smoking-related diseases like chronic obstructive pulmonary disease (COPD) are common and contribute to the overall disease burden. Some of these comorbidities, including CRSwNP, share pathophysiological mechanisms with severe asthma, particularly eosinophilic-driven inflammation and the role of interleukin-5 (IL-5). Treatments that target IL-5 may therefore have a broader impact by addressing multiple components of the disease burden associated with severe eosinophilic asthma and its comorbidities, potentially leading to better outcomes.

Mepolizumab, a humanized monoclonal antibody targeting IL-5, exemplifies a precision medicine approach for the treatment of severe eosinophilic asthma. It is approved for managing severe asthma, eosinophilic granulomatosis with polyangiitis, hypereosinophilic syndrome, and CRSwNP in multiple regions worldwide. In both clinical trials and real-world studies, mepolizumab has been shown to significantly reduce exacerbation rates and oral corticosteroid (OCS) use in patients with severe asthma and CRSwNP. In this session, Dr. Liao will discuss the OCS burden in severe asthma and CRSwNP patients and explore strategies to reduce inappropriate OCS use, ultimately improving patients' quality of life.

嚴重氣喘病患常伴有多種共病，如慢性鼻竇炎伴鼻息肉（CRSwNP）、胃食管反流病（GERD）、抑鬱、焦慮，以及吸煙相關的慢性阻塞性肺病（COPD），這些共病進一步加重了患者的疾病負擔。 CRSwNP 與嚴重氣喘兩者在病理機制上皆與 Eosinophil、IL-5 高度相關。因此，針對 IL-5 的治療不僅能改善嚴重嗜酸性氣喘，還可能同時改善共病症，從而提升患者的整體治療效果。

NUCALA 藉由 Anti- IL-5 精準療法 ，有效地下降嗜酸性粒細胞，並在全球各地取得嚴重氣喘、嗜酸性肉芽腫性血管炎、嗜酸性粒細胞增多症，以及 CRSwNP 的適應症。臨床試驗和實際應用數據顯示，NUCALA 不僅能顯著降低嚴重氣喘及 CRSwNP 患者的發作率，還能減少對口服皮質類固醇（OCS）的依賴。在這場會議中，2024 胸腔重症醫學年會的演講中，廖信閔醫師將深入探討嚴重氣喘患者所面臨的 OCS 使用負擔，並提出減少不當使用 OCS 的策略，從而改善患者的生活品質。

Takahiro Hiraide, M.D., Ph.D.

Department of Cardiology, Keio University School of Medicine, Tokyo, Japan

Current concepts of pulmonary hypertension management: from 7th WSPH and clinical practice in Japan

Pulmonary hypertension (PH) remains a complex and progressive disorder characterized by elevated pulmonary arterial pressure and vascular resistance, leading to right ventricular failure and significant morbidity and mortality. It requires a multidisciplinary approach for effective management. In this session, Dr. Takahiro Hiraide, a rising expert in the field of pulmonary hypertension, will provide an in-depth overview of the latest updates from the 7th World Symposium on Pulmonary Hypertension (WSPH) and share insights from his extensive clinical experience in Japan.

The 7th WSPH has introduced several pivotal advancements in the understanding and treatment of pulmonary hypertension. Dr. Hiraide will discuss the new classification system, updated diagnostic criteria, and emerging therapeutic strategies that were highlighted during the symposium. He will also explore the implications of these updates for clinical practice, emphasizing the importance of early diagnosis and individualized treatment plans.

Emerging evidence-based treatment algorithms, including the use of combination pharmacotherapy targeting the nitric oxide, endothelin, and prostacyclin pathways, will be reviewed. Dr. Hiraide will highlight novel agents and their clinical trial data in the management of PH.

In addition to the global perspective provided by the WSPH, Dr. Hiraide will present his personal treatment algorithm in Japan. He will illustrate how these international guidelines are being adapted to meet the specific needs of Japanese patients.

We welcome attendees to join this session and engage in an enriching exchange of experiences with Dr. Takahiro Hiraide. This is an excellent opportunity to deepen your understanding of pulmonary hypertension management and to discuss practical insights that can enhance patient outcomes.

Ronald J. Oudiz, M.D.

Chief, Division of Cardiology, Harbor-UCLA Medical Center Torrance, California, USA

Multicenter study to assess the effects of different doses of sildenafil on mortality in adults with pulmonary arterial hypertension

BACKGROUND: Sildenafil, approved for pulmonary arterial hypertension (PAH), has a recommended adult dose of 20 mg TID, with a previously approved 5-mg TID dose by the US Food and Drug Administration. Safety concerns arose because of common off-label use of higher doses, particularly after pediatric data linked higher doses to increased mortality. To assess this, the Food and Drug Administration mandated a study evaluating the effects of various sildenafil doses on mortality in adults with PAH.

METHODS: This randomized, double-blind study compared sildenafil at doses of 5, 20, or 80 mg TID in adults with PAH. The primary objective was noninferiority of 80 mg of sildenafil versus 5 mg for all-cause mortality. Secondary end points included time to clinical worsening and change in 6-minute walk distance at 6 months. Interim analyses were planned at 50% and 75% of the anticipated mortality events. Safety and tolerability were assessed in the intention-to-treat population.

RESULTS: The study was halted after the first interim analysis, demonstrating noninferiority for 80 mg of sildenafil versus 5 mg. Of 385 patients enrolled across all dose groups, 78 died. The primary analysis showed a hazard ratio of 0.51 (99.7% CI, 0.22–1.21; P<0.001 for noninferiority) for overall survival comparing 80 mg of sildenafil with 5 mg. Time to clinical worsening favored 80 mg of sildenafil compared with 5 mg (hazard ratio, 0.44 [99.7% CI, 0.22–0.89]; P<0.001). Sildenafil at 80 mg improved 6-minute walk distance from baseline at 6 months compared with 5 mg (least square mean change, 18.9 m [95% CI, 2.99–34.86]; P=0.0201). No significant differences were found between 80 mg of sildenafil and 20 mg in mortality, clinical worsening, and 6-minute walk distance. Adverse event–related drug discontinuations were numerically higher with 80 mg of sildenafil.

CONCLUSIONS: Sildenafil at 80 mg was noninferior to sildenafil at 5 mg when examining all-cause mortality in adults with PAH. Secondary efficacy end points favored 80 mg of sildenafil over 5 mg. On the basis of these findings, the Food and Drug Administration recently revoked the approval of 5 mg of sildenafil for adults with PAH, reinforced 20 mg TID as the recommended dose, and now allows dose titration up to 80 mg TID, if needed.

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

廖信閔 Xin-Min Liao, M.D., Ph.D.

Physician, Department of Division of Pulmonary Medicine, National Cheng Kung University Hospital

Real-world evidence and clinical experience in RSV prevention

With the global population aging and the number of chronic disease patients increasing, RSV (Respiratory Syncytial Virus) poses a significant health threat to adults, particularly the elderly and those with a history of chronic illnesses, and requires attention. RSV infection can lead to severe respiratory complications, especially in adults over 60 years old. High-risk groups, including those with chronic respiratory diseases, asthma, diabetes, heart failure, cardiovascular disease, chronic liver and kidney disease, hematologic disorders, and other immunocompromised conditions, are in urgent need of prevention. This presentation will explore the role of family physicians in RSV prevention and share real-world evidence and clinical experiences, emphasizing the prevention strategies and clinical use of RSV vaccines.

隨著全球人口老齡化及慢性病患者數量的增加，RSV（呼吸道融合病毒）對成年人，尤其是老年人和患有慢性病史的患者，造成的健康威脅極大並且需要關注。RSV 感染可引發嚴重的呼吸道併發症，特別是在 60 歲以上成人，尤其是高危險群，包括慢性呼吸道疾病、氣喘、糖尿病、心衰竭、心血管疾病、慢性肝腎疾病、血液疾病、及其他免疫不全病患等為預防迫切的族群，本次演講將探討胸腔醫科醫師在 RSV 預防中的角色，並分享目前真實世界證據與臨床經驗，強調 RSV 預防方案及疫苗臨床使用經驗。

柯明耀 Mingyao Ke, M.D.

Chief Expert, Department of Respiratory, Hospital of The Second Affiliated Hospital of Xiamen Medical College, Xiamen, China

氣道支架的創新性應用

Airway stents have been widely used for management of tracheobronchial pathologies. The main types of airway stents are uncovered metallic stents, covered metallic stents and silicone stents. Airway stents could be utilized for the treatment of benign and malignant airway stenosis. Besides these, can be used for airway fistula (respiratory-digestive tract fistulas and bronchopleural fistula, and so on) by sealing the fistula or the lumen of bronchus, as well as bleeding in central airway or pulmonary hemorrhage. Furthermore, innovation in clinical application of airway stents have been made, which included metallic stents loaded with radioactive seeds, on-site modified silicone stents, on-site modified sealing metallic stents, and hybrid stents by combining metallic stents with non-metallic stents.

My presentation will include three parts: brief introduction of airway stents, the current clinical application of airway stents and the innovation of airway stents in clinical application.

柯明耀 Mingyao Ke, M.D.

Chief Expert, Department of Respiratory, Hospital of The Second Affiliated Hospital of Xiamen Medical College, Xiamen, China

GGN 消融治療進展及臨床實踐

The incidence of ground-glass nodules (GGN) in the lung is extremely high and is the predominant presentation of early lung cancer. Current guidelines and consensus exhibit significant variance in the treatment of GGN, with surgical resection being the primary approach and ablation therapy emerging as a focal point. This presentation will cover the advancements and applications of GGN ablation treatment. Ablation for GGN can be conducted percutaneously or bronchoscopically. The percutaneous approaches are more common, which encompassing thermal ablation (radiofrequency, microwave, laser) and cryoablation (argon-helium knife, liquid nitrogen). Bronchoscopic ablation is still under exploration. Currently, ablation therapy is indicated for patients with GGN-type lung cancer or high-risk GGN without a pathological diagnosis and who are not suitable or unwilling to undergo surgery. In addition, synchronous biopsy and ablation is feasible for GGN without pathology. The flexible application of ablation technologies and rigorous control over the quality of ablation treatment are essential for curative ablation. In the future, ablation will be equally important with surgical resection in the treatment of GGN, with personalized selection of therapeutic methods based on lesion characteristics, location of lesion, and patient's conditions.

楊順貿 Shun-Mao Yang, M.D.

Director, Interventional Pulmonology Center National Taiwan University Hospital, Hsin-Chu

一站式消融合併手術治療多發性結節

In patients with multiple pulmonary lesions, different approaches may be needed to treat each lesion. A multiple-staged procedure may involve increased risk of complications and patient discomfort. The development of the hybrid operating room (HOR) has been an important advancement, especially to support the management of pulmonary nodules. The real-time and high-definition imaging guidance ability during the procedure has led to improvements in existing techniques in thoracic procedures. The two-dimensional fluoroscopy and three-dimensional cone-beam computed tomography (CBCT) in the HOR can aid appropriate navigation and positioning of devices. Furthermore, invasive thoracic procedures involving ablation and resection can be efficiently performed under general anesthesia with single-lung ventilation. The HOR provides the necessary infrastructure to conduct the combined procedures at the same time, in the same suite, feasible for treatment of different lesions in an appropriate manner, along with a tailored approach. Here, we present the initial experience for the single stage management of multiple lung lesions including CBCT-guided percutaneous MWA and surgical resection of lung nodules in the HOR.

樹金忠 Chin-Chung Shu, M.D., Ph.D.

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

台灣肺結核現況與治療演進

Tuberculosis (TB) remains a common infectious disease leading high mortality and still a public health challenge in Taiwan. Over the past decades, Taiwan has made significant decreasing incidence of TB, yet continues to face obstacles related to population aging. In 2022, the incidence of TB became 28 per 100,000 person-year, reflecting improved healthcare access and effective public health interventions. However, certain demographic groups, including elderly individuals and low socio-economical populations, still bear a disproportionate burden of TB.

Advancements in diagnostic technologies have been pivotal in Taiwan's TB control efforts. Molecular diagnostic techniques, including nucleic acid amplification tests (NAATs), have enhanced the accuracy and speed of TB diagnosis, enabling early detection and prompt initiation of appropriate treatment. Rapid diagnostic tools for drug resistance have also been integrated into clinical practice, facilitating timely adjustments to treatment regimens and reducing transmission rates.

The treatment of TB in Taiwan has evolved considerably, guided by global best practices and local epidemiological insights. The cornerstone of TB treatment remains the Directly Observed Treatment, Short-course (DOTS) strategy, which ensures patient compliance and reduces the risk of drug resistance. First-line antibiotics such as isoniazid, rifampicin, ethambutol, and pyrazinamide continue to be effective in curing TB when administered under medical supervision. Recently, we work on shorten anti-TB course from 6 months to 4 months for drug-susceptible TB by repurposing drug or for low risk patients.

In addition to active TB management, Taiwan has also focused on the prevention and treatment of latent tuberculosis infection (LTBI). LTBI represents a reservoir of potential future TB cases, making its identification and treatment crucial for TB control efforts. Taiwan has implemented targeted screening programs, particularly for high-risk groups. The treatment of LTBI typically involves a course of isoniazid or a combination of isoniazid and rifapentine for a specified duration, aimed at reducing the risk of progression to active TB disease. By identifying and treating LTBI early, Taiwan not only prevents the development of active TB but also contributes to reducing the overall TB burden in the population.

In conclusion, Taiwan's approach to TB management shows a comprehensive strategy integrating advancements in healthcare infrastructure, diagnostic technologies, shorten TB treatment and LTBI intervention. While progress has been made in reducing TB incidence and improving treatment outcomes. By maintaining a commitment to innovation, collaboration, and community engagement, Taiwan aims to achieve sustainable TB control and contribute to global efforts towards TB elimination.

黃維立 Wei-Li Huang, M.D.

Clinical Assistant Professor, Division of Thoracic Surgery, Department of Surgery, National Cheng-Kung University Hospital, Tainan, Taiwan

台灣肺結核手術的進展

Mycobacterial infections typically result in pulmonary lesions. Historically, surgery was primarily utilized to address post-tuberculosis (TB) complications such as refractory pneumonia, hemoptysis, and destroyed lungs. Recently, research has shown that surgery can also be beneficial in treating patients with multidrug-resistant tuberculosis (MDR-TB) who have localized disease, enhancing the success rate of treatment.

In Taiwan, the government's efforts have reduced the incidence of tuberculosis from 75 per 10,000,000 in 2005 to 30 per 10,000,000 in 2021. Despite this progress, the prevalence of MDR-TB among newly diagnosed TB patients has remained around 1%, with approximately 80-100 new cases of MDR-TB diagnosed annually over the past decade.

Surgery, serving an adjunctive role, can excise necrotic and non-viable tissues, such as cavitary lesions or destroyed lung tissue, thereby enhancing drug efficacy and improving treatment outcomes. Globally, the treatment success rate for MDR-TB is around 50%. However, in Taiwan, thoracic surgeons' active involvement in managing MDR-TB has led to promising results. The treatment success rate increased to 84% among patients with localized lesions who underwent surgical resection.

Nonetheless, MDR-TB surgery carries a high risk of complications and mortality. Therefore, careful patient selection is essential. The resectability of the pulmonary lesion and the patient's overall operability must be thoroughly evaluated before lung resection.

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

蔡英明 Ying-Ming Tsai, M.D., Ph.D.

高醫岡山醫院胸腔科主任

COPD Disease Stability: A New Clinical Goal Made Possible?

As advancements in medicine and drug development progress, people's expectations for managing chronic diseases have also increased. Many fields related to chronic diseases are beginning to explore the concept of Disease Stability to help patients coexist with their conditions. This year, the treatment of COPD introduced this concept for the first time at the ATS/ERS conference, exploring whether COPD patients can also aim for stability.

Compared to another chronic respiratory disease—Asthma, COPD is a progressive disease. Thus, improving patients' overall quality of life, slowing disease progression, and reducing exacerbations and mortality are priorities for both healthcare providers and patients.

COPD Disease Stability addresses three common clinical aspects, drawing on relevant experimental data. It emphasizes the importance of patients receiving timely and appropriate treatment, enhancing adherence, improving inhaler technique, and using preventive vaccinations to maintain stability.

In this session, we will share the latest evidence, analyzing the differences in how various treatments aid patients in achieving Disease Stability and discussing the reasons behind these differences in depth.

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

黃偉彰 Wei-Chang Huang, M.D., Ph.D.

Attending Physician of Division of Chest Medicine, Department of Internal Medicine, Taichung Veterans General Hospital.
Director of Mycobacterial Center TCVGH.

Asthma Clinical Remission in Clinical Practice: Too ideal or is it achievable?

本次演示專注於當前哮喘管理未滿足的需求、GINA 2024 建議，LAMA 的角色以及 Trelegy 200 的簡要介紹。

氣喘治療的基礎通常依賴於 ICS/LABA，大多數氣喘患者都大量使用該方法。然而，基於現實世界的研究證明，即使使用最佳劑量的 ICS/LABA，仍有高達 1/3 的患者仍未得到控制。根據 GINA 2024 的最新建議，對於這些仍不受控制的患者，LAMA (long acting muscarinic antagonist) 可以發揮作用。LAMA 是治療氣喘的新型成分，最近也是治療嚴重氣喘的一個非常重要的成分，特別是對於肺功能低下且有症狀的患者。從最近發表的研究來看，LAMA 能夠為患者提供額外的支氣管擴張，從而極大地改善他們的肺功能和症狀。Trelegy (Fluticasone Furoate, Vilanterol, Umeclidinium) 在 2023 年 2 月份獲得在氣喘治療的健保起伏，成 了目前在台灣第一也是唯一一個三合一同時獲得 COPD 和 Asthma 的適應症和健保給伏的選擇。在台灣，Trelegy 也是唯一一個三合一當中有兩個計量的選擇，Trelegy 100 和 Trelegy 200。在肺功能不加或有症狀的病患若聖潔到 Trelegy，有展現出良好的效果。最後，Trelegy 是在氣喘藥物完整組合的一部分，包括 Relvar 100、Relvar 200、Trelegy 100 和 Trelegy 200，可都在同一 Ellipta 裝置中使用。這提供了靈活性並迎合各種類型的患者，也讓他們根據疾病的嚴重程度在同一台易於使用和易於教學的裝置上輕鬆升階和降解。

通過這次的演示，希望大家從中對於 LAMA 和 Trelegy 200 在特定人群中的作用有更深入的了解。

大員 D

Dec. 7 (sat.)

09:00-09:20 P82 Experience of multi-specialty team in diagnosis and management of pediatric airway anomalies
曹珮真醫師

09:20-09:40 P82 Experience of multi-disciplinary team in pediatric respiratory tract surgical treatment
蔡昕霖 醫師

09:40-10:20 P84 The evolution of congenital pulmonary airway malformation
顏亦廷 醫師

10:50-11:30 P85 Integrating EGFR TKIs and surgical intervention: optimizing multimodal treatment strategies for advanced EGFR-mutant Non-Small cell lung cancer
鄭文建 醫師

11:30-12:10 P86 Congenital tracheal and pulmonary malformations: the chimei experience
蘇英傑 醫師

12:20-13:30 P87 **Lung Cancer**
Satellite Symposium_ 美商默沙東藥廠股份有限公司台灣分公司
Maximizing patient outcomes: perioperative immunotherapy for early stage lung cancer
李瑞英 醫師

How to maximize the patient outcome under current situation Real world application from Italy of NSCLC PD-L1 low & negative expression.
Francesco Grossi, M.D.

15:00-15:40 P89 Management of tracheal tumors: the NTUH thoracic surgery team's experience
盧照文 醫師

16:10-16:50 P90 Surgery for acquired tracheal stenosis and tracheal tumors
林曜祥 醫師

17:00-18:10 P91 **Lung Cancer**
Satellite Symposium_ 嬌生股份有限公司
The earlier the better: first-line amivantamab for EGFR exon 20 insertion in advanced NSCLC.
吳尚俊 醫師

Beyond TKI therapy: evolving post-TKI Strategies for common EGFR mutations in NSCLC.
黃俊耀 醫師

Dec. 8 (sun.)

08:40-09:20 P93 Perioperative therapy for resectable Non–Small-Cell lung cancer
蔡秉中 醫師

09:20-10:00 P94 Transforming survival rates in resected NSCLC with precision medicine
李瑞英 醫師

10:30-11:10 P95 Advancing neoadjuvant therapies in resectable NSCLC implications for ICI treatment strategies
徐博奎 醫師

11:10-11:50 P96 How to achieve better survival benefits in resectable NSCLC, from adjuvant IO therapy to neoadjuvant IO therapy
張晃智 醫師

曹珮真 Pei-Chen Tsao, M.D.

臺北榮民總醫院兒童醫學部主治醫師兼任部定助理教授

Experience of multi-specialty team in diagnosis and management of pediatric airway anomalies

蔡昕霖 Hsin-Lin Tsai, M.D., Ph.D., FACS.

Associate Professor, School of Medicine, National yang Ming University

Experience of multi-disciplinary team in pediatric respiratory tract surgical treatment

1. **Experience of multi-specialty team in diagnosis and management of pediatric airway anomalies**
2. **Experience of multi-disciplinary team in pediatric respiratory tract surgical treatment**

Pediatric airway anomalies, often seen in children with congenital conditions such as congenital heart disease (CHD) or syndromic disorders, pose substantial challenges requiring both diagnostic and interventional approaches. These anomalies significantly increase morbidity and mortality, particularly post-surgery. Flexible bronchoscopy plays a critical role in the diagnosis of airway abnormalities by providing real-time, dynamic views of the airway during respiration, which are essential for accurate assessment and treatment guidance. Compared to imaging studies, bronchoscopy offers the advantage of visualizing the airway's functional changes during breathing. Collaboration between bronchoscopy and surgery is integral, as bronchoscopy often diagnoses airway compression caused by vascular anomalies in CHD patients, leading to timely surgical interventions. This synergy is vital in procedures like laryngotracheal reconstruction, where bronchoscopy helps assess airway stenosis and guides the surgical approach. In severe airway anomalies such as tracheomalacia, ECMO is often used as a bridge during surgery, allowing for stable oxygenation. Postoperatively, flexible bronchoscopy continues to play a key role in monitoring complications like granulation tissue or restenosis, ensuring long-term airway stability. The cooperation of a multi-specialty team combining the expertise of pulmonologists, surgeons, and critical care specialists, can manage pediatric airway anomalies effectively and enhance long-term outcomes.

顏亦廷 Yi-Ting Yen, M.D., Ph.D.

Director, Division of Trauma and Acute Care Surgery, National Cheng Kung University Hospital

The evolution of congenital pulmonary airway malformation

Congenital Pulmonary Airway Malformation (CPAM), previously known as Congenital Cystic Adenomatoid Malformation (CCAM), is a developmental disorder of the lung characterized by abnormal bronchial proliferation and multicystic masses of segmental lung tissue. These malformations are part of a spectrum of bronchopulmonary foregut malformations and are typically unilateral, affecting a single lobe of the lung. CPAMs are classified into five subtypes according to the Stocker classification, which is based on cyst size and associated anomalies. The condition is often diagnosed antenatally through ultrasound or postnatally in cases of respiratory distress. Treatment may involve surgical intervention, and the prognosis varies depending on the size and type of the lesion.

The evolution of Congenital Pulmonary Airway Malformation (CPAM) can vary, with some lesions showing a tendency to grow or regress spontaneously. Antenatal sonographic monitoring has revealed that CPAMs may resolve completely, regress in size, or progress. Postnatal management of CPAM, especially asymptomatic cases, remains a subject of debate due to the potential for infection and the risk of malignancy, such as pleuropulmonary blastoma, associated with certain types of CPAM. Recent literature suggests that an increased rate of infection over time can make surgical intervention more challenging, which has led to recommendations for early elective surgery in some cases. Furthermore, advancements in understanding the molecular and pathological pathways of CPAM are aiding in the distinction of its subtypes and may influence future treatment approaches. In this lecture, the conceptual, diagnostic, as well as therapeutic evolution for CPAM will be delineated.

鄭文建 Wen-Chien Cheng, M.D., Ph.D.

中國醫藥大學附設醫院胸腔內科主治醫師

Integrating EGFR TKIs and surgical intervention: optimizing multimodal treatment strategies for advanced EGFR-mutant Non-Small cell lung cancer

In recent years, the treatment landscape for advanced EGFR-mutant NSCLC has evolved significantly. The integration of EGFR TKIs with surgical intervention represents a promising multimodal approach to optimize patient outcomes.

EGFR TKIs, such as gefitinib, erlotinib, afatinib and osimertinib, have revolutionized the management of EGFR-mutant NSCLC by specifically targeting and inhibiting the EGFR pathway, which is crucial for tumor growth and survival. These targeted therapies have demonstrated substantial efficacy in improving PFS, OS and ORR compared to traditional chemotherapy.

However, despite the success of EGFR TKIs, resistance inevitably develops, leading to disease progression. This challenge underscores the need for a comprehensive treatment strategy that combines the strengths of targeted therapy with other modalities. Surgical intervention, traditionally reserved for early-stage disease, is now being reconsidered for select patients with advanced NSCLC who have responded well to EGFR TKIs.

The rationale for integrating surgery lies in its potential to achieve complete resection of residual disease, thereby prolonging survival and possibly achieving a cure in a subset of patients. Studies have shown that patients with limited metastatic disease or those who achieve significant tumor shrinkage with EGFR TKIs may benefit from surgical resection. This approach requires careful patient selection and multidisciplinary collaboration to ensure optimal outcomes.

Moreover, the timing and sequencing of EGFR TKIs and surgery are critical factors that need to be tailored to individual patient profiles. Preoperative administration of EGFR TKIs can reduce tumor burden, making surgery more feasible and less invasive. Postoperative continuation of EGFR TKIs may help in controlling micrometastatic disease and preventing recurrence.

In conclusion, the integration of EGFR TKIs and surgical intervention offers a promising multimodal treatment strategy for advanced EGFR-mutant NSCLC. By leveraging the strengths of both targeted therapy and surgery, we can optimize treatment outcomes and improve the quality of life for patients.

蘇英傑 Ying-Chieh Su, M.D.

Attending physician, Department of thoracic surgery, Chimei medical center

Congenital tracheal and pulmonary malformations: The chimei experience

In congenital lung abnormalities in newborns or infants, they are often incidentally diagnosed only when respiratory symptoms such as shallow or rapid breathing occur. Severe conditions like tracheal agenesis or atresia typically have a poor prognosis, often resulting in death during childhood.

More common conditions, such as congenital lobar emphysema, congenital cystic adenomatoid malformation, or pulmonary sequestration, if not severe, are often discovered incidentally during chest X-rays in adulthood or diagnosed when symptoms gradually worsen.

For less severe congenital tracheal or pulmonary malformations, the diagnosis rate is low due to the lack of symptoms. In our hospital's statistics over the past 20 years, relatively more common conditions like pulmonary sequestration have occurred in fewer than 10 cases.

In this meeting, our department will review and share our experience in managing these diseases.

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

李瑞英 Jui-Ying Lee, M.D.

Attending surgeon, Division of Chest Surgery, Department of Surgery, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan

Maximizing patient outcomes: perioperative immunotherapy for early stage lung cancer

The presentation provides a critical analysis of the rationale and potential impact of employing immunotherapy in the perioperative setting, where the convergence of surgery and immunotherapy holds significant promise for improving patient outcomes.

The session begins by addressing the evolving landscape of cancer treatment and the emergence of immunotherapy as a revolutionary approach. It underscores the shift towards personalized medicine and the utilization of the immune system to target cancer cells, transforming the way oncologists approach treatment.

With a focus on early-stage lung cancer, the presentation delves into the specific challenges and opportunities in this context. It explores the potential benefits of integrating immunotherapy into the perioperative pathway, emphasizing the goal of maximizing treatment efficacy, reducing the risk of recurrence, and ultimately improving patient survival rates and quality of life.

I review the latest advancements in immunotherapeutic agents, highlighting their mechanisms of action and the evidence supporting their potential in the perioperative care of early-stage lung cancer. A discussion of ongoing clinical trials and emerging data further illuminates the current state of the field, providing insights into future directions and potential implications for patient care.

Furthermore, the presentation addresses the multidisciplinary approach required for successful perioperative immunotherapy, emphasizing the crucial role of collaborative decision-making between surgeons, medical oncologists, and other healthcare professionals. It underscores the importance of patient education and engagement in shared decision-making, recognizing the impact of informed and empowered patients on treatment outcomes.

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

Francesco Grossi, M.D.

Associate Professor in Medical Oncology, University of Insubria.
Director of the Medical Oncology Unit, ASST of the Seven Lakes, Varese, Italy

How to maximize the patient outcome under current situation – Real world application from Italy of NSCLC PD-L1 low & negative expression.

This abstract presents a real-world perspective on maximizing patient outcomes in non-small cell lung cancer (NSCLC) with low and negative PD-L1 expression, focusing on insights gained from clinical practice in Italy.

In the context of current treatment landscapes, NSCLC patients with low or negative PD-L1 expression represent a significant challenge due to limited response to standard immunotherapy. Real-world data from Italy highlights the complexities associated with managing this patient population and the pragmatic strategies employed to optimize outcomes.

This analysis underscores the importance of a multidisciplinary approach, integrating the latest evidence-based therapies and diagnostic advances. It emphasizes the value of comprehensive molecular profiling, including assessment of tumor mutational burden and identification of actionable genetic alterations, to guide treatment decisions and enhance clinical outcomes in this challenging subgroup of NSCLC patients.

Furthermore, the abstract delves into the significance of tailored therapeutic approaches, such as the role of combination therapies, targeted agents, and alternative immunotherapeutic strategies, shedding light on their real-world application and impact on patient care.

Drawing from the Italian experience, the abstract discusses the need for robust patient monitoring and the dynamic adaptation of treatment regimens to address evolving disease characteristics, treatment response, and potential resistance mechanisms. This patient-centric approach underscores the importance of personalized medicine in optimizing patient outcomes in NSCLC with low and negative PD-L1 expression.

In conclusion, real-world insights from Italy offer valuable learnings on maximizing patient outcomes in NSCLC with low and negative PD-L1 expression. By leveraging multidisciplinary collaboration, advanced diagnostics, and tailored therapeutic strategies, it is possible to navigate the complexities of managing this patient population and drive meaningful improvements in clinical outcomes.

盧照文 Chao-Wen Lu, M.D.

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

Management of tracheal tumors: the NTUH thoracic surgery team's experience

Primary airway cancers comprise less than 1% of the pulmonary malignancies. Squamous cell carcinoma (SqCC) is the most common primary tracheal tumor followed by adenoid cystic carcinoma. Squamous cell carcinoma and adenoid cystic carcinoma, while both malignant, present with different prognostic outcomes. For SqCC, which is more aggressive, complete resection remains the goal, though locoregional recurrences are common, particularly when resection margins are positive. Data from multicenter studies suggest that postoperative radiotherapy may improve outcomes in patients with incomplete resections or positive margins. Conversely, ACC, while less aggressive, often presents with a solid growth pattern associated with a higher risk of metastasis, necessitating a more cautious surgical approach. Surgical management of tracheal tumors is highly specialized, involving intricate techniques to ensure the removal of the tumor while preserving the function of the airway. Given the central role of the trachea in respiration and its proximity to vital structures like the esophagus, major blood vessels, and nerves, surgery must be carefully planned and executed. The surgical methods include resection followed by anastomosis or reconstruction, endoscopic tumor removal, and stent placement. We conducted a retrospective analysis of patients with airway tumors managed by the thoracic surgery team at NTUH between 2006 and July 2024. The postoperative outcomes and the surgical approaches used will be thoroughly discussed.

林曜祥 Yaoh-Shiang Lin, M.D.

Jointly Appointed Professor, National Defense Medical Center

Surgery for acquired tracheal stenosis and tracheal tumors

The trachea is an air passage that measures about 10 to 12 centimeters in length, connecting the lower border of the cricoid cartilage to the carina. The etiology of various tracheal diseases is highly diverse, and the incidence of these diseases is hardly common compared to other parts of the body. Most colleagues, apart from performing tracheostomy, have limited experience in managing tracheal obstructions, and even fewer specialize in treating tracheal conditions. In this presentation, I will share my experience in managing two common causes of tracheal obstruction: acquired tracheal stenosis and tracheal tumors.

Satellite Symposium_ 嬌生股份有限公司

吳尚俊 Shang-Gin Wu, M.D.

Chest Medicine, Department of Internal Medicine, National Taiwan University Hospital

The earlier the better: first-line amivantamab for EGFR exon 20 insertion in advanced NSCLC.

EGFR exon 20 insertion mutations represent a unique subset of non-small cell lung cancer (NSCLC) characterized by limited treatment options and poor prognosis. Traditional EGFR tyrosine kinase inhibitors (TKIs) exhibit minimal efficacy in this patient population, underscoring the urgent need for more effective therapies.

Amivantamab, a bispecific antibody targeting EGFR and MET, has emerged as a promising first-line treatment option for patients with advanced NSCLC harboring EGFR exon 20 insertions. The PAPILLON study, evaluating the combination of amivantamab and chemotherapy, has demonstrated superior clinical outcomes compared to chemotherapy alone, with improvements in progression-free survival (PFS), overall response rate (ORR), and duration of response (DoR). Although overall survival (OS) data remains immature, a clear trend favoring the amivantamab plus chemotherapy regimen is evident.

This lecture will delve into the clinical advantages of early intervention with amivantamab, supported by recent trial data. We will discuss its mechanisms of action, efficacy, safety profiles, and its role in personalized treatment strategies for enhancing patient outcomes. The timely initiation of targeted therapies like amivantamab has the potential to significantly alter the treatment landscape for patients with EGFR exon 20 insertion mutations.

Satellite Symposium_ 嬌生股份有限公司

黃俊耀 Chun-Yao Huang, M.D., Ph.D.

慈濟醫療財團法人台北慈濟醫院胸腔科主治醫師

Beyond TKI therapy: evolving post- TKI Strategies for common EGFR mutations in NSCLC.

While EGFR tyrosine kinase inhibitors (TKIs) have transformed the treatment of non-small cell lung cancer (NSCLC) with EGFR mutations, the development of resistance often limits their long-term efficacy. This presentation will explore the evolving landscape of post-TKI therapeutic strategies for common EGFR mutations in NSCLC.

Amivantamab, in addition to its existing use as a first line treatment for Exon20 insertions, it officially received post-TKI common EGFR mutations in NSCLC indication approval by TFDA in 2024 October. The MARIPOSA-2 study demonstrated that amivantamab not only improves progression-free survival but also Intracranial progression-free survival and enhances overall response rates for patients with advanced EGFR-mutant NSCLC.

The discussion will highlight key clinical trial results, mechanisms of action, and safety profiles of these therapies, emphasizing their role in overcoming resistance to first- and second-line TKIs. Personalized approaches are essential for extending survival and improving outcomes in EGFR-mutant NSCLC patients, making early identification of resistance mechanisms and timely therapeutic adjustments critical. It is expected that post-TKI Strategies for common EGFR mutations in NSCLC will evolve to optimize overall treatment outcomes for patients.

蔡秉中 Ping-Chung Tsai, M.D.

Division of Thoracic Surgery, Department of Surgery, Kaohsiung Veterans General Hospital, Kaohsiung

Perioperative therapy for resectable Non–Small-Cell lung cancer

Anatomic surgical resection followed by adjuvant chemotherapy has been a long-standing standard of care for patients with resectable non–small-cell lung cancer (NSCLC). Recently, incorporating of immunotherapy and targeted therapy in the perioperative setting has been established as a valuable component of treatment for resectable NSCLC. Many major trials had showed significant improvements in event-free survival, major pathological response, and pathological complete response among participants. The purpose in the speech would summarize the results of major trials in the perioperative setting and add perspective aspect from thoracic surgeon.

李瑞英 Jui-Ying Lee, M.D.

Attending surgeon, Division of Chest Surgery, Department of Surgery, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan

Transforming survival rates in resected NSCLC with precision medicine

In early-stage NSCLC patients, while surgery achieve complete resection (R0), the risk of recurrence is frequently underestimated, especially for those with high-risk factors. Recurrence rates would be around 40% for stage Ib, 62% for stage II, and 76% for stage IIIA patients with EGFR mutation. This presentation, from the perspective of surgeons, will explore the crucial role of postoperative treatment, particularly the application of precision medicine, in reducing recurrence and improving patient survival.

The focus will be on the integration of surgical and adjuvant therapies, demonstrating how personalized treatment approaches in the era of precision medicine are transforming survival outcomes for early-stage lung cancer patients.

徐博奎 Po-Kuei Hsu, M.D., Ph.D.

Director, Division of General Examination, Healthcare and Service Center, Attending Physician, Division of Thoracic Surgery, Department of Surgery, Taipei Veterans General Hospital

Advancing neoadjuvant therapies in resectable NSCLC implications for ICI treatment strategies

The integration of neoadjuvant immunotherapy (IO) into the treatment of locally advanced non-small cell lung cancer (NSCLC) offers significant potential to improve long-term outcomes. Patients with stage II and IIIA NSCLC face a high risk of recurrence and limited survival after surgery, presenting a critical need for better treatment strategies. Neoadjuvant IO, particularly using checkpoint inhibitors like nivolumab combined with chemotherapy, helps activate the immune system while the tumor is still present. This approach has demonstrated an enhanced pathological complete response (pCR), an early predictor of improved survival outcomes.

The CheckMate 816 trial revealed that neoadjuvant nivolumab plus chemotherapy significantly increased pCR and event-free survival (EFS) compared to chemotherapy alone, with an 11-fold higher pCR rate and better EFS. Patients achieving pCR showed extended EFS and overall survival (OS), emphasizing the long-term benefits of this approach.

Importantly, neoadjuvant IO demonstrated a manageable safety profile, without increasing surgery-related complications, and reduced the risk of distant recurrence. This highlights its potential to improve patient outcomes while maintaining surgical feasibility.

In summary, incorporating neoadjuvant IO into the treatment of locally advanced NSCLC provides a promising strategy to reduce recurrence risk and improve survival, offering new hope for patients through a more effective and durable treatment approach.

張晃智 Huang-Chih Chang, M.D.

Attending physician, Department of Pulmonology, Chang-Gung Memorial Hospital, Kaohsiung

How to achieve better survival benefits in resectable NSCLC, from adjuvant IO therapy to neoadjuvant IO therapy

Despite advances in cancer treatment, continued declines in mortality, but lung cancer remains the leading cause of cancer death in the world. Nearly half of patients with non-small cell lung cancer (NSCLC) are diagnosed with early-stage, localized or regional disease and are at high risk of recurrence within 5 years of diagnosis. Immune checkpoint inhibitors (ICIs) have improved outcomes in patients with metastatic NSCLC and have recently been tested in early-stage lung cancer in multiple clinical trials to determine the efficacy of neoadjuvant or adjuvant therapy in patients with localized or regional disease. The prospect of perioperative ICI for lung cancer is developing rapidly, and recent reports show that the results of multiple clinical trials are gradually maturing; and recent data have also found that ICI has significant potential in improving the early remission rate and reducing the recurrence rate of lung cancer.

「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

吳育丞 醫師 Yu-Cheng Wu, M.D. 台中榮民總醫院重症醫學部

Variation in Oxygen Saturation Measured by a Wearable Device May Predict Response to Treatment in Patients with Community-Acquired Pneumonia

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Background: Community-acquired pneumonia (CAP) is 1 of the leading causes of death worldwide, and early prediction of response to treatment is crucial in managing patients with CAP. Wearable devices are increasingly being used to monitor physiological parameters continuously. Therefore, the aim of this study was to determine the ability of wearable devices to predict the outcome of treatment for patients with CAP.

Methods: We prospectively enrolled patients with CAP at a tertiary referral hospital in central Taiwan between 2020 and 2021, and used wearable devices to monitor oxygenation (SpO2) and physical activity for 2 days after admission. An unfavorable treatment outcome on Day 5 was determined by clinical deterioration, radiographic progression, or pneumonia-related complications. Multivariate logistic regression was used to determine the odds ratio (OR) and 95% confidence interval (CI).

Results: A total of 62 patients with CAP were enrolled, and 51.6% (32/62) of them were classified as having unfavorable treatment outcomes. The groups with favorable and unfavorable treatment outcomes had similar disease severities, including CURB-65 (1.13±0.82 vs. 1.06±0.8, p=0.719) and the pneumonia severity index (97.3±36.21 vs. 98.06±31.7, p= 0.983). We found a lower SpO2, a higher variation in SpO2, and lower physical activity in those with an unfavorable response compared to those with a favorable response. After adjusting for age, sex, and severity, we found that a lower average SpO2 (OR: 0.91, 95% CI 0.62–1.33, P=0.624) and a greater variation in SpO2 (OR: 1.87, 95% CI 1.02–3.42, P=0.044) on Day 2tended to be associated with an increased risk of an unfavorable treatment outcome.

Conclusion: In this study, we continuously monitored CAP patients using a wearable device and identified Day 2 SpO2 average and variation as potential early treatment outcome predictors.
Key words: Pneumonia, pulse oximetry, internet of things (IoT), wireless, monitoring

【胸腔醫學雜誌】優秀論文獎第二名

郭育筑 醫師 Yu-Chu Kuo, M.D. 中國醫藥大學附設醫院胸腔暨重症系

Safety and Feasibility of Radial Endobronchial Ultrasound-guided Transbronchial Cryobiopsy without Fluoroscopy in the Diagnosis of Lung Diseases

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Introduction: Transbronchial lung cryobiopsy (TBLC) has emerged as a new bronchoscopic procedure that can improve specimen quality to increase diagnostic yield in various diffuse parenchymal lung diseases (DPLDs). We evaluated the safety and feasibility of TBLC in combination with radial probe-endobronchial ultrasound (R-EBUS) to diagnose DPLDs without fluoroscopy.

Methods: Patients with DPLDs who underwent R-EBUS without fluoroscopy to locate target lesions and confirm the absence of adjacent vessels, followed by sampling with conventional transbronchial lung forceps biopsy (TBLB) and TBLC, were enrolled from January 2015 to March 2019.

Results: A total 21 patients with diffuse lung infiltrates and 13 patients with bilateral pulmonary nodules/masses were analyzed. The overall diagnostic rate was 76.4% (26/34), and the diagnostic yield increased from 44.1% with the TBLB to 70.6% after TBLC (p=0.023). Compared to TBLB, TBLC provided a larger specimen and sample volume (38 mm3 vs 6 mm3; p<0.001). Eleven patients who initially had non-diagnostic results by TBLB received a definite diagnosis after TBLC; eight of these patients were given a definite diagnosis of interstitial lung disease (ILD) (p<0.001).

Conclusion: Compared to TBLB with R-EBUS guidance, TBLC with R-EBUS guidance without fluoroscopy increased the diagnostic yield in patients with DPLDs, particularly in those with ILD.
Key words: Radial probe-endobronchial ultrasound, transbronchial lung cryobiopsy, transbronchial lung forceps biopsy, interstitial lung diseases, peripheral lung lesion

【胸腔醫學雜誌】優秀論文獎第三名

陳昭賢 醫師 Chao-Hsien Chen, M.D. 台東馬偕紀念醫院胸腔內科

Does it matter where the heart stops? rCAST score performance in predicting outcomes of in-hospital cardiac arrest patients

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Objectives: The characteristics of patients with in-hospital cardiac arrest (IHCA) are generally considered to be different from those with out-of-hospital cardiac arrest (OHCA). The revised post-Cardiac Arrest Syndrome for Therapeutic hypothermia (rCAST) score has been proven to be a good predictive score for neurologic outcomes and mortality in OHCA patients who receive therapeutic temperature management (TTM); however, its application in IHCA patients has yet to be evaluated.

Methods: In this retrospective study, we enrolled adult post-cardiac arrest syndrome (PCAS) patients who had an IHCA and received TTM from 2017 to 2021 at our hospital. Their medical records were extracted to calculate the rCAST score and analyze their outcomes.

Results: A total of 37 patients were enrolled for analysis. The average rCAST score was 5.6±3.6, and 51.4% and 48.6% of the patients were classified into the low and moderate severity categories, respectively. The areas under the curves for the rCAST score were 0.780 (95% confidence interval [CI]: 0.614-0.899) to predict poor neurologic outcomes, and 0.809 (95% CI: 0.647-0.919) to predict mortality at day 28. Only those patients in the low severity category were associated with survival and favorable neurologic outcome benefits.

Conclusion: Our preliminary results suggest that the rCAST score had moderate accuracy in predicting poor neurologic outcomes and mortality at 28 days in IHCA patients receiving TTM. Further large-scale studies are warranted to confirm these findings.

Key words: Mortality, neurologic outcome, in-hospital cardiac arrest, post-cardiac arrest syndrome, rCAST, targeted temperature management

Young Investigator Award

Young Investigator Award

胡栢瑋 醫師 Po-Wei Hu, M.D. 陽明交通大學附設醫院胸腔科

Correlations between blood vessel distribution, lung function and structural change in idiopathic pulmonary fibrosis

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Background and Objective: Correlations between the image analysis of CT scan, lung function and quality of life in patients with idiopathic pulmonary fibrosis (IPF) remain unclear. This study aimed to investigate the impacts of pulmonary bloodvessel distribution and the extent of fibrosis on the lung function and quality of life of patients with IPF.

Methods: Patients were enrolled in an IPF registry and had completed pulmonary function tests, chest HRCT, St. George Respiratory Questionnaire (SGRQ) and echocardiography. Pulmonary blood-vessel distribution, specific image-derived airway volume (siVaw) and fibrosis extent (siVfib) were quantitatively calculated by functional respiratory imaging on HRCT.

Results: The study subjects were categorized into DLco <40% pred. (n=40) and DLco ≥40% pred. (n=19) groups. Patients with DLco <40% pred. had significantly higher scores of SGRQ, composite physiologic index (CPI), exercise oxygen desaturation (ΔSpO2), siVaw, lower FVC% pred. and 6-minute walking distance% pred. The proportion of small blood vessels in the upper lobes (BV5PR-UL) was significantly correlated with CPI, DLco % Pred., FVC% pred., SGRQ and ΔSpO2. Only BV5PR-UL had a significant impact on all indices but not BV5PR in the lower lobes (BV5PR-LL). siVfib was significantly negatively correlated with BV5PR-UL, DLco% pred. and FVC % pred., as well as positively correlated with CPI, ΔSpO2 and siVaw.

Conclusion: BV5PR-UL and siVfib had significant correlations with lung function and may become important indicators to assess the severity of IPF and the impact on quality of life.

Young Investigator Award

沈易綸 醫師 Yi-Luen Shen, M.D. 亞洲大學附設醫院內科部胸腔科

Angiotensin-(1–7) attenuates SARS-CoV2 spike protein-induced interleukin-6 and interleukin-8 production in alveolar epithelial cells through activation of Mas receptor

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Background: SARS-CoV-2 spike proteins (SP) can bind to the human angiotensin-converting enzyme 2 (ACE2) in human pulmonary alveolar epithelial cells (HPAEpiC) and trigger an inflammatory process. Angiotensin-(1–7) may have an anti-inflammatory effect through activation of Mas receptor. This study aims to investigate whether SARS-CoV-2 SP can induce inflammation through ACE2 in the alveolar epithelial cells which can be modulated through angiotensin-(1–7)/Mas receptor axis.

Methods: HPAEpiC were treated with SARS-CoV-2 SP in the presence or absence of ACE2 antagonist-dalbavancin and Mas receptor agonist-angiotensin-(1–7). Proinflammatory cytokine production (IL-6 and IL-8) were measured at mRNA and protein levels. MAP kinase phosphorylation and transcription factor activation was determined by Western Blot. Mas receptor was blocked by either antagonist (A779) or knockdown (specific SiRNA). Experiments were replicated using A549 cells.

Findings: SARS-CoV-2 SP (5 μg/mL) significantly induced MAP kinase (ERK1/2) phosphorylation, downstream transcription factor (activator protein-1, AP-1) activation and cytokine production (IL-6 and IL-8) at both mRNA and protein levels. Pretreatment with dalbavancin (10 μg/mL), or angiotensin-(1–7) (10 μ M) significantly reduced ERK1/2 phosphorylation, AP-1 activation, and cytokine production. However, these angiotensin-(1–7)-related protective effects were significantly abolished by blocking Mas receptor with either antagonist (A799,10 μM) or SiRNA knockdown.

Interpretation: SARS-CoV-2 SP can induce proinflammatory cytokine production, which can be inhibited by either ACE2 antagonist or Mas receptor agonist-angiotensin-(1–7). Angiotensin-(1–7)-related protective effect on cytokine reduction can be abolished by blocking Mas receptor. Our findings suggest that ACE2/angiotensin-(1–7)/Mas axis may serve as a therapeutic target to control inflammatory response triggered by SARS-CoV-2 SP.

Young Investigator Award

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Follistatin-respiratory connection predicting all-cause mortality among community-dwelling middle-to-old age individuals: Results from the I-Lan Longitudinal Study

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Objectives: The link between aging and pulmonary function decline is well-established, but the underlying mechanisms have yet to be fully revealed. Serum follistatin, a myokine implicated in muscle degeneration, may play a role in age-related pulmonary changes. This study aims to investigate the relationship between serum follistatin levels and pulmonary function decline in community- dwelling older adults, and evaluate their combined association with all-cause mortality.

Research design and methods: This longitudinal cohort study utilized data from 751 participants aged 50 years in the I-Lan Longitudinal Aging Study between 20182019. Serum follistatin levels, spirometry results, demographic and clinical data were retrieved. Participants were stratified based on their follistatin levels. Survival curves and group comparisons based on follistatin levels and decline in peak expiratory flow (PEF) using Kaplan-Meier analysis and log-rank tests. Multivariate Cox proportional hazards models were further used to identify independent predictors of all-cause mortality during the 52-month follow-up.

Results: Elevated follistatin levels significantly correlated with worse pulmonary function, particularly decreased PEF (p=0.030). Kaplan–Meier analysis revealed the combination of elevated follistatin levels and decreased PEF was associated with increased risk of all-cause mortality (Log-rank p=0.023). Cox proportional hazards models further identified that concurrent presence of higher follistatin levels and decreased PEF predicted higher risk of allcause mortality (adjusted HR 3.58, 95% CI: 1.22–10.53, p=0.020).

Conclusion: Higher serum follistatin levels correlate with decreased pulmonary function, specifically PEF decline, in community- dwelling older adults. Furthermore, the coexistence of elevated follistatin levels and decreased PEF was associated with risk of all- cause mortality. Follistatin may serve as a biomarker for pulmonary aging and related adverse outcomes.

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

非支氣管癌引起的惡性中央氣道阻塞：介入性支氣管鏡治療的 15 年臨床成果

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Impact of Interventional Pulmonology on Malignant Central Airway Obstructions from Non-Bronchogenic Cancers: A 15-Year Experience.

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Purpose: The purpose of this study was to evaluate the effectiveness of interventional pulmonology in treating malignant central airway obstructions caused by non-bronchogenic cancers, and to determine its impact on patient outcomes.

Materials and Methods: From January 2008 to December 2023, a total of 1,319 patients with malignant central airway obstructions were treated. Among them, 535 patients had obstructions due to non-bronchogenic cancers. The study analyzed this specific group to assess outcomes.

Results: The average age of the 535 patients was 64.7 years, with 381 males. The most common causes of non-bronchogenic cancers leading to airway obstruction were esophageal cancer (n=99), colon cancer (n=73), kidney cancer (n=62), breast cancer (n=57), head and neck cancers (n=51), thyroid cancer (n=41), and sarcoma (n=26). Most patients (n=417) had already undergone one or more lines of systemic treatment. Airway obstructions were intrinsic in 51.8%, extrinsic in 13.1%, and mixed in 35.1% of cases. Electrocautery debulking was performed in 86.9% of cases, with cryoextraction used in 50.9% of these cases. Airway stenting was necessary in 43.9% of patients. Median survival after interventional pulmonology was 15.72 months. Significant predictors of outcomes included extrinsic type occlusion (p=0.001), ECOG performance status (p=0.002), absence of obstructive pneumonia (p=0.035), and the ability to receive subsequent oncologic treatment (p<0.001). The complication rate was 7.4%, mostly mild, with no procedure-related mortality.

Conclusions: Interventional pulmonology proved to be an effective and safe treatment for malignant central airway obstructions caused by non-bronchogenic cancers, improving airway patency and prolonging survival in select patients, with minimal 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)

OA02

比較冷凍探頭和切片夾用於支氣管內視鏡超音波導引縱膈切片：一項前瞻性觀察性研究

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Comparison of cryoprobes and forceps for the endobronchial ultrasound-guided mediastinal biopsy: A prospective observational study

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Purpose: Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) has been widely used for the diagnosis of mediastinal and hilar lesions due to its long history of safety. Recent evidence showed that EBUS-TBNA combined cryobiopsy (EBUS-transbronchial mediastinal cryobiopsy, EBUS-TMC) or forceps biopsy (EBUS-intranodal forceps biopsy, EBUS-IFB) have higher diagnostic accuracy, and obtain larger tissue samples for further gene mutation and histologic subtyping analysis. However, few data revealed a comparison between EBUS-TMC and EBUS-IFB for mediastinal/hilar lesions diagnosis. The purpose of this study was to evaluate the efficacy of different biopsy devices for the diagnosis of the mediastinal/hilar lesions.

Materials and Methods: Consecutive patients with mediastinal/hilar lesions who underwent EBUS-TBNA and mediastinal biopsy from November 2022 to March 2024 were enrolled. After completing needle aspiration, cryobiopsy and forceps biopsies were performed sequentially. The cases that tissue specimen could not be retrieved by cryobiopsy or forceps biopsy were excluded. Primary endpoints included diagnostic accuracy and the size of tissue specimens.

Results: A total of 219 mediastinal/hilar lesions were finally evaluated in 183 patients. The overall diagnostic accuracy of EBUS-TMC was higher than EBUS-IFB (95.4% vs 84.9%, P < 0.001). Subgroup analysis showed that the yield rate of EBUS-TMC were superior to EBUS-IFB (96.1% vs 89.6%, P = 0.008 in population of all malignancy; 95.2% vs 76.2%, P = 0.040 in population of malignancy except primary lung cancer; 93.8% vs 73.8%, P < 0.001 in population of benign process). The tissue sample obtained by EBUS-TMC was also significantly larger than EBUS-IFB (16.3 mm2 vs 3.1 mm2, P < 0.001). EBUS-IFB did not influence the accuracy when EBUS-TMC accompanied with EBUS-TNA. There were no severe complications causing death or disability.

Conclusions: EBUS-TMC might be a better auxiliary method for EBUS-TBNA to improve diagnostic yield and tissue harvesting.

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

OA03

雄性激素抑制及攝護腺肥大與肺癌存活率之關係

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Androgen suppression, benign prostatic hyperplasia and lung cancer survival

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Purpose: The role of androgen and androgen receptors (AR) in the pathogenesis of lung cancer remains unclear. Our team's preliminary basic research demonstrated that finasteride, a 5-alpha-reductase inhibitor, inhibited A549 lung cancer cell growth and reduced the expressions of AR protein by interfering with the AR protein stability and promoting AR ubiquitination. Previous studies have shown that patients with benign prostatic hyperplasia (BPH) typically exhibit lower androgen levels, and AR signaling can be inhibited through androgen pathway manipulation (APM). This study aimed to assess the role of androgen and AR in lung cancer pathophysiology by examining the impact of BPH or APM on lung cancer survival.

Materials and Methods: In this retrospective hospital-based cohort study, we screened all men with lung cancer diagnosed during the period from January 1, 2006 to December 31, 2021. The medical history of BPH was defined as having a previous diagnosis of BPH (ICD-10-CM diagnosis code N40) or having undergone treatment for BPH. APM exposure was defined as using antiandrogens, 5-alpha reductase inhibitors, or gonadotropin-releasing hormone agonists/antagonists for >30 days after lung cancer diagnosis. We employed the Kaplan–Meier method and Cox proportional hazards model to assess overall survival of lung cancer. We also used propensity score matching to minimize potential confounding effects

Results: Among 4,742 men with lung cancer, 1,219 (25.7%) were diagnosed with BPH, while 121 (2.6%) were identified as having APM exposure. In a multivariable Cox proportional hazards analysis, patients with a BPH diagnosis (Hazard Ratio [HR] 0.72; 95% CI, 0.67–0.78, p<0.001) and those with APM exposure (HR 0.62; 95% CI, 0.49–0.79, p<0.001) demonstrated better overall survival (OS). The median OS for patients with and without BPH was 24.5 months vs. 16.2 months (p<0.001); while the OS for those with and without APM exposure was 48.2 months vs. 17.5 months (p<0.001). After propensity score matching, OS for BPH was 23.8 vs. 13.8 months (p<0.001) and for APM exposure, 48.2 vs. 20.7 months (p<0.001). In subgroup analysis, BPH and APM exposure may provide benefit to improve OS, independent of lung cancer stage, age stratified by 70 years, histology, or smoking habits.

Conclusions: A history of BPH and APM exposure was associated with better OS in male patients with lung cancer. These findings indicate a potential oncogenic role of androgen and AR in lung cancer. APM may provide potential therapeutic options and targets for lung cancer 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)

OA04

表皮生長因子受器 - 酪胺酸激酶抑制劑治療在晚期表皮生長因子受器突變非小細胞肺癌病人的癌症治療相關性心臟功能不全發生率：單一醫學中心前瞻觀察性研究

彭睦涵[1], 黃彥翔[1,2], 徐國軒[1,2], 曾政森[1,2], 李柏昕[1,2], 林維文[3], 楊宗穎[1,2]
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The Incidence of Cancer Therapy-Related Cardiac Dysfunction to EGFR-TKIs in Advanced EGFR-mutant Non-small Cell Lung Cancer: A Single-center Prospective Observational Study

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Purpose: Clinical trials have shown that epidermal growth factor receptor (EGFR) - tyrosine kinase inhibitors (TKIs) could lead to cardiac toxicities, including cancer therapy-related cardiac dysfunction (CTRCD). The primary objective of this study was to investigate the incidence of CTRCD in patients with advanced or recurrent EGFR-mutant non-small cell lung cancer (NSCLC) treated with EGFR-TKIs.

Materials and Methods: Between June 2022 and April 2024, we prospectively enrolled patients with advanced or recurrent EGFR-mutant NSCLC receiving EGFR-TKI treatment. All patients underwent electrocardiography and echocardiography at least twice. CTRCD was defined as a left ventricular ejection fraction (LVEF) of less than 50% and an absolute reduction in LVEF of more than 10% from baseline.

Results: A total of 96 patients were included in this study. The median age was 64 years (range: 39 to 91 years), with 38.5% male and 61.5% female patients. Regarding smoking status, 72.9% were never-smokers, and 27.1% were former or current smokers. As for EGFR subtypes, 57.3% of patients (55/96) had Exon 19 deletion, and 40.6% (39/96) had Exon 21 L858R mutation. Regarding TKIs, 16.7% of patients received erlotinib, 13.5% received afatinib, 5.2% received dacomitinib, and 64.6% received osimertinib. A reduction in LVEF of more than 10% was observed in 14.6% (14/96) of patients. Among this group, 42.9% (6/14) had an LVEF of less than 50%, representing 6.3% (6/96) of the total population. Specifically, 14.5% (9/62) of patients receiving osimertinib experienced a greater than 10% reduction in LVEF, with 66.7% (6/9) of these patients having an LVEF of less than 50%. Among those with LVEF <50%, 33.3% (2/6) were symptomatic. In contrast, 14.7% (5/34) of patients receiving first- or second-generation TKIs experienced an LVEF reduction of more than 10%, though no patients in this group had an LVEF of less than 50%.

Conclusions: Our study demonstrates the incidence of CTRCD in patients with advanced or recurrent EGFR-mutant NSCLC receiving EGFR-TKI treatment. Although the incidence rate and symptomatic cases are relatively low, close monitoring of cardiac function during EGFR-TKI therapy remains essential.

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

OA05

晚期非小細胞肺癌患者的免疫特徵動態變化與免疫治療後感染之預測

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Dynamic Immune Signatures of Patients with Advanced Non–Small-Cell Lung Cancer for Infection Prediction After Immunotherapy

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Purpose: By evaluating immune signatures, this study investigated the post-immunotherapy risk of pulmonary infection in patients with lung cancer and identified circulating biomarkers that could serve as predictors of post-immunotherapy infection.

Materials and Methods: Blood specimens were prospectively collected from patients with NSCLC both before and after chemotherapy (C/T) and/or immunotherapy (IO) to explore dynamic immune signatures. Real-world clinical data were extracted from medical records for outcome evaluation. Mass cytometry and enzyme-linked immunosorbent assay (ELISA) were employed to analyze immune signatures and cytokine profiles.

Results: In the retrospective cohort, 283 patients with stage IV NSCLC were enrolled. IO was associated with a lower risk of pneumonia (odds ratio: 0.46, $p = 0.012$). Patients who received IO and remained pneumonia-free exhibited the most favorable survival outcomes compared with those who received C/T or developed pneumonia ($p < 0.001$). In the prospective cohort, 30 patients were enrolled. The proportion of circulating natural killer (NK) cells significantly increased after treatment in both IO alone ($p < 0.001$) and C/T+IO group ($p < 0.01$). Additionally, an increase in the cell densities of circulating PD-1+CD8+(cytotoxic) T cells ($p < 0.01$) and PD-1+CD4+ T cells ($p < 0.01$) were observed in the C/T alone group after treatment. However, in the IO alone group, a decrease in the cell densities of TIM-3+ and PD-1+ cytotoxic T cells ($p < 0.05$), and PD-1+CD4+ T cells ($p < 0.01$) were observed after treatment. In both C/T alone and C/T+IO groups, cell densities of circulating PD-1+ cytotoxic T cells significantly increased in patients with pneumonia after treatment (both $p < 0.05$). However, in IO alone group, cell density of PD-1+ cytotoxic T cells significantly decreased in patients without pneumonia after treatment ($p < 0.05$). Furthermore, the level of TNF-α significantly increased after treatment with IO alone ($p < 0.05$) but decreased after treatment with C/T alone ($p < 0.01$).

Conclusions: Our results indicate that the incorporation of IO into the treatment regimen may potentially offer protective effects against pulmonary infection. The protective effects are associated with the reduction of exhausted T-cell populations and the augmentation of TNF-α and NK cells. The exhausted T cells, NK cells, and TNF-α might play crucial roles in the immune response against infections. These observations highlight the potential utility of certain circulating biomarkers, particularly exhausted T cells, for predicting posttreatment 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)

OA06

使用超音波影像建立之深度學習模型鑑別惡性與良性肋膜積液

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Differential of malignant from benign pleural effusions with deep-learning model based on ultrasound image

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Purpose: It is important but challenging to differentiate between malignant pleural effusion (MPE) or benign pleural effusion (BPE), while accurate classification highly affects therapeutic approaches. Diagnostic thoracentesis is not without risks and histologic examination can be time-consuming. We aim to develop a non-invasive approach by utilizing deep-learning model based on ultrasound pleural effusion images to differentiate between MPE from BPE.

Materials and Methods: Patients with pleural effusion detected by chest ultrasound who received diagnostic thoracentesis were retrospectively collected from the National Taiwan University Hospital Hsin-Chu branch between 2014 to 2021. MPE was confirmed by cytology reports while BPE was ascertained by negative cytology and compatible clinical course. Preprocessing techniques, including data reshaping, autoencoders, histogram equalization, and data augmentation, were applied to minimize the difference between different sonography machines, patient settings and operators. The dataset was randomly divided into training, validation and test datasets at an 8:1:1 ratio. A deep learning model was trained on the training set and subsequently validated and tested on validation and testing sets. Performance metrics included accuracy, F1 score, and area under the receiver operating characteristic curve (AUC).

Results: The cohort included 601 patients with a mean age of 71 years old and male predominance (59.2%). MPE accounted for 49.9% (300/601) of the cohort. The deep learning model achieved the following performance metrics with raw image (training set: accuracy/F1/AUC 1.000/1.000/1.000; validation set: 0.800/0.823/0.855; testing set: 0.762/0.780/0.826). After preprocessing with data augmentation, our model performance further improved (testing set: 0.774/0.784/0.853).

Conclusions: Our deep-learning model showed a good performance in differentiating between BPE and MPE. Artificial intelligence assisted chest ultrasound holds promise as a non-invasive point-of-care modality for managing patients with pleural effusion.

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

OA07

EGFR TKI 聯合原發腫瘤切除手術治療轉移性非小細胞肺癌患者的之手術結果和病理反應分析可行性評估

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Surgical and Pathology Outcome of a Randomized, Phase II Trial of EGFR TKI with Primary Tumor Resection for EGFR-Mutant Metastatic NSCLC Patients: Feasibility Evaluation

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Purpose: Several phase II trials have explored combination local consolidation therapies for EGFR-mutant advanced lung cancer to improve survival, but none have specifically evaluated primary thoracic tumor resection with EGFR TKI before disease progression. We hypothesize that surgery targeting resistant subclones or reducing tumor burden from drug-induced resistance could improve non-progression intervals by lowering the risk of further resistance. This approach aims for better disease control than EGFR TKI therapy alone, without intending to cure the disease.

Materials and Methods: We are conducting a two-arm, phase II trial in Taiwan to evaluate primary tumor resection in EGFR-mutant advanced NSCLC patients eligible for thoracic surgery. The trial aims to enroll 100 stage IV patients. After 12 weeks of afatinib, participants will be randomized (1:1) to receive either afatinib monotherapy or surgery with/without radiation for residual distant disease. The primary goal of thoracic surgery is to achieve optimal locoregional disease control and potentially secure a negative resection margin. The radiation therapy will be administered at the discretion of the multidisciplinary team of investigators, which is will be completed after the first dose of afatinib. The primary endpoint of this trial is the two-year progression-free survival (PFS). Secondary endpoints include progression-free survival and overall survival (OS).

Results: A total of 56 patients were randomized into two groups. The hazard ratio (HR) for progression was 0.45 (95% CI: 0.19–1.05). However, statistical significance was with a P-value of 0.0595 with unmatured data. A major pathology response was observed in 36.4% of the patients. Pathologic complete response was achieved in 9.1% of patients. The average postoperative hospital stay (POD) was 4.9 days. 76.8% patients were performed using a single-wound approach, and 58.9% of patients underwent sub-lobar resections. No mortality was noticed in surgical group. Patients were classified as MPR-positive (N=8) or MPR-negative (N=14). With a median follow-up of 10.9 months, the median PFS was 21.1 months for the MPR-positive group, compared to 13.9 months for the MPR-negative group. The hazard ratio (HR) for disease progression was 0.56 (95% CI: 0.13–2.37).

Conclusions: This trial is the first to use pure thoracic surgery (primary tumor resection) as local consolidation therapy with EGFR TKI in non-oligometastatic, stage IV patients. Minimally invasive surgery reduced risks like pneumonitis. The focus was on pathology outcomes, showing promise in some subgroups. While pathology results are encouraging, the oncological outcome is still pending, and further follow-up is needed to assess long-term benefits.

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

OA08

表皮生長因子受體基因突變晚期非小細胞肺癌患者接受第一線 afatinib 與 osimertinib 治療的三年整體存活期分析

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Afatinib vs. Osimertinib as First-line Treatment for Advanced EGFR-mutant Non-Small-Cell Lung Cancer: A Three-Year Overall Survival Analysis

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Purpose: The primary objective of this study was to compare the 3-year overall survival (OS) and progression-free survival (PFS) between first-line treatments with afatinib and osimertinib in patients with advanced epidermal growth factor receptor (EGFR)-mutant non-small cell lung cancer (NSCLC).

Materials and Methods: Between January 2018 and December 2020, we retrospectively enrolled patients with advanced NSCLC harboring an exon 19 deletion or L858R mutation, who received afatinib or osimertinib as first-line treatment for analysis.

Results: A total of 128 patients were included in this study, with 81 in the afatinib group and 47 in the osimertinib group. The median follow-up time was 39.9 months for the afatinib group and 37.0 months for the osimertinib group. The median PFS was 13.5 months in the afatinib group and 18.2 months in the osimertinib group (p=0.240). The median OS was 40.5 months in the afatinib group and 37.0 months in the osimertinib group (p=0.980). In patients without brain metastases, the median PFS was 18.7 months for afatinib and 17.9 months for osimertinib (p=0.843), with a median OS of 41.7 months in the afatinib group and 38.5 months in the osimertinib group (p=0.959). Among patients with brain metastases, the median PFS was 10.9 months for afatinib and 21.7 months for osimertinib (p=0.045). The median OS was 36.2 months in the afatinib group and 35.3 months in the osimertinib group (p=0.992). Rebiopsies were performed in 71% (51/72) of patients after disease progression on afatinib, with a T790M mutation detection rate of 35% (18/51). A total of 63% (45/72) of patients received osimertinib as sequential therapy following progression on afatinib, with a median OS of 41.7 months. Among these patients, the median OS was 41.7 months for those with a detected T790M mutation, 42.0 months for those without the mutation, and 35.6 months for those with unknown T790M mutation status. In contrast, patients who did not receive sequential osimertinib treatment had a median OS of only 22.7 months.

Conclusions: Our study demonstrated that both afatinib and osimertinib as first-line treatments offer favorable median OS in patients with advanced EGFR-mutant NSCLC. Additionally, we recommend that patients receiving afatinib as first-line therapy undergo sequential osimertinib treatment, regardless of their T790M mutation status.

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

PA01

晚期非小細胞肺癌治療納入熱消融術的存活增加

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Survival Benefits of Incorporating Thermal Ablation in Treatment Protocols for Late- Stage Non-Small Cell Lung Cancer

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Objective: This study aimed to evaluate the impact of incorporating thermal ablation(TA) into treatment protocols for patients with advanced non-small cell lung cancer (NSCLC) to improve survival outcomes.

Methods: A retrospective cohort study was conducted at a medical center in Taiwan,analyzing data from 1,083 patients diagnosed with stage IIIB or IV NSCLC between 2008 and 2020. Patients were divided into TA and non-TA treatment groups. Statistical analyses included Chi-square tests, Mann-Whitney tests, propensity score matching,and Cox regression models to adjust for confounders.

Results: The TA group demonstrated a significantly longer median overall survival (OS) of 37 months compared to 15 months in the non-TA group ($P < 0.001$). Five-year OSrates were 32.4% for the TA group versus 9.8% for the non-TA group. Median progression- free survival (PFS) was 36 months for the TA group versus 14 months forthe non-TA group, with five-year PFS rates of 24.1% versus 6.3% ($P < 0.001$).

Subgroup analyses indicated improved survival outcomes for patients receiving targeted therapy and chemotherapy when TA was included. Thermal ablation was found to be comparable to lobectomy in terms of survival outcomes.

Conclusions: Thermal ablation significantly improves overall and progression-free survival in patients with advanced NSCLC. This minimally invasive technique offers avaluable treatment alternative for patients ineligible for surgery. The findings support integrating TA into standard care protocols for late-stage lung cancer and highlight the need for further research to optimize its application and validate these results in prospective 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)

PA02

非重症肌無力之早期胸腺瘤病人接受腫瘤手術切除有無全胸腺範圍切除之長期追蹤預後分析

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Long-term follow-up of non-myasthenic patients with early-stage thymoma who underwent extended thymectomy or limited resection

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Purpose: The standard resection for early-stage thymoma is total thymectomy and complete tumour excision with or without myasthenia gravis but the optimal surgery mode for patients with early-stage non-myasthenic thymoma is debatable. This study analysed the oncological outcomes for non-myasthenic patients with early- stage thymoma treated by thymectomy or limited resection in the long term.

Materials and Methods: Patients who had resections of thymic neoplasms at Taipei Veteran General Hospital, Taiwan between December 1997 and March 2013 were recruited, exclusive of those combined clinical evidence of myasthenia gravis were reviewed. A total of 113 patients were retrospectively reviewed with pathologic early stage (Masaoka stage I and II) thymoma who underwent limited resection or extended thymectomy to compare their long-term oncologic and surgical outcomes.

Results: The median observation time was 134.1 months [interquartile range (IQR) 90.7–176.1 months]. In our cohort, 52 patients underwent extended thymectomy and 61 patients underwent limited resection. Shorter duration of surgery ($p < 0.001$) and length of stay ($p = 0.006$) were demonstrated in limited resection group. Six patients experienced thymoma recurrence, two of which had combined myasthenia gravis development after recurrence. There was no significant difference ($p = 0.851$) in freedom-from-recurrence, with similar 10-year freedom-from-recurrence rates between the limited resection group (96.2 %) and the thymectomy group (93.2 %). Tumour-related survival was also not significantly different between groups ($p = 0.726$).

Conclusions: Patients with early-stage non-myasthenic thymoma who underwent limited resection without complete excision of the thymus achieved similar oncologic outcomes during the long-term follow-up and better peri-operative results compared to those who underwent thymectomy.

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

PA03

南台灣肺癌篩檢低劑量電腦斷層掃描年度趨勢量對過度診斷、過度處置和性別差異的影響

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Impact of Annual Trend Volume of Low-Dose Computed Tomography for Lung Cancer Screening on Overdiagnosis, Overmanagement, and Gender Disparities

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Background: With the increasing prevalence of nonsmoking-related lung cancer in Asia, Asian countries have increasingly adopted low-dose computed tomography (LDCT) for lung cancer screening, particularly in private screening programs. This study examined how annual LDCT volume affects lung cancer stage distribution, overdiagnosis, and gender disparities using a hospital-based lung cancer database.

Methods: This study analyzed the annual utilized LDCT volume, clinical characteristics of lung cancer, stage shift distribution, and potential overdiagnosis. At the individual level, this study also investigated the relationship between stage 0 lung cancer (potential strict definition regarding overdiagnosis) and the clinical characteristics of lung cancer.

Results: This study reviewed the annual trend of 4971 confirmed lung cancer cases from 2008 to 2021 and conducted a link analysis with an LDCT imaging examination database over these years. As the volume of lung cancer screenings has increased over the years, the number and proportion of stage 0 lung cancers have increased proportionally. Our study revealed that the incidence of stage 0 lung cancer increased with increasing LDCT scan volume, particularly during the peak growth period from 2017 to 2020. Conversely, stage 4 lung cancer cases remained consistent across different time intervals. Furthermore, the increase in the lung cancer screening volume had a more pronounced effect on the increase in stage 0 lung cancer cases among females than it had among males. The estimated potential for overdiagnosis brought about by the screening process, compared to non-participating individuals, ranged from an odds ratio of 7.617 to one of 17.114. Both strict and lenient definitions of overdiagnosis (evaluating cases of stage 0 lung cancer and stages 0 to 1 lung cancer) were employed.

Conclusions: These results provide population-level evidence of potential lung cancer overdiagnosis in the Taiwanese population due to the growing use of LDCT screening, particularly concerning the strict definition of stage 0 lung cancer. The impact was greater in the female population than in the male population, especially among females younger than 40 years. To improve lung cancer screening in Asian populations, creating risk-based prediction models for smokers and nonsmokers, along with gender-specific strategies, is vital for ensuring survival benefits and minimizing overdiagnosis.

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

PA04

透過標靶 STAT3 調節腫瘤相關 CD4+ 毒殺 T 細胞活化克服對免疫檢查點治療的抗性

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Targeting STAT3 overcomes resistance to checkpoint inhibition by modulating tumor-associated CD4+ T cell activation

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Purpose: Despite advances in immunotherapy, non-small cell lung cancer (NSCLC) remains a leading cause of cancer mortality globally, with limited responses to immune checkpoint inhibitors such as anti-PD-L1 antibodies. Targeting the molecular mechanisms underlying immune evasion and tumor progression is crucial for improving therapeutic outcomes. In this study, we investigated the role of PTPN6 agonist SC-43 in modulating the STAT3 signaling, PD-L1 expression, and immune cell activation to enhance anti-tumor immunity and the efficacy of anti-PD-L1 therapy.

Materials and Methods: NSCLC cell lines and a syngeneic Lewis lung carcinoma (LLC1) tumor model were used to evaluate the effects of SC-43 on tumor growth and immune responses. Western blotting and qRT-PCR were performed to assess PTPN6, STAT3, and PD-L1 expression levels. Combination therapy studies were conducted by administering SC-43 alongside anti-PD-L1 antibodies, and tumor growth was monitored. Flow cytometry was utilized to evaluate CD4+ T-cell activation in cancer and immune cell co-culture systems. Survival analysis of NSCLC patients was performed using publicly available datasets to determine the correlation between PTPN6 expression and overall survival.

Results: SC-43 demonstrated significant anti-tumor effects by modulating the PTPN6/STAT3 signaling axis, leading to the suppression of STAT3 activation in NSCLC. Notably, SC-43 downregulated PD-L1 expression through STAT3-mediated transcriptional repression. In the syngeneic LLC1 tumor model, SC-43 enhanced the efficacy of anti-PD-L1 therapy, resulting in a significant reduction in tumor growth compared to monotherapy. Mechanistically, targeting the PTPN6/STAT3 axis by SC-43 augmented the activation of CD4+ T cells, contributing to enhanced anti-tumor immunity. Furthermore, lower expression of PTPN6 in NSCLC tumor tissues was significantly correlated with poor overall survival, highlighting its potential as a prognostic biomarker.

Conclusion: Our findings demonstrate that targeting the PTPN6/STAT3/PD-L1 signaling axis with SC-43 enhances the cytotoxic activity of CD4+ T cells and potentiates the efficacy of anti-PD-L1 therapy in NSCLC. These results underscore the therapeutic potential of SC-43 in overcoming immune resistance and improving patient outcomes in NSCLC. Further clinical exploration of SC-43 in combination with immune checkpoint inhibitors 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)

PA05

一位 28 歲男性縱膈腔腫瘤合併心包膜積液

許麗娟 [1], 李佳穎 [2], 蔡雅安 [3], 王辰瑜 [3], 莊雅淳 [3], 沈德群 [3,4,5*]
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A 28-year-old man with a mediastinal tumor and pericardial effusion

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Background: Germ cell tumors originate from the yolk sac of the embryo. As the embryo develops, these cells typically migrate to the gonads. However, if the embryo does not develop normally or due to other unknown reasons, germ cells may undergo abnormal changes in locations outside the gonads. Mediastinal germ cell tumors are a rare type of malignant tumor, with less than 10% of these tumors found in the mediastinum. Generally, when the mediastinum is affected by a germ cell tumor, the clinical manifestations vary depending on the location and extent of the tumor's compression.

Case Presentation: We reported a 28-year-old male who presented to the emergency department with sudden chest pain and difficulty breathing. A chest X-ray revealed a large mediastinal mass, compressing the heart (Figure 1). A chest CT scan showed a huge mediastinal mass (10x15 cm) with pericardial invasion and associated pericardial effusion (Figure 2). Laboratory tests revealed significantly elevated tumor markers, alpha-fetoprotein (AFP, 2310 ng/mL). An urgent pericardiocentesis was performed to relieve potential cardiac tamponade. Subsequently, the patient underwent video-assisted thoracoscopic surgery for tumor biopsy and pericardial window creation. Histopathological analysis revealed malignant primary mediastinal yolk sac tumor. The patient continues to receive chemotherapy and is under regular follow-up.

Discussion: Yolk sac tumors, a subtype of non-seminomatous germ cell tumor, are rare and often found in young males with a poor prognosis. These tumors commonly reside in the anterior mediastinum, often large and invasive, leading to symptoms such as chest pain, superior vena cava syndrome, and potential metastasis to the lungs, liver, brain, and bones. Diagnosis is typically involving imaging and tumor marker analysis, with elevated AFP levels being a key indicator. Treatment primarily involves chemotherapy, often with platinum-based regimens, followed by surgical resection of residual tumors. Factors influencing prognosis include pre-chemotherapy AFP levels, presence of residual tumor cells post-chemotherapy, and lung 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)

PA06

於複合式手術室進行錐狀電腦斷層導引消融術 -127 例回顧

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Cone-beam computed tomography image-guided percutaneous microwave ablation for lung nodules in a hybrid operating room: A review of 127 cases

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Background: We developed the new workflow for cone beam computed tomography (CBCT) guided percutaneous microwave ablation (MWA), under general anesthesia in the hybrid operating room (HOR). In this research we aim to review the results of the first 127 consecutive microwave ablation cases performed in our institute to evaluate the further evolution, safety and efficacy of this technique.

Methods: This retrospective study recruited 100 consecutive patients, who underwent microwave ablation in the CBCT equipped HOR between July 2020 and January 2024. The workflow of the procedure included general anesthesia and patient fixation, CBCT scan and iGuide needle pathway planning, needle placement with laser beam and augmented fluoroscopy guidance, and assessment of ablation zone. Technical evolution included the use of coaxial needle for synchronous biopsy and ablation and use of the fine adjustment tool.

Results: 145 lesions in 127 patients who underwent MWA were analyzed and 113 patients had single and 14 patients had multiple nodules. The patients were separated as early group and the intraparenchymal fine adjustment group. The median global operation room time was 110 min. The median procedure time was 45 min. The median total dose area product was 19701 μGym2. The median postoperative stay for all patients was 1 day. Post procedural complications were presented.

Conclusion: The MWA technique is safe, feasible, and the various technical strategies can be successfully applied for further efficacy of the procedure. Intraparenchyma fine adjustment method can improve the biopsy yield rate in small nodules.

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

PA07

圓徑探頭氣管內視鏡超音波 (EBUS) 於加護病房呼吸衰竭病人之應用：一家醫學中心的回溯性研究

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The application of radial probe endobronchial ultrasonography (EBUS) in patient with respiratory failure in the intensive care unit (ICU): a retrospective study in a medical center

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Purpose: Radial probe endobronchial ultrasonography (EBUS) was utilized to diagnose various peripheral lung parenchymal diseases. However, there are limited articles to demonstrate the application of bronchoscopy with radial probe EBUS in the intensive care unit (ICU). Therefore, our study aimed to assess the feasibility, safety, and effectiveness of using bronchoscopy with radial probe EBUS in the ICU.

Materials and Methods: We conducted a retrospective analysis of two patient groups in the ICU of a tertiary university hospital. The non-EBUS group consisted of patients underwent bronchoscopy between January 2016 and December 2016, while the EBUS group underwent radial probe EBUS from January 2021 to December 2022.

Results: We enrolled 75 patients in non-EBUS group, and 57 patients in EBUS group. The definitive diagnosis rates were 75.4% (n=43/57) in EBUS group and 77.3%(n=58/75) in non-EBUS group (p= 0.799). The primary indication in these patients was unexplained pneumonia with an unidentified pathogen with the rates of 75.4% (n=43/57) in EBUS group and 68% (n=51/75) in non-EBUS group; and the diagnosis rates of infection were 74.4% (n=32/43) in EBUS group and 76.5% (n=39/51) in non-EBUS group (p= 0.818). The diagnosis rates of atypical infection were 53.5% (n=23/43) in EBUS group and 56.9% (n=29/51) in non-EBUS group (p= 0.743). Based on the culture results obtained from bronchoalveolar lavage, we altered anti-infective agents for 78.1% (n=25/32) in EBUS group and 71.8% (n=28/39) in non-EBUS group (p= 0.542). The rates of altered anti-infective agent of atypical infection were 78.3% (n=18/23) in EBUS group and 72.4% (n=21/29) in non-EBUS group (p= 0.439). The most frequent complication observed was minimal bleeding without other intervention (22.8%, n=13/57 in EBUS group and 8%, n=6/75 in non-EBUS group) during bronchoscopy. Notably, there were no instances of hypoxia or pneumothorax development following the procedure in EBUS group.

Conclusions: This study demonstrates the safety and practicality of using bronchoscopy with radial probe EBUS to diagnose peripheral lung parenchymal diseases in critically ill ICU patients. Physicians tend to adjust anti-infective agents based on culture results in the EBUS group. This reliable diagnostic tool facilitates precise and specific diagnoses, ultimately resulting in optimized treatment strategies.

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

PA08

罕見的上皮生長因子受體基因 p.I740_K745dupIPVAIK 可被 cobas® EGFR Mutation Test v2 偵測

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Rare EGFR p.I740_K745dupIPVAIK is detectable by cobas® EGFR Mutation Test v2

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Background: Uncommon Epidermal growth factor receptor (EGFR) mutations comprise a heterogeneous population of non-small cell lung cancer (NSCLC). Of them, kinase domain duplication has been implicated to be oncogenic. Duplication occurring in the exon 19 of EGFR is extremely rare. Without scrupulous testing algorithm, it could be misdiagnosed.

Methods: This study comprised two advanced lung adenocarcinoma patients at Taichung Veterans General Hospital (TCVGH) with rare EGFR exon 19 duplication. Various methods, including AmoyDx® Pan Lung Cancer PCR Panel, cobas® EGFR Mutation Test v2, and Sanger sequencing were applied for genetic analysis.

Results: A 69-year-old male ex-smoker presented with dyspnea and weight loss for 2 months. Chest X-film showed right lower lung mass lesion. Ultrasound-guide biopsy revealed adenocarcinoma with positive thyroid transcription factor-1 (TTF-1) staining. Staging examinations showed one tiny metastasis in right temporal lobe of brain. The diagnosis of lung adenocarcinoma in right lower lung, cT4N0M1b, stage IVA, with solitary brain metastasis was made. Initially, genetic analysis was performed using AmoyDx® Pan Lung Cancer PCR Panel, which revealed not detected for nine driver mutations. Patient also underwent cobas® EGFR Mutation Test v2 testing, which reported positive for exon 19 deletion (19Del). Owing to the inconsistent results, we check the genetic analysis process thoroughly and excluded the possibility of inadequate tumor specimen. Sanger sequencing was applied for DNA sequencing. The results disclosed EGFR exon 19 c.2217_2234 AATTC duplication, indicating p.I740_K745dupIPVAIK mutation. According to the user manual, E746_A750>IP (c.2235_2248>AATTC) and E746_T751>IP (c.2235_2251>AATTC) have been designed for detection in cobas® EGFR Mutation Test v2. It is theoretical that c.2217_2234 AATTC duplication of this patient shares the same "AATTC" nucleic acid sequence, which makes it being attachable by the primer and detectable. Patient underwent afatinib treatment in the 2nd-line setting and achieved objective response. Another 66-year-old female never smoker presented with cough, dyspnea, and weight loss being diagnosed with lung adenocarcinoma in right lower lung, cT4N3M1c, stage IVB, with lung, liver, and right kidney metastases. Similarly, AmoyDx® Pan Lung Cancer PCR Panel reported not detected for nine driver mutations, but cobas® EGFR Mutation Test v2 showed positive for 19Del. Sanger sequencing disclosed the same nucleic acid sequence with that of the first patient. However, this patient declined any treatment.

Conclusion: Rare EGFR exon 19 duplication (p.I740_K745dupIPVAIK), which was missed by AmoyDx® Pan Lung Cancer PCR Panel, could be detected by cobas® EGFR Mutation Test v2. Patients harboring this kind mutation could possibly benefit from EGFR-TKI treatment. To establish a better genetic analysis algorithm is important in order to avoid missing patients with druggable driver mutation(s).

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

PA09

支氣管鏡切片和冷凍切片在肺實質病灶診斷率之比較

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Comparative study of transbronchial cryobiopsy and transbronchial biopsy for diagnostic yield in peripheral pulmonary lesions

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Introduction: Transbronchial cryobiopsy (TBCB) is a minimally invasive technique for diagnosing lung diseases, yielding larger specimens than conventional transbronchial biopsies (TBB). It has shown superior diagnostic rates for interstitial lung diseases compared to TBB. However, its diagnostic performance relative to TBB in peripheral pulmonary lesions (PPLs) remains uncertain. This study aims to investigate this difference.

Material and methods: From May 2021 to December 2023, patients with PPLs were enrolled. Each patient underwent TBB followed by TBCB. These procedures were conducted either in a hybrid operating room (HOR) or a standard bronchoscopy room without fluoroscopy. The study compared histopathology yield rates between the two approaches.

Results: A total of 90 cases were enrolled. The lesion size was 4.1 ± 2.5 cm and 14 (15.6%) of them were below 2.0 cm. 44 (48.9%) cases were lung cancer patients, while 28 (31.1%) were infectious diseases. The tissue size [60 (30, 144) vs. 4 (2, 6), p<0.001] and pathology yield rates (92.1% vs. 76.4%, p=0.004) were higher for TBCB. For patients receiving the procedure in bronchoscopic room, TBCB also had a higher yield rate (97.2% vs. 77.8%, p=0.013), while the yield difference is not statistically significant in HOR (88.6% vs. 77.3%, p=0.157). The rate of ≥ grade 3 bleeding was 7.8%.

Conclusion: TBCB enhances the diagnostic yield of PPLs, whether guided by fluoroscopy or not, for both cancerous and benign lesions. Moreover, it is a relatively safe procedure associated with minimal 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)

PA10

胸腔 X 光影像型態分類與定位之深度學習演算法

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A deep learning algorithm to classify and localize image patterns of chest radiography

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Purpose: Chest X-rays are the most commonly used medical examinations, offering a quick and convenient method for diagnosis. However, interpreting chest X-rays remains challenging, requiring careful judgment and extensive experience from physicians. Moreover, radiology reports are often not available in real-time. Deep learning algorithms have made significant advances in the field of image recognition, particularly in object detection, which enables effective image classification and localization. This technology holds great potential for application in chest X-rays, providing timely and reliable reference reports.

Materials and Methods: In this study, we utilized several publicly available chest X-ray datasets. A total of 17,115 CXRs were collected and labeled. After integrating the annotations (covering nine categories: atelectasis, calcification, cardiomegaly, opacity, nodule/mass, effusion, pneumothorax, fibrosis and fracture) and applying image preprocessing and data augmentation, we proceeded with model training with YOLOv8 for object detection, at size of 512 x 512 pixels. Additionally, we collected chest X-rays from our hospital, which were annotated and used for external validation.

Results: The training dataset contained 29,190 CXRs (2-fold augmentation with horizontal flip), and internal validation dataset contained 2,520 CXRs. The external validation dataset contained 645 CXRs. All the CXRs were resized to 512x512 pixels. The amount of annotation bounding boxes of each CXR pattern are shown in Table 1. The internal validation resulted in an mAP50 (mean average precision at IoU 0.5) of 0.396 (Non-maximum suppression, NMS at confidence = 0.5, IoU = 0.6), while the external validation yielded an mAP50 of 0.504 (NMS at confidence = 0.5, IoU = 0.6). The top three patterns with the highest accuracy were cardiomegaly, pneumothorax, and nodule/mass, while the three with the lowest accuracy were opacity, fracture and atelectasis. The accuracy validation results were summary in Table 2, Figure 1a (Precision) and 1b (Recall). Examples of predicted CXRs were shown in Figure 2a-f (6 examples).

Conclusions: This study demonstrates that object detection algorithms may effectively identify and localize various CXR patterns after training, offering potential clinical utility. Further study is required to improve accuracy and reliability for 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)

PA11

小細胞肺癌患者於一線鉑類化療失敗後之治療模式與存活

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Treatment pattern and survival outcome in patients with small cell lung cancer after failure of first-line platinum-based chemotherapy

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Purpose: Small-cell lung cancer (SCLC) is a highly aggressive malignancy with limited treatment options after failure of first-line (1L) platinum-based chemotherapy. This study aims to evaluate the treatment patterns and survival outcomes of Taiwanese SCLC patients following 1L treatment failure, focusing on the impact of the treatment-free interval (TFI).

Materials and Methods: This retrospective study reviewed the medical records of SCLC patients treated at Taipei Veterans General Hospital from 2012 to 2021. Data on clinical characteristics, systemic treatments after 1L failure, and survival status were collected. Progression-free survival (PFS) and overall survival (OS) were analyzed and stratified by TFI, with TFI <90 days considered resistant relapse and TFI ≥90 days considered sensitive relapse.

Results: A total of 287 patients were analyzed. Of these, 76% received second-line (2L) chemotherapy, and 54.1% received third-line chemotherapy. Topotecan was administered to 25.4% of patients, primarily those with a TFI of 90-179 days. Platinum rechallenge was used in 8.4% of patients, mostly in those with a TFI ≥180 days. The median PFS for 2L treatment was 2.3 months (95% CI, 2.2-2.6), and the median OS was 5.1 months (95% CI, 4.3-6.2). Patients with a TFI ≥90 days had significantly longer PFS (2.6 vs 2.2 months, P=0.011) and OS (9.6 vs 4.0 months, P<0.0001) compared to those with TFI <90 days. Platinum rechallenge showed similar efficacy to topotecan in patients with sensitive relapse (3.0 vs 2.7 months, P=0.61).

Conclusions: The survival outcomes of patients with relapsed SCLC remain poor, particularly in those with resistant relapse. Our findings highlight the importance of optimizing first-line treatment to delay progression, and the need for more effective second-line therapies to improve outcomes for relapsed SCLC 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)

PA12

Lurbinectedin 用於復發小細胞肺癌的真實世界治療效果與安全性分析

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Real-world Efficacy and Safety of Lurbinectedin in the Treatment of Relapsed Small Cell Lung Cancer

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Purpose: Small cell lung cancer (SCLC) has a high recurrence rate and limited treatment options for relapsed or refractory cases. Lurbinectedin, an inhibitor of oncogenic transcription and an alkylating agent, has shown promise in this setting. This study aims to evaluate the treatment efficacy and safety of lurbinectedin in patients with relapsed SCLC in a tertiary medical cancer.

Materials and Methods: This retrospective study reviewed patients treated with lurbinectedin in our institute from 2019 to 2024. Data on clinical characteristics, treatment patterns, treatment-related adverse events (TRAEs), and survival status were collected. Efficacy was assessed in terms of objective response rate (ORR), disease control rate (DCR), progression-free survival (PFS), and overall survival (OS).

Results: A total of 16 patients with de novo SCLC, 4 patients with adenocarcinoma with SCLC transformation (tSCLC), and 1 patient with combined adenocarcinoma with SCLC received lurbinectedin. Among the 16 patients with de novo SCLC, 50% of patients had CNS metastasis prior to lurbinectedin. The median lines of treatment prior to lurbinectedin treatment were 3 lines, and the median duration from diagnosis to lurbinectedin treatment was 15.8 months. The median dosage of lurbinectedin was 2.4 mg/m2, with a median of 2 cycles administrated. The ORR and DCR were both 12.5%. The median PFS and OS was 1.7 months (95% confidence interval [CI]: 0.72-2.68) and 4.4 months (95% CI: 0.72-2.68) after lurbinectedin, respectively. No patient with tSCLC or combined SCLC responded to lurbinectedin. TRAEs occurred in 95.2% of all patients, predominantly hematological TRAEs. Grade ≥3 TRAEs occurred in 61.9% of the patients, with 14.3% leading to discontinuation or death.

Conclusions: Lurbinectedin showed modest efficacy in relapsed SCLC in a real-world setting, possibly due to late administration and suboptimal dosing. Improving patient selection and developing additional treatments are crucial. Further studies are needed to validate these findings and optimize lurbinectedin use.

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

PA13

不同劑量之 Cisplatin 與 Carboplatin 作為接續性輔助化學治療用於早期非小細胞肺癌的存活比較分析：單一中心回溯性世代研究

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Comparative Survival Analysis of Different Doses of Cisplatin and Carboplatin Doublets as Adjuvant Chemotherapy in Resected Early-Stage Non-Small Cell Lung Cancer: A Single Center Retrospective Cohort Study

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Background: Adjuvant chemotherapy is a key treatment for resected early-stage non-small cell lung cancer (NSCLC). However, the optimal cisplatin dose for Asian populations remains unclear, as the standard dose is based on studies in Western populations. This study aimed to compare the clinical efficacy and adverse events of low-dose versus standard-dose cisplatin and carboplatin in resected early-stage NSCLC patients.

Materials and Methods: We retrospectively enrolled patients with resected early-stage NSCLC who received platinum-based adjuvant chemotherapy between April 2011 and March 2023 at a medical center in southern Taiwan. Patients were divided into three groups based on their chemotherapy regimen: low-dose cisplatin (<75 mg/m^2), standard-dose cisplatin (75–100 mg/m^2), and carboplatin. Event-free survival (EFS) and overall survival (OS) were compared using Kaplan–Meier analysis and Cox proportional hazards models.

Results: A total of 267 patients were included in the analysis. There were no significant differences in EFS or OS among the three groups. However, low-dose cisplatin was associated with fewer adverse events compared to standard-dose cisplatin.

Conclusions: Low-dose cisplatin as adjuvant chemotherapy did not compromise clinical outcomes in resected early-stage NSCLC patients and reduced the incidence of adverse events. A prospective randomized trial is warranted to confirm these findings.

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

PA14

免疫療法時代第四期肺腺癌之早期死亡率分析：臺灣單中心回溯性世代研究

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Early mortality in stage IV lung adenocarcinoma in the era of immunotherapy: A single-center retrospective cohort study in Taiwan

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Purpose: Despite advancements in therapies, lung adenocarcinoma remains one of the leading causes of death. Early mortality, defined as death within three months of diagnosis, can lead to unnecessary harm, increased costs, and delayed hospice care. We aim to identify the risk factors associated with early mortality in the era of immunotherapy.

Materials and Methods: Patients who were first diagnosed with stage IV lung adenocarcinoma between 2019 and 2021 at Taipei Veterans General Hospital were retrospectively included in this study. After excluding patients who did not receive any anti-cancer treatment, we compared variables including age, gender, performance status, BMI, smoking status, genetic mutations, PD-L1 expression, and treatment strategy between those who died within 90 days of diagnosis and those who lived longer.

Results: A total of 781 patients were included in this study, with 7.8% dying within 90 days. The 90-day mortality rate was significantly higher in patients older than 65 years (OR 2.48, 95% CI 1.23-5.00), those with an ECOG ≥2 (OR 6.54, 95% CI 3.63-11.8), and those without EGFR or ALK mutations (OR 2.29, 95% CI 1.31-4.00). There was a trend toward higher 90-day mortality in underweight patients, but this was not statistically significant. Among patients with wild-type NSCLC, PD-L1 expression and immunotherapy were not associated with 90-day mortality.

Conclusions: Our findings show that older age, poor performance status, and the absence of EGFR or ALK mutations were associated with higher 90-day mortality. These information may assist clinicians in making more informed decisions about the timing of hospice care. Further studies are needed to evaluate the impact of PD-L1 expression and immunotherapy on early mortality in a more resource-intensive setting.

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

PA15

ALK 陽性晚期非小細胞肺癌病人接受第一線 alectinib 治療的臨床效益：單一醫學中心研究

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Alectinib as First-line Treatment for Advanced and Recurrence ALK-positive Non-Small-Cell Lung Cancer: A Single-center Retrospective Study

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Purpose: The primary objective of this study was to investigate the clinical response rate and progression-free survival (PFS) of alectinib as a first-line treatment in patients with advanced and recurrent ALK-positive non-small cell lung cancer (NSCLC).

Materials and Methods: Between May 2018 and July 2023, we retrospectively enrolled patients with advanced or recurrent NSCLC harboring the ALK fusion gene who received alectinib as a first-line treatment. These patients were analyzed for clinical outcomes.

Results: A total of 40 patients were included in this study, with a median follow-up time of 20.3 months. The median age of the patients was 55 years (range: 33 to 82 years). The gender distribution was equal, with 50.0% male and 50.0% female patients. Regarding smoking status, 77.5% were never-smokers, while 22.5% were former or current smokers. According to the Eastern Cooperative Oncology Group (ECOG) performance status, 82.5% of the patients had a score of 0-1, while 17.5% had a score of 2-4. In terms of cancer staging, 22.5% of the patients were at stage 4A, 62.5% at stage 4B, and 15.0% had experienced recurrence following surgery or concurrent chemoradiotherapy (CCRT). Histologically, 92.5% of the patients had adenocarcinoma, while 7.5% had poorly differentiated carcinoma. At baseline, 47.5% of the patients had brain metastases, while 52.5% did not. Regarding the response to alectinib treatment, 7.5% of patients were not evaluable, 75.0% achieved a partial response, 10.0% had stable disease, and 7.5% experienced progressive disease. The objective response rate was 81.1%, and the disease control rate was 91.9%. The estimated median PFS for patients receiving alectinib was 25.4 months. For patients with baseline brain metastasis, the median PFS was also 25.4 months, while for those without brain metastasis, the median PFS had not been reached by the end of the follow-up period.

Conclusions: Our study demonstrated that alectinib provides a favorable clinical response and prolonged PFS in patients with advanced or recurrent ALK-positive NSCLC. These findings are consistent with data from clinical trials.

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

PA16

具 *EGFR* 基因突變之晚期非小細胞肺癌患者於 Osimertinib 治療失敗後的治療種類及療效之台灣真實世界研究

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Real-World Treatment Patterns and Outcomes of Post-Osimertinib Therapy in Advanced *EGFR*-Mutant NSCLC Patients in Taiwan

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Purpose: With increasing therapeutic options for EGFR-mutated NSCLC, real-world data is crucial to understanding patient outcomes and unmet needs beyond osimertinib. This study seeks to investigate the effectiveness and treatment patterns of post-osimertinib therapies among advanced NSCLC patients in Taiwan, thereby providing valuable insights into the clinical practice landscape.

Materials and Methods: A retrospective database analysis was conducted using records from National Taiwan University Hospital. Patients who received second-line (2L) or third-line (3L) systemic anti-cancer therapy (SACT) after progressing from osimertinib between 2017 and 2021 were included. Primary endpoints were treatment patterns, real-world progression-free survival (rwPFS), real-world time to next therapy (rwTTNT), and real-world overall survival (rwOS).

Results: 114 patients were enrolled, comprising 21 received 2L SACT and 93 received 3L SACT. The EGFR mutations were del-19 (56 patients) and L858R (58 patients). Compared to the 2L SACT cohort, patients receiving 3L SACT exhibited a significantly higher frequency of EGFRT790M mutations (9.5% vs. 69.9%). The SACT regimens administered encompassed 49 platinum-based chemotherapy, 19 platinum-based chemotherapy with other medications, 19 EGFR TKIs, and 16
combinations of EGFR TKIs with anti-angiogenic agents. The median rwPFS was observed to be 3.41 and 2.56 months in the 2L and 3L cohorts, respectively. The rwTTNT was recorded as 4.33 and 5.05 months for 2L and 3L, respectively. Median rwOS extended to 16.52 months in the 2L setting and 18.66 months in the 3L setting. For 3L cohort, platinum-based chemotherapy with other medications could provide a longer rwOS than the other regimens.

Conclusions: Platinum-based chemotherapy was the predominant subsequent treatment after osimertinib. The effectiveness of real-world subsequent treatments following osimertinib remains suboptimal, highlighting the persistent challenges in managing this patient population.

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

PA17

惡性肋膜間皮瘤病人接受治療的臨床預後：單一醫學中心研究

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The Clinical Outcomes of Malignant Pleural Mesothelioma Patients: A Single-center Retrospective Study

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Purpose: Mesothelioma is known for its poor prognosis. This study aims to investigate the clinical factors affecting the survival of mesothelioma patients through a retrospective review of medical records.

Materials and Methods: We retrospectively analyzed the clinical outcomes of mesothelioma patients diagnosed at Taichung Veterans General Hospital between January 2007 and December 2022 through a medical record review.

Results: A total of 31 patients were included in the study. The median age was 64 years (range 23-83 years), with a male predominance (74.2% male, 25.8% female). The distribution of early-stage (I-II) and late-stage (III-IV) disease was nearly equal, at 54.8% and 45.2%, respectively. Smokers comprised 58.1% of the cohort. The most common histological subtype was epithelioid (48.4%). For first-line treatment, 12 patients (38.7%) underwent surgery, with 9 of them receiving adjuvant chemotherapy (29%). Nineteen patients (61.2%) received systemic therapy alone (18 received platinum-based chemotherapy, and 1 received immunotherapy). As second-line therapy, 5 patients (16.1%) were treated with immunotherapy, and 6 patients (19.3%) received radiotherapy during the course of their treatment.

The median overall survival (OS) was 24.3 months. There was no significant difference in OS between females and males (21.3 vs. 44.3 months, p=0.977), or between older (≥65 years) and younger patients (21.3 vs. 44.3 months, p=0.169). Smokers had a median OS of 24.3 months compared to 44.3 months for non-smokers, but this difference was not statistically significant (p=0.977). Patients who underwent surgery with adjuvant chemotherapy showed no significant difference in median OS compared to those who received chemotherapy alone (14.4 vs. 24.3 months, p=0.671). The use of immunotherapy did not significantly affect median OS (12.6 vs. 24.3 months, p=0.902), nor did the use of radiotherapy (24.3 vs. 22.9 months, p=0.168).

Conclusions: This study outlines the clinical characteristics, treatment strategies, and outcomes of patients with malignant pleural mesothelioma. Our findings suggest that neither patient characteristics nor treatment modalities, including surgery, radiotherapy, or immunotherapy, significantly influenced OS. Novel therapeutic approaches are needed to improve outcomes in patients with malignant pleural mesothelioma.

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

PA18

Real-time EBUS-TBNA 在肺癌根治性手術術前評估中的價值：單一中心的回溯性研究

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The value of real-time EBUS-TBNA in the preoperative assessment of curative lung cancer surgery: a single center retrospective study

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Introduction: Lung cancer is the leading cause of cancer-related deaths worldwide. Accurate clinical staging of the mediastinum is crucial in determining appropriate treatment. Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) is a minimally invasive diagnostic procedure that offers a high diagnostic yield for mediastinal lymph node staging. Recently, it has gained precedence over positron emission tomography (PET) and computed tomography (CT) scans as a method for preoperative staging.

Methods: We retrospectively analyzed patients who underwent EBUS-TBNA between January 2021 and March 2024 in our pulmonary medicine center. Patients diagnosed with lung cancer via EBUS-TBNA were included in further analysis. The gold standard for detecting metastatic lymph nodes was surgical nodal dissection. We compared the preoperative lymph status evaluated by PET , CT and EBUS-TBNA to gold standard surgical lymph node dissection pathology to assess their accuracy. We also estimated the discrepancies in nodal staging among all modalities and reported the percentage of down-staging and up-staging after EBUS-TBNA. Additionally, we assessed the resectability of lung cancer using EBUS-TBNA, CT, and PET scans in patients who underwent all three examinations. Fisher's exact test and unpaired Student's t-test were used to examine differences between variables. All statistical analyses were performed in GraphPad version 9.5.1.

Results: Of the 216 patients who underwent EBUS-TBNA, 141 (65%) were diagnosed with lung cancer. Among these, 28 patients (20%) underwent lung resection with nodal dissection. The concordance between surgical pathology and EBUS-TBNA for nodal staging was 86%, significantly higher than that of CT (57%) and PET (63%) scans ($p<0.01$). A high probability of nodal staging changes after EBUS-TBNA was observed. Among 21 patients who received all examinations, the evaluation of resectability was 62% for EBUS-TBNA, 47% for CT, and 43% for PET. These findings align with the superior concordance between surgical pathology and EBUS-TBNA, indicating better predictive value for resectable lung cancer (non-advanced lymph node involvement) using EBUS-TBNA compared to PET/CT scans.

Conclusion: In patients with lung cancer, EBUS-TBNA shows higher accuracy in mediastinal lymph node staging compared to PET/CT alone. Given its precision and feasibility, EBUS-TBNA should be incorporated into pre-surgery staging for accurate nodal status assessment.

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

PA19

支氣管鏡熱蒸氣肺消融術治療肺氣腫：一年追蹤分析

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Bronchoscopic Thermal Vapor Ablation for Severe Emphysema: The Results of 1 Year Follow-Up

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Purpose: For severe emphysema patients, well control is not easy under standard medical treatment only. Bronchoscopic Lung Volume Reduction (BLVR) has been included to GOLD guideline since 2017. And Bronchoscopic Thermal Vapor Ablation (BTVA) is the only BLVR technique available in Taiwan. We want to evaluate the treatment effect in Taiwan.

Materials and Methods: The patients who received BTVA since 2021/01/01 till 2024/10/01 were included. We analysis the changes after treatment in forced expiratory volume of one second (FEV1), Residual volume (RV), 6-minute walking distance (6MWD) and St. George's Respiratory Questionnaire (SGRQ) in 3rd, 6th and 12th month.

Results: Total 14 patients/ 15 treatments were included. 14 patients were male patients. The average age is 66.8 years-old (+/- 7.7) and the average cigarette consumption was 66.1 pack-year (+/- 23.1). In the 14 patients, 6 completed 12 months follow up, 10 completed 6 months follow up, and 13 patients completed 3 month follow up; 2 lost follow up in 9th month, 2 progressed to chronic respiratory failure with non-invasive positive pressure ventilator dependent. The results of change in parameters: FEV1: +22.3mL (3rd month), +9.0mL (6th month), -10.0mL (12th month)/ RV: -10.8mL (3rd month), +104.0mL (6th month), -264.0mL (12th month)/ 6MWD: -3.3meter (3rd month), +6.6meter (6th month), +16.8meter (12th month)/ SGRQ: -10.0 (3rd month), -5.1 (6th month), -13.1 (12th month).

Conclusions: Compared to previous STEP-UP trial performed in European area, although in lung function and lung volume area, BTVA seems showed poor response; however, BTVA showed better response in exercise tolerance and life quality in 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)

PA20

第三代標靶藥物 Osimertinib 在 IIIB-IV 期 EGFR 突變型非小細胞肺癌患者的預後因素及療效：單一中心研究的經驗

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Prognostic Factors and Outcomes of Osimertinib Treatment in Stage IIIB-IV EGFR-Mutant NSCLC Patients:Insights from a Single-Center Study

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Background: This study examines the efficacy of third-generation EGFR-TKI, Osimertinib, in treating patients with Stage IIIB-IV non-small cell lung cancer (NSCLC) with EGFR mutations at China Medical University Hospital between April 2020 and April 2024. We aimed to assess the treatment outcomes, particularly focusing on the presence of central nervous system (CNS) metastases.

Methods: We retrospectively analyzed 70 patients who were initially treated with Osimertinib. Patients were stratified based on CNS metastases, with 39 patients presenting no CNS involvement and 31 with CNS metastases. Key variables included demographics, ECOG performance status, EGFR mutation type, and metastatic spread. Progression-free survival (PFS) was evaluated using Kaplan-Meier analysis, and Cox proportional hazards models were employed to identify independent predictors.

Results: Patients with CNS metastases exhibited higher rates of ECOG ≥ 2 (19.4% vs. 0%, p=0.004) and received radiotherapy more frequently (51.6% vs. 10.3%, p=0.002). Multivariate analysis identified age ≥ 65 years (HR 0.429, p=0.028) and metastasis to ≥3 organs (HR 2.362, p=0.038) as independent predictors of reduced PFS. Median PFS was significantly lower in patients with ≥3 metastatic sites (20.3 months) compared to those with fewer metastases (34.4 months, p=0.024).

Conclusion: Osimertinib demonstrated substantial efficacy in patients with EGFR-mutant NSCLC, with particular challenges in those with multi-organ involvement, which underscoring the need for individualized treatment strategies for advanced NSCLC patients.

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

PA21

支氣管鏡檢後痰液細胞學陽性之臨床意義

李瑞源 [1]
台中醫院胸腔內科 [1]

Clinical Suspecion of Lung Cancer: Post-Bronchoscope Sputum Cytology as a Positive Indicator for Staging and Malignancy Assessment

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Introduction: This paper aims to discuss the case of a 76-year-old non-smoking male patient with no family history of lung cancer but presenting with hoarseness of voice. The initial diagnosis from a local clinic physician revealed vocal cord paralysis, prompting the patient to seek further evaluation. Chest X-ray revealed an unknown shadow in the left lower lung, and subsequent chest ultrasound confirmed the presence of lung consolidation. Further investigations, including bronchoscopy, computed tomography (CT) guidance biopsy, positron emission tomography (PET), pathology analysis, and molecular genetic testing, identified the diagnosis as stage T2N2M1a adenocarcinoma with a PD-L1 expression level of over 50% in the central region of the left lower lung. It is worth noting that post-bronchoscope sputum cytology examination showed suspicious malignant cells.

Materials and Methods: The diagnostic procedures for the patient included bronchoscopy, CT-guided biopsy, PET scan, pathology analysis, and molecular genetic testing. Additionally, sputum samples were obtained through bronchoscopic bronchial epithelial cell brushing and bronchoalveolar lavage.

Results: The bronchoscopy-aided sputum cytology analysis revealed the presence of suspicious malignant cells, suggesting the likelihood of lung cancer. The advanced stage, T2N2M1a adenocarcinoma, was confirmed by CT guidance biopsy, PET scan, and other imaging techniques, along with pathology and molecular genetic testing.

Discussion: According to previous studies, post-bronchoscope sputum cytology with positive malignant cells serves as an essential indicator for lung cancer staging and malignancy assessment. The presence of malignant cells in sputum cytology can provide valuable information regarding tumor characteristics, such as size, nodal involvement, metastasis, and molecular markers like PD-L1 expression levels.

Conclusion: The case of this 76-year-old male patient highlights the significance of post-bronchoscope sputum cytology examination in predicting the staging and malignancy of lung cancer. The positive presence of suspicious malignant cells in sputum cytology further supports the diagnosis of advanced stage T2N2M1a adenocarcinoma in the central region of the left lower lung. This emphasizes the importance of integrating sputum cytology analysis into the comprehensive diagnostic approach for 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)

PA22

早發性肺腺癌於東南亞移工之啟示

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台中醫院胸腔內科 [1]

Early-Onset Lung Adenocarcinoma in a Young Vietnamese Migrant Worker: A Case Report and Literature Review

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Introduction: Lung adenocarcinoma is a common type of lung cancer, traditionally affecting older populations with a history of smoking. However, recent trends show an increasing number of cases in younger individuals. Early-onset lung cancer, particularly in Southeast Asian populations, presents unique clinical characteristics and challenges in diagnosis and treatment. This case report details a 38-year-old Vietnamese migrant worker diagnosed with possible late stage lung adenocarcinoma, highlighting the need to examine the epidemiology, prognosis, and genetic mutations of lung cancer in Southeast Asia. Furthermore, it discusses whether adjustments in lung cancer screening guidelines, particularly for smokers, are warranted based on current evidence from Taiwan and other regions.

Materials and Methods: A 38-year-old male Vietnamese migrant worker, with a 10-year history of smoking (10 cigarettes per day), was found to have ambiguous abnormalities in the left lung during a routine health examination mandated by Taiwan's Ministry of Labor regulations. Initial acid-fast bacillus sputum screening was negative. One month later, follow-up imaging revealed a significant enlargement of the left hilum. A series of diagnostic tests, including computed tomography (CT) and CT-guided biopsy, confirmed a 2.5 cm primary lung adenocarcinoma in the left lower lobe. Magnetic resonance imaging (MRI) of the brain showed no metastasis, and genetic testing for EGFR, ROS, ALK, and PDL1 mutations were negative, indicating a wild-type form of the tumor. Multiple ground-glass opacities in the left lung suggested the possibility of lung-to-lung metastasis. The patient opted to return to Vietnam for further treatment.

Results: Diagnostic findings revealed a 2.5 cm adenocarcinoma in the left lower lobe, with no signs of metastasis to the liver or brain, though multiple ground-glass opacities were observed in the left lung. Genetic testing was negative for common mutations (EGFR, ROS, ALK, PDL1), classifying the tumor as wild-type. The absence of these mutations indicates a potentially less favorable prognosis, as targeted therapies would not be applicable. The case highlights the potential for early-onset lung cancer in a younger, smoking population from Southeast Asia, raising concerns about differences in lung cancer characteristics compared to older populations in other regions.

Discussion: Early-onset lung cancer, particularly in Southeast Asian populations, is a growing concern. This case raises questions about the incidence, prognosis, and genetic mutation patterns of lung cancer in younger individuals from this region. Studies have shown that younger lung cancer patients, especially those without significant genetic mutations, may have a different disease trajectory compared to older populations. This patient, despite being relatively young, had a significant history of smoking, which may have contributed to the development of lung adenocarcinoma. Southeast Asia has been noted for its unique epidemiological patterns of lung cancer, with younger patients and wild-type tumors more prevalent compared to Western populations. The findings in this case warrant further research into genetic differences and potential environmental factors contributing to lung cancer in this region.

Conclusion: This case of early-onset lung adenocarcinoma in a 38-year-old Vietnamese migrant worker underscores the need to reconsider lung cancer screening protocols in Taiwan and other countries, particularly for younger smokers. While this patient exhibited a wild-type tumor without common genetic mutations, the presence of ground-glass opacities and potential lung-to-lung metastasis emphasizes the aggressive nature of early-onset lung cancer. Further studies are needed to explore the incidence and genetic mutation patterns of lung cancer in Southeast Asia, and whether tailored screening programs, particularly for younger smokers, could improve early detection and outcomes. Current literature highlights the importance of early detection in lung cancer, especially in populations with high smoking rates. Studies from Taiwan's National Health Screening Program suggest that modifying the criteria for lung cancer screening—such as lowering the age for screening or adjusting based on smoking history—could improve outcomes for younger individuals at risk. Furthermore, genetic studies have shown that Southeast Asian populations may have distinct patterns of genetic mutations compared to Western populations, influencing prognosis and treatment options. Based on this case and existing literature, it may be necessary to adjust lung cancer screening guidelines in Taiwan and similar regions to account for younger smokers, particularly those from high-risk populations such as Southeast Asian migrant workers. Further research into the genetic and environmental factors contributing to early-onset lung cancer is essential to guide more effective prevention, screening, and treatment strategies.

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

PA23

非小細胞肺癌同步化學放射治療十年後成效分析

李瑞源 [1]
台中醫院胸腔內科 [1]

Long-term Follow-up of a Stage IIIB Poorly Differentiated Non-Small Cell Lung Cancer Patient Treated with CCRT: A Case Report

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Introduction: Non-small cell lung cancer (NSCLC) accounts for a significant portion of cancer-related deaths worldwide. Late-stage NSCLC patients without access to appropriate targeted therapy or immunotherapy covered by health insurance face a challenging prognosis. We present a case of a 74-year-old male patient with a history of smoking, familial lung cancer, prior pulmonary tuberculosis, and cardiac arrhythmias. The patient presented with hoarseness and a swollen right neck, which led to a diagnosis of vocal cord paralysis. Further investigations revealed a suspicious shadow in the right lung apex on chest X-ray, confirmed as lung consolidation by chest ultrasonography. Subsequent bronchoscopy revealed a malignant tumor and further imaging, including computerized tomography (CT) scan and positron emission tomography (PET), along with histopathological and molecular genetic evaluations, confirmed the diagnosis of poorly differentiated NSCLC (T4N2M0) in the right lung apex.

Materials and Methods: The patient underwent a comprehensive treatment plan that included 15 cycles of gemcitabine plus carboplatin chemotherapy and concurrent chemoradiotherapy (CCRT) consisting of 15 sessions of localized radiation therapy. Regular surveillance, including chest X-ray, CT scan, and ultrasonography, was performed to monitor the disease progression. After four years of completing the treatment, a follow-up CT scan-guided biopsy was performed on the right lung apex lesion, which revealed necrotic tissue without any signs of recurrence. Subsequent follow-up appointments focused on managing complications such as cardiac arrhythmias and fatigue. In the tenth year of follow-up, a moderate amount of pleural effusion was detected, but cytological examination of the removed fluid did not indicate the presence of cancer cells. Additionally, no significant changes were observed in the original lung apex lesion.

Results: Over the course of ten years of follow-up, the patient exhibited no signs of lung cancer recurrence. Regular monitoring and appropriate management of complications contributed to the favorable outcome. The absence of targeted therapy or immunotherapy covered by health insurance highlights the significance of CCRT in the long-term survival of late-stage NSCLC patients.

Discussion: The management of advanced NSCLC remains a challenge, particularly for patients without access to targeted therapy or immunotherapy. This case demonstrates the potential efficacy of CCRT in extending the disease-free interval and overall survival of patients. While the precise mechanisms underlying this success are yet to be determined, the combination of chemotherapy and radiation therapy appears to have played a crucial role.

Conclusion: Our case report emphasizes the importance of CCRT as a viable treatment option for late-stage poorly differentiated NSCLC patients lacking appropriate targeted therapy or immune-based treatments covered by health insurance. The ten-year disease-free survival achieved in this patient indicates the potential of CCRT in achieving favorable outcomes in challenging clinical scenarios. Further studies and investigations are warranted to validate and expand upon these findings.

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

PA24

晚期肺腺癌合併細胞程式死亡 - 配體 1 陽性之回溯性研究

李瑞源 [1]
台中醫院胸腔內科 [1]

Retrospective Case Series Analysis of advanced Lung Adenocarcinoma with PDL1(+) Presenting with Vocal Cord Paralysis and Hemoptysis

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Introduction: Lung adenocarcinoma is one of the most prevalent types of lung cancer, with various clinical presentations and disease stages. In this retrospective case series analysis, we aim to investigate two unique cases of advanced lung adenocarcinoma presenting with vocal cord paralysis and hemoptysis. We will discuss the clinical characteristics, diagnostic procedures, treatment options, and outcomes for these patients.

Materials and Methods: We reviewed the medical records of two male patients diagnosed with advanced lung adenocarcinoma. Patient A, a 76-year-old non-smoker with no family history of lung cancer, presented with hoarseness and was diagnosed with vocal cord paralysis. Imaging studies, including chest X-ray and chest ultrasound, revealed a lung opacity and pleural effusion. Patient B, a 53-year-old smoker with a history of hypertension, diabetes, and mild cerebral infarction, presented with hemoptysis for two months. Diagnostic procedures, including chest X-ray, computed tomography, bronchoscopy, and molecular genetic testing, were performed to confirm the diagnosis and assess the disease stage.

Results: Patient A was diagnosed with stage T2N2M1a lung adenocarcinoma in the left lower lobe. The tumor was centrally located, and a high PD-L1 expression, greater than 50%, was observed. Patient B was diagnosed with stage T4N2M1c lung adenocarcinoma involving the left pulmonary hilum and with lumbar vertebral metastasis. The PD-L1 expression was also greater than 50%.

Discussion: The presentation of vocal cord paralysis in patient A and hemoptysis in patient B led to further investigations, ultimately revealing late-stage lung adenocarcinoma. Both cases highlight the importance of thorough diagnostic procedures, including imaging studies, bronchoscopy, and molecular genetic testing, for accurate staging and treatment planning. The high PD-L1 expression observed in both cases may have potential implications for targeted immunotherapy.

Conclusion: Advanced lung adenocarcinoma can present with diverse clinical manifestations, and prompt diagnosis is crucial for appropriate management. Our retrospective case series analysis emphasizes the significance of comprehensive diagnostic approaches and individualized treatment strategies for patients with advanced lung adenocarcinoma. Further studies are warranted to explore the therapeutic implications of PD-L1 expression in advanced 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)

PA25

以進行性咳嗽及肺不張為表現的支氣管內黏液表皮樣癌：病例報告

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Endobronchial Mucoepidermoid Carcinoma Presenting with Progressive Cough and Atelectasis: A Case Report

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Mucoepidermoid carcinoma (MEC), the most common malignant salivary gland tumor, accounts for 0.1–0.2% of malignant lung tumors. Pulmonary MECs are commonly found in the segmental or lobar bronchi, rarely present as endobronchial lesions. We hereby present the case of a 46-year-old woman who presented with persistent cough and dyspnea for three months. Her chest X-ray revealed total collapse of the left lung and compensatory hyperinflation of the right lung. Computed tomography (CT) showed a soft tissue nodule with prominent enhancement in the left main bronchus, decreased left lung volume with the trachea and mediastinal structures shifted to the left side, diffuse ground-glass infiltrates, reticulation, and bronchiectasis with mucus impaction involving the left upper lobe (LUL) and left lower lobe (LLL), as well as mild left pleural effusion. Diagnostic bronchoscopy revealed an endobronchial lesion almost completely obstructed the left main bronchus. Pathological report of biopsy suggested that the papillary lesion composed of oncocytic cells, which showed positive of cytokeratin (CK) and p40 and negative of TTF-1, napsin-A, HMV-45, collagen-IV, S-100, and smooth muscle actin. A papillary lesion of squamous differentiation was favored, but there was sufficient information for the diagnosis of carcinoma. Patient was then referred to thoracic surgery department for surgery to relieve the blocked bronchus. Endobronchial cryoablation and argon plasma coagulation was performed, and successful recanalization was achieved. The specimen was sent for pathologic examination again. The specimen showed predominant solid sheets of squamoid cells with focal cystic change. The non-keratinizing squamoid cells showed uniform nuclear with mild atypia and low mitotic activity. Immunostains showed positive of CK 5/6, focal positive of CK 7, and weak positive of p40. There were also intermediate cells with clear cytoplasm, and mucin producing cells, highlighted by mucicarmine stain. The overall picture suggested low-grade mucoepidermoid carcinoma.

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

PA26

真實世界中，安立適用於晚期 ALK 陽性非小細胞肺癌的治療效果與安全性：台灣的前瞻性研究

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The effectiveness and safety of alectinib for advanced ALK(+) non-small cell lung cancer in the real world: a prospective study in Taiwan

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Introduction: Alectinib is approved for the treatment of advanced non-small cell lung cancer with ALK fusion (ALK-positive NSCLC). However, its real world effectiveness and safety profiles have not been reported in Taiwan.

Methods: We prospectively analyzed ALK-positive NSCLC patients who received alectinib in the real-world practices in National Taiwan University Hospital. The patients' clinicopathologic characteristics, the tumor responses, the alectinib doses and the adverse effects (AEs) were recorded and analyzed.

Results: A total of 109 ALK-positive NSCLC patients received alectinib were enrolled. The median age was 55.8 year-old; 51% were female; 73% were never smoker and all were positive for ALK immunohistochemical stain. 77 (70%) patients received alectinib as the first-line ALK tyrosine kinase inhibitors (TKIs). The median progression-free survival (PFS) was 51.9 (95% confidence interval [CI], 17.9 – 86.0) months. The other 32 (30%) patients receive alectinib as second or more-lines of ALK TKIs. The median PFS was 26.7 (95% CI, 0 – 64.7) months. The alectinib PFS was shorter when given after resistance to a second-generation ALK TKI (5.4 vs 51.9 months, p = 0.03). 90 (82%) patients started alectinib at the standard dose (600mg bid), while 4 (4%) patients started at 450mg bid and 15 (14%) patients started at 300mg bid. Any AEs were noted in 71(65%) patients. The most common was constipation in 25 (23%), followed by aminotransferase elevation in 21 (19%), skin rash in 15 (14%) and CPK elevation in 14 (13%). Grade 2 pneumonitis occurred in 1 (1%) patient. Four (4%) patients experienced grade 3 AEs, including 3 (3%) with aminotransferase elevation and 1 (1%) with skin rash. No grade 4 or more AE observed. There were 32 (29%) patients with dose reduction, 7 (6%) patients with dose interruption and 3 (3%) patients with dose discontinuation (one for pneumonitis, one for skin rash and one for constipation).

Conclusions: Alectinib was commonly used as the first-line treatment for advanced ALK-positive NSCLC. The real-world effectiveness was comparable to the efficacy in clinical trials. The AEs were generally mild and manageable.

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

PA27

Denosumab 的使用尤其是良好的順從性與肺癌患者更好的整體存活率相關骨轉移：一項回顧性隊列研究

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Denosumab Usage especially Good Compliance was Associated with Better Overall survival of Lung cancer Patients with Bone Metastasis: A retrospective cohort study

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Background: Lung cancer with progressive bone metastases usually leads to skeletal-related events (SREs) and reduced quality of life. Denosumab has been proven to delay the onset of SREs and improve overall survival. However, factors associated with overall survival of lung cancer patients with bone metastasis were seldom discussed.

Methods: We conducted a retrospective cohort study of 622 lung cancer patients treated in a southern Taiwan medical center from 2018 to 2022, comparing the patients with bone metastasis treated with denosumab (n=90) to those who did not receive denosumab. Kaplan-Meier survival analysis and Cox proportional hazards models were used to evaluate the factors associated with incidence of SREs and overall survival of lung cancer patients with bone metastasis.

Results: Denosumab significantly improved survival rates, , particularly when combined with Tyrosine Kinase Inhibitors (TKIs). High persistence and compliance with Denosumab therapy, along with completing at least five treatment cycles, are crucial for achieving optimal outcomes.

Conclusion: The use of Denosumab in lung cancer patients with bone metastasis significantly enhances overall survival, suggesting it should be considered a valuable addition to the treatment regimen for this patient population. Future studies should focus on strategies to improve adherence to Denosumab treatment to maximize its clinical benefits.

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

PA28

免疫治療於表皮生長因子受體酪胺酸激酶抑制劑抗藥性之非小細胞肺癌的治療效果與預後

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Efficacy and Outcomes of Immunotherapy-based Treatments in EGFR-TKI Refractory NSCLC

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Purpose: Epidermal growth factor receptor tyrosine kinase inhibitors (EGFR-TKIs) are the standard first-line treatment for advanced EGFR-mutant non-small cell lung cancer (NSCLC), but most patients experience tumor progression. Identifying optimal immunotherapy (IO)-based strategies and timing after EGFR-TKI failure to improve survival outcomes remains debate.

Materials and Methods: A retrospective analysis evaluated outcomes in EGFR-mutant NSCLC patients treated with either immunotherapy (IO) alone or combined with chemotherapy (IO+C/T) after disease progression. Data from Jan. 2014 to Dec. 2022 at Taipei Veterans General Hospital were analyzed using Kaplan-Meier for overall survival (OS) and time to treatment failure (TTF), with Cox proportional hazard models assessing survival predictors.

Results: This study enrolled 107 patients with advanced EGFR-mutant NSCLC, all of whom had previously been treated with first- to second-generation EGFR-TKIs. The IO alone group included 33 patients, while 74 patients were in IO+C/T group. Both the IO and IO+C/T groups had an objective response rate (ORR) of 20%, while the disease control rate (DCR) was higher in the IO+C/T group (69%) compared to the IO group (53%). Patients who received platinum-based chemotherapy had a higher ORR compared to those who received non-platinum-based chemotherapy (27.9% vs. 7.1%, p=0.03). The IO+C/T group had a trend toward longer OS and TTF compared to the IO alone group (OS: 20 vs. 16 months, p=0.70; TTF: 4 vs. 2 months, p=0.46). Multivariate analysis revealed that patients who had undergone more than 4 lines of treatment before starting IO-based therapy had poorer OS (HR 2.21, 95% CI 1.16-4.21, p=0.01) and TTF (HR 1.89, 95% CI 1.11-3.19, p=0.019) compared to those with fewer than 4 lines of treatment. The HRs for OS were 4.32 (95% CI 1.95-9.61, p<0.001) for patients with more than 4 lines of treatment and 2.05 (95% CI 1.04-4.05, p=0.038) for those with 2-4 lines of treatment, in comparison to patients who had 0-1 lines of treatment, suggesting that earlier initiation of IO-base treatment can significantly reduce the risk of death.

Conclusions: This study highlights the benefits of early incorporation of IO-based therapies in treating advanced EGFR-mutant NSCLC after EGFR-TKI failure. Combining immunotherapy with chemotherapy showed a trend toward improved survival over immunotherapy alone. Additionally, the negative impact of multiple prior treatments underscores the importance of earlier IO therapy initiation.

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

PA29

評估定量即時聚合酶連鎖反應檢驗非小細胞肺癌突變對臨床的影響

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The Clinical Impact of Quantitative Real-time Polymerase Chain Reaction Test for Detecting Mutations from Non-small Cell Lung Cancer

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Purpose: Traditionally, patients with advanced non-small cell lung cancer (NSCLC) undergo testing for *EGFR, ALK, ROS1*, and *BRAF* V600E mutations to determine eligibility for targeted therapy. However, some actionable mutations may remain undetected. The quantitative real-time polymerase chain reaction Amoy PLC (11-in-1) multiplex (multiplex qPCR) kit can detect a broader range of genetic alterations in NSCLC cells, including *EGFR, ALK, ROS1, KRAS, BRAF, HER2, RET, MET, NTRK1, NTRK2* and *NTRK3*. Therefore, we conducted a study to assess the clinical impact of this multiplex qPCR test.

Materials and Methods: This observational study, conducted at two centers, included patients diagnosed with NSCLC who underwent the multiplex qPCR test. Clinical data, mutation patterns, PD-L1 expression, treatment regimens and outcomes were analyzed.

Results: Between October 2023 and August 2024, 70 patients were enrolled in the study. Five patients were excluded due to insufficient sample quality. Among the remaining 65 patients, 12 had mutations detected by both the conventional test and the multiplex qPCR test, and all 12 of these patients received targeted therapy based on the mutation results. Twenty-six patients had mutations detected only by the multiplex qPCR test. Among these patients, the most frequent mutations were *KRAS* G12A/V/R or G13C (n = 6), followed by *MET* exon 14 skipping (n = 5), *KRAS* G12C (n = 4), *RET* rearrangements (n = 4), *EGFR* exon 19 deletions (n = 3), *EGFR* L858R (n = 1), *EGFR* exon 20 insertion (n = 1), *BRAF* V600E (n = 1), and *KRAS* G12D/S (n = 1). Of these 26 patients, 13 received targeted therapies based on their identified mutations: five received tepotinib, four were treated with EGFR-TKIs, two with selpercatinib, one with amivantamab, and one with a combination of dabrafenib and trametinib. Finally, 27 patients had no detectable mutations in either test.

Conclusions: The multiplex qPCR test was able to identify some genetic mutations that conventional tests missed. These results can help inform clinical practice and facilitate personalized treatment. Further studies are required to assess the survival benefits associated with the use of the multiplex qPCR 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)

PA30

肺腺癌惡性肋膜積水與伺機感染：腫瘤微環境之免疫抑制

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Management of Concurrent Malignant Pleural Effusion and Opportunistic Infections: A Case Study

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Introduction: This case study presents the management of a 94-year-old woman with advanced lung cancer, malignant pleural effusion, and concurrent opportunistic infections. The patient's medical history included hypertension, hyperlipidemia, and a previous stroke, which resulted in impaired mobility. Additionally, her son was diagnosed with colorectal cancer. The evaluation of the patient revealed a large amount of pleural effusion, which was drained multiple times. Subsequent analysis of the pleural fluid showed the predominance of lymphocytes, clear l fluid, and positive Aspergillus antigen in eight samples. Atypical cells were present in five samples, and adenocarcinoma was identified in one sample. TB PCR was positive, but HIV testing yielded negative results. Computed tomography showed collapsed lung and enlarged pre-tracheal lymph nodes in the right lung.

Objective: The aim of this case report is to discuss the management strategies employed in treating late-stage lung cancer with concurrent malignant pleural effusion in an elderly patient. The association between opportunistic infections, including TB and Aspergillus, in this case will also be explored. The importance of a comprehensive examination of various body fluids in improving symptomatology and quality of life for patients with advanced lung cancer will be emphasized.

Materials and Methods: The patient underwent multiple pleural effusion drainages, along with treatment consisting of anti-tuberculosis and antifungal medications. The response to treatment was closely monitored. Various laboratory tests, including pleural fluid analysis, chest X-ray, ultrasound, computed tomography, and HIV testing, were performed. The patient's medical records were also reviewed.

Results: Following pleural effusion drainage and treatment with anti-tuberculosis and antifungal medications, the patient's symptoms improved. However, due to her advanced age and lack of proactive management, the lung adenocarcinoma persisted. This case highlights the rare occurrence of concurrent TB and Aspergillus infections and underscores the impact of the tumor microenvironment on host immunity, as well as the effects of tumor-released cytokines on the immune response against surrounding microorganisms.

Discussion: The findings from this case prompt important considerations for managing advanced lung cancer with malignant pleural effusion, particularly in elderly patients. Comprehensive examination of various body fluids is crucial for accurate diagnosis and treatment planning in patients with advanced lung cancer. Furthermore, the occurrence of concurrent TB and Aspergillus infections in this case warrants further investigation. The interactions between the tumor microenvironment, host immune function, and the immune response against microorganisms in the context of malignancy require further exploration.

Conclusion: This case emphasizes the challenges encountered in managing advanced lung cancer with concurrent malignant pleural effusion and opportunistic infections. A comprehensive examination of body fluids plays a critical role in accurately diagnosing and planning treatment for patients with advanced lung cancer. Further research is necessary to gain a better understanding of the intricate interplay between tumor-host interactions and the immune response against microorganisms in 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)

PA31

評估血管內皮生長因子 / 血管內皮生長因子受體信號抑制對表皮生長因子受體酪胺酸激酶抑制劑誘導非小細胞肺癌誘導細胞生長抑制和凋亡的影響

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Evaluation of the effect of VEGF/VEGFR signaling suppression on EGFR-TKI induced growth inhibition and apoptosis in non-small cell lung cancer

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Purpose: The signaling pathways associated with Bim deletion and vascular endothelial growth factor/vascular endothelial growth factor receptor (VEGF/VEGFR) contribute to the resistance of non-small cell lung carcinoma (NSCLC) to epidermal growth factor receptor tyrosine kinase inhibitors (EGFR-TKIs). Bevacizumab (VEGF inhibitor) with EGFR-TKIs provides significant benefits for advanced NSCLC patients with EGFR mutations and Bim deletions. However, inhibitory mechanism of combined VEGF/VEGFR signaling suppression and EGFR-TKI in NSCLC is ambiguous. This study aims to investigate how VEGF/VEGFR signaling suppression combined with EGFR-TKI affects tumor cell growth and apoptosis in NSCLC cells.

Materials and Methods: NSCLC HCC827 cell line (EGFR mutation) will be used in this study. We will evaluate cell viability, flow cytometry, and Western blot to assess the effects of VEGF and VEGF small interfering RNA (siRNA) on erlotinib (EGFR-TKI)-induced growth inhibition and apoptosis. We will also evaluate the combined anti-proliferative and apoptotic effects of lenvatinib (an angiogenesis inhibitor) and erlotinib in HCC827 cells with or without Bim silencing.

Results: The findings indicate that VEGF significantly mitigates the cytotoxic effects of erlotinib in HCC827 cells, while the application of VEGF siRNA enhances the sensitivity of thses cells to erlotinib. These results suggest that VEGF plays a role in upregulating the resistance of HCC827 cells to erlotinib. Furthermore, Bim siRNA has been shown to effectively diminish erlotinib-induced cytotoxicity in HCC827 cells. The silencing of Bim leads to a significant reduction in the expression of cleaved caspase-8 and caspase-9 in NSCLC HCC827 cells following erlotinib treatment. Additionally, our research demonstrates that lenvatinib significantly enhances the anti-proliferative effect of erlotinib in HCC827 cells with Bim silencing.

Conclusions: Our data indicate that VEGF upregulates the resistance of HCC827 cells to erlotinib, while VEGF siRNA sensitizes HCC827 cells to erlotinib treatment. Furthermore, we observed that lenvatinib significantly enhances the anti-proliferative effects of erlotinib in HCC827 cells with Bim silencing.

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

PA32

顱內再生不良性血管外皮細胞瘤併遲發性肺轉移病例報告與文獻回顧

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Intracranial anaplastic hemangiopericytoma with delayed pulmonary metastasis, a case report and literature review

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The solitary fibrous tumor (SFT) is a fibroblastic mesenchymal neoplasm that can arise in multiple locations throughout the body, including the central nervous system (CNS). Once classified as solitary fibrous tumor/hemangiopericytoma (SFT/HPC) in the 2016 CNS classification under the mesenchymal, non-meningothelial tumor subgroup, it is now referred to solely as solitary fibrous tumor (SFT) in the 2021 CNS classification. Research has shown that the NAB2-STAT6 fusion gene is involved in its pathogenesis. SFTs generally display indolent behavior, with studies indicating low rates of local recurrence and distant metastasis within five years of follow-up. CNS SFTs are classified into WHO grades 1, 2, and 3 based on mitotic activity and necrosis, and they tend to be more aggressive than non-CNS SFTs, often resulting in lower survival rates and higher rates of local recurrence and metastasis. Delayed metastasis can occur, with some cases documented as long as 199 months after initial resection.

We present a case of delayed pulmonary metastasis from a WHO grade 3 intracranial anaplastic hemangiopericytoma, which developed 10 years after the initial resection and adjuvant external beam radiation therapy (EBRT). The patient experienced only intermittent dyspnea on exertion. A routine chest X-ray, conducted as part of chronic obstructive pulmonary disease (COPD) follow-up, revealed multiple pulmonary nodules, some of which had cavitation. A chest computed tomography (CT) scan showed a cavitary nodule measuring 2.2 centimeters in the right lower lung and a solid nodule measuring 1.4 centimeters in the right middle lung. The patient underwent thoracoscopic wedge resection of the tumors in both the right middle and lower lungs. Pathological analysis confirmed the presence of squamous cell carcinoma in the right lower lung and SFT in the right middle lung.

In conclusion, while SFT is a rare condition, it can be potentially lethal, and delayed recurrence or metastasis after a significant interval has been documented. Therefore, long-term follow-up for recurrence is essential.

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

PA33

晚期肺癌的重大不良心血管事件：一項多中心隊列研究

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Major adverse cardiovascular events in advanced-stage lung cancer: a multicenter cohort study

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Purpose: Lung cancers are common worldwide. First-line targeted therapy and chemotherapy are both standard treatments in the current guidelines. With the development of new anticancer therapy, the lifespan of patients with late-stage lung cancer has increased. Cardiovascular events can occur during cancer treatment. This observational study aimed to report the incidence of major adverse cardiovascular events (MACE) after cancer treatment using real-world data.

Materials and Methods: Patients diagnosed with advanced-stage lung cancer between January 2011 and December 2017 were enrolled. Data were collected from the Chang Gung Research Database (CGRD).

Results: We identified 4406 patients with advanced lung cancer, of whom 2197 received first-line epidermal growth factor receptor tyrosine kinase inhibitor (EGFR-TKI) therapy and 2209 received first-line platinum-based chemotherapy. Most patients in the first-line EGFR-TKI group were never-smokers (74.9%), whereas those in the first-line chemotherapy group were ever-smokers (66.0%). The incidence of MACE was not significantly different between the two groups (12.0% versus 11.9%, $p = 0.910$). However, the incidence of ischemic stroke was higher in the first-line EGFR-TKI group than in the first-line chemotherapy group (3.9% versus 1.9%, $p < 0.001$).

Conclusions: MACEs are common in patients with advanced-stage lung cancer during treatment. The incidence of MACE was similar between the first-line EGFR-TKI therapy and first-line chemotherapy groups. Although more patients in the EGFR-TKI group were female and never-smokers, the risk of ischemic stroke was higher in patients who received first-line EGFR-TKI therapy than in those who received first-line chemotherapy.

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

PA34

氣管發炎性肌纖維母細胞腫瘤：案例報告

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Inflammatory myofibroblastic tumor of trachea: A case report

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Introduction: Inflammatory myofibroblastic tumor, a rare mesenchymal neoplasm with intermediate malignant character, can arise in any site of the body. Here, we report a case with tracheal inflammatory myofibroblastic tumor (IMT).

Case Presentation: A 49-year-old man with diabetes mellitus presented to the emergency room due to progressive dyspnea for days. His vital signs were stable except for tachypnea at triage. On physical examination, mild stridor was noted. Neck computed tomography revealed a tracheal tumor below the vocal cords. He was then admitted to the intensive care unit (ICU) for compromised airway. Bronchoscopy examination disclosed the tumor nearly obstructing the airway. Biopsy was done and pathologic report showed spindle cells arranged in storiform or fascicular pattern admixed with prominent lymphoplasmacytic infiltration within fibrous stroma. Immunohistochemical staining showed tumor cells are positive for Anaplastic lymphoma kinase (ALK). IMT was diagnosed. Sleeve-resection of the tumor was done by a chest surgeon then. After the operation, the patient was extubated smoothly and has outpatient clinic follow-up now.

Discussion: IMT was considered a benign mesenchymal tumor previously, with the pathological character of myofibroblastic spindle cell proliferation and lymphocyte infiltrate. It was re-classified "intermediate" for the nature of locally aggressive and rare metastasis by the World Health Organization in 2020. Symptoms of the patients depend on the site of IMT, include asymptomatic, painless tumor, chest pain, cough, abdominal pain, fever, generalized malaise, and body weight loss. Although IMT can occur in any site of the body, the most common site is in the abdominal cavity. The treatment of IMT comprises operation and systemic therapy. For most operable IMT, surgical resection leads to better prognosis. Chemotherapy and ALK tyrosine kinase inhibitors are reserved for inoperable IMT. About 50% of IMT encompass ALK gene rearrangement. Crizotinib exhibits efficacy in ALK-positive IMT and was approved in adult and pediatric patients with unresectable, recurrent, or refractory ALK-positive IMT by U.S. FDA in 2022. The sequential treatment for ALK-positive IMT after failure of crizotinib is still under investigation.

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

PA35

肺部腺鱗癌病人常見基因突變與預後之真實世界資料

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Real-world Data of Oncogenic Alterations in Patients of Lung Adenosquamous Carcinoma and Their Clinical Outcome

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Purpose: Lung cancer is the leading culprit of cancer-related mortality in Taiwan. Adenosquamous carcinoma (ADSC) is a unique type of lung cancer. The WHO defined ADSC as a tumor comprising morphologic patterns of both adenocarcinoma (Ad) and squamous cell carcinoma (SqCC), and each pathologic component exceeds 10% of total tumor volume. The incidence rate of lung ADSC was reported to be around 0.4 − 4.0% among all pulmonary malignancy. Although ADSC has morphologic coexistence of two different histologic entities, patients of lung ADSC were believed to have the worst outcome as compared to pure Ad or pure SqCC. The present study aims to investigate the oncogenes percentage in lung ADSC and explores the treatment response of TKI in lung ADSC.

Materials and methods: A retrospective cohort study was performed at an affiliated tertiary hospital in northern Taiwan, the National Taiwan University Hospital (NTUH). Patients diagnosed of lung ADSC were screened from the Cancer Registry of NTUH. The clinical features, survival condition, anti-cancer therapy, and treatment response were reviewed. Genetic alteration profiles were recorded. All categorical variables were analyzed with Pearson's $\chi 2$ tests, except where a small size (less than 5) required the use of Fisher's exact test. The overall survival was plotted by the Kaplan–Meier method and compared by the log-rank test. Multivariable analysis for overall survival was performed using the Cox's proportional hazards model. Two-sided p-values of less than 0.05 were considered significant.

Results: From Jan. 2004 to Dec. 2018, a total number of 102 patients diagnosed as lung ADSC from the Cancer Registry of NTUH were included for data analysis. The mean age of the enrollees at diagnosis was 64.9 ± 11.8 years, and 54 (52.9%) of them was male. There were more never-smokers (n=63, 61.8%) than ever-smokers (n=39, 35.9%). The ECOG performance status was good in most of the patients (n=98, 96.1%), while the initial staging was distributed as followed, stage I (n=30, 29.4%), stage II (n=12, 11.8%), stage III (n=32, 31.4%), stage IV (n=28, 27.5%). Diagnoses were made based on surgical specimen in most cases (n=78, 76.5%). Cases with Ad component exceeding 50% account for half of the studied subjects. There were 52 patients harbored EGFR mutation among those with available genetic profile (n=52/84, 61.9%), with deletion 19 being the most common mutation (n=30/52, 57.7%). Two patients had ALK rearrangement (n=2/42, 4.8%). Uncommon genetic alteration was rarely noticed, with 1 patients had moderate ROS-1 rearrangement (n=1/22), and 1 patient with MET exon 14 skipping (n=1/4). There was 31 out of 44 patients with mutant EGFR ever received effective TKI. The median overall survival time for stage IV SqCC, ADSC and Ad were 7.9, 18.6, 22.1 months, respectively.

Conclusions: The frequency of driver mutation in lung ADSC patients, especially EGFR, is similar to patients of lung Ad in Taiwan. Aggressive search for oncogenes in ADSC patients may provide therapeutic benefits.

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

PA36

一家醫學中心使用 Pemetrexed 學名藥加上鉑類藥物作為非小細胞肺癌一線化療的經驗

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Experience of a Medical Center Using Pemetrexed Synthon Plus Platinum-Based Therapy as First-Line Chemotherapy for Non-Small Cell Lung Cancer

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Purpose: Pemetrexed synthon is a generic drug, and the objective of this study was to evaluate its efficacy and safety when used in combination with platinum-based chemotherapy as a first-line treatment for non-small cell lung cancer (NSCLC). The study sought to determine the treatment outcomes and side effect profile of this regimen in a clinical setting.

Materials and Methods: Between September 2022 and September 2024, 22 patients with lung adenocarcinoma were treated with pemetrexed synthon plus a platinum-based drug at this medical center. The average age of the patients was 61.3 years, with 17 males and 5 females. Among them, 21 had adenocarcinoma, and 1 had non-small cell carcinoma. The stages of the disease were as follows: 12 patients with stage 4A, 9 with stage 4B, and 1 with stage 4C. All patients tested negative for driver gene mutations, and their PD-L1 expression levels were below 50%.

Results: The mean progression-free survival (PFS) was 4.7 months, and the mean overall survival (OS) was 7 months, with the median PFS and OS not yet reached. Among the 15 patients treated for over 3 months, 7 had a partial response (PR), and 5 had stable disease (SD), resulting in an objective response rate (ORR) of 58% and a disease control rate (DCR) of 80%. Side effects included Grade 1-2 nausea and vomiting in 4 patients, neutropenia in 2 patients, and anemia in 1 patient. As of the conclusion of the study, 6 patients had died due to disease progression.

Conclusions: The combination of pemetrexed synthon and platinum-based therapy has demonstrated efficacy and safety as a first-line chemotherapy regimen for non-small cell lung cancer. This regimen has provided promising outcomes in this hospital's clinical experience, making it a viable option for NSCLC 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)

PA37

晚期肺癌患者周邊血液免疫細胞的臨床特徵及其與治療結果的關聯性

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Clinical Features of Peripheral Blood Immune Cells and Their Association with Treatment Outcomes in Advanced Lung Cancer Patients with Progressive Disease

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Purpose: Immune system dysfunction is linked to tumorigenesis and disease progression in lung cancer. The characteristics of peripheral blood immune cells in advanced lung cancer, particularly during disease progression, have rarely been studied.

Materials and Methods: This observational, prospective study was conducted to enroll advanced lung cancer patients from April 2022 to April 2023. Peripheral blood samples for immune cell analysis were collected during disease progression after at least one line of systemic treatment. Clinical variables, including progression-free survival (PFS) and overall survival (OS) were recorded.

Results: A total of 30 patients with advanced lung cancer were enrolled, of whom 21 (70%) were male. The initial cancer staging of diagnosis was stage IV (70%) and stage IIIB/IIIC (30%). The histological types of lung cancer included adenocarcinoma (73.3%), squamous cell carcinoma (20%), and small cell carcinoma (6.7%). All patients received first-line systemic treatment, and 26 (86.7%) underwent subsequent treatment following disease progression. Peripheral blood immune cell immunophenotyping analysis demonstrated an increased percentage of lymphocytes (19.9% vs. 23.6%, p=0.0474) from pre-treatment to post-disease progression. In the analysis of treatment outcomes, a higher percentage of CD8+ T cells was associated with better median PFS of previous line of treatment (25.1 months vs. 7.3 month, p=0.035). In the correlation analysis, the percentage of nonclassical monocytes was positive correlated with the PFS of the previous line of chemotherapy (r=0.7, p=0.02). The percentage of intermediate monocytes was also positively correlated with the PFS of the previous line of targeted therapy (r=0.62, p=0.01). Conversely, the neutrophil-to-lymphocyte ratio (NLR) was negatively correlated with the PFS of the previous line of immunotherapy (r=-0.99, p=0.003). For the subsequent line of treatment, the percentage of CD8+ T cells was positively correlated with the PFS of the next line of chemotherapy (r=0.58, p=0.04).

Conclusions: In patients with advanced lung cancer, particularly during disease progression after systemic treatment, an increase in lymphocyte percentages was observed post-treatment. A higher percentage of CD8+ T cells correlates with improved PFS from prior treatments, indicating that specific immune cell profiles may serve as potential biomarkers for treatment outcomes.

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

PA38

惡性肋膜間皮癌的臨床表現，治療預後及危險因子分析：來自南台灣的多中心回溯性研究

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Clinical Characteristics, Treatment Outcomes, and Prognostic Factors in Malignant Pleural Mesothelioma: A Retrospective Analysis from Southern Taiwan

Introduction: We conducted a retrospective study of patients pathologically diagnosed with malignant pleural mesothelioma (MPM) at three Kaohsiung Medical University-affiliated hospitals. Electronic medical records were reviewed to assess baseline characteristics, including asbestos exposure, treatment regimens, response rates, median progression-free survival (PFS), median overall survival (OS), and adverse drug reactions.

Results: A total of 69 patients were included in the study, with a male predominance (71.1%) and a median age of 67.4 years at diagnosis. Occupational exposure to asbestos was reported in 55.1% of patients, and 26.1% had a prior history of asbestosis. Epithelioid mesothelioma was the most common histological subtype (59.4%), and 92.8% of patients were diagnosed at advanced, unresectable stages (stages 3 or 4). Treatment modalities included chemotherapy, immunotherapy, surgery, and radiotherapy, while 23.1% of patients received only supportive or hospice care. Among those receiving chemotherapy, 69% were treated with pemetrexed plus platinum as the first-line regimen, resulting in a response rate of 26.3% and a disease control rate of 71.1%. The median overall survival (OS) for the pemetrexed plus platinum group was 14.43 months, and the median progression-free survival (PFS) was 9.0 months. Patients receiving only supportive care had a significantly lower median survival of 1.97 months ($p < 0.001$) compared to those who received active treatment. No significant prognostic factors, including gender, smoking status, asbestos exposure, radiotherapy, or surgical intervention, were identified in the analysis. The most common serious adverse events during pemetrexed plus platinum treatment were anemia (52.0%), thrombocytopenia (13.1%), and liver function impairment (5.2%).

Conclusion: This is the first retrospective analysis of MPM in Taiwan. Cox regression analysis revealed no significant prognostic factors. The median OS was 14.43 months, and the median PFS was 9.0 months in patients treated with pemetrexed plus platinum as the first-line regimen.

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

PA39

標靶治療後對肺轉移性非小細胞肺癌進行原發腫瘤切除與放射線治療之比較：健保資料庫數據研究

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Primary Tumor Resection VS Radiotherapy for pulmonary metastatic Non-small-cell Lung Cancer After First-Line TKI Treatment: A national data Study

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Purpose: There has been no large-scale, prospective, randomized study assessing the impact of thoracic surgery compared with radiotherapy in patients with stage IV epidermal growth factor receptor (EGFR)-mutant lung adenocarcinoma who respond to EGFR tyrosine kinase inhibitor (TKI) therapy. To address this gap, we designed a propensity-score-matched, nationwide, population-based cohort study to evaluate the effects of compared thoracic surgery with radiotherapy in this patient population.

Materials and Methods: We included patients with stage IV EGFR-mutant lung adenocarcinoma, categorizing them into two groups based on their treatment. The case group comprised patients who underwent thoracic surgery after responding to EGFR-TKI therapy, while the comparison group consisted of patients treated with EGFR-TKI and radiotherapy until tumor progression. Both groups were matched at a 1:1 ratio for comparison. The endpoint is overall survival.

Results: In the comparison of TKI + Surgery (N=235) and TKI + Radiotherapy (N=796) groups, the gender distribution showed that 23.34% of patients in the surgery group were female, compared to 76.66% in the radiotherapy group. For males, the distribution was 22.09% in the surgery group and 77.91% in the radiotherapy group. The age distribution between the groups showed no statistically significant difference after matching. The 5-year OS of was 63.17% and 23.15% in the surgery and radiotherapy groups, respectively (log-rank $p < 0.001$). The HR 0.27.

Conclusions: Thoracic surgery significantly prolonged overall survival in patients with stage IV EGFR-mutant lung adenocarcinoma who responded to EGFR-TKI treatment, compared to primary lung radiotherapy. These results highlight the potential benefits of thoracic surgery and provide a strong rationale for further clinical trials to eliminate selection bias and confirm its true 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)

PA40

合併使用靜脈注射免疫球蛋白及大劑量全身性皮質類固醇治療肺腺癌患者使用 Pembrolizumab 誘發之細胞因子釋放症候群

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Combined IVIG and High-Dose Systemic Corticosteroids for the Management of Pembrolizumab-Induced Cytokine Release Syndrome in Lung Adenocarcinoma

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Background: Cytokine release syndrome (CRS) is a well-known immune-related adverse event following chimeric antigen receptor (CAR) T-cell therapy, but it is rarely reported after immune checkpoint inhibitor (ICI) therapy. We present a rare case of CRS associated with pembrolizumab use in a patient with lung cancer.

Case presentation: A 61-year-old woman with lung adenocarcinoma, cT4N0M1a, stage IV, with contralateral lung metastases, harboring a TP53 mutation and programmed death-ligand 1 (PD-L1) expression (tumor proportion score [TPS] = 0), presented with a 1-week history of intermittent fever, myalgia, and worsening dyspnea on exertion following her 8th maintenance treatment with pembrolizumab and pemetrexed. Physical examination revealed bilateral crackles in the lungs. Laboratory tests showed elevated C-reactive protein (CRP) levels, and a chest X-ray revealed increased bilateral lung infiltrates. A chest computed tomography (CT) scan demonstrated stable pulmonary lesions, but newly developed interlobular septal thickening and ground-glass opacities in both lungs. She was initially treated with empiric antibiotics for pneumonia with sepsis. Systemic corticosteroid was also initiated for suspected immune-related adverse events (irAE). However, her condition worsened, progressing to multiple organ dysfunction syndrome, including respiratory failure, renal failure, thrombocytopenia, and acute hepatitis, with elevated IL-6 levels. Tocilizumab was administered for suspected cytokine release syndrome (CRS) but showed limited efficacy. Subsequently, combined intravenous immunoglobulin (IVIG) and high-dose systemic steroids were given, leading to a gradual improvement in her symptoms. She was eventually discharged in stable condition.

Conclusion: This case highlights the rare occurrence of cytokine release syndrome (CRS) following pembrolizumab therapy in lung cancer. The combination of intravenous immunoglobulin (IVIG) and high-dose systemic corticosteroids was a safe and effective treatment after the failure of standard-dose systemic corticosteroids and tocilizumab.

Keywords: Lung adenocarcinoma, Cytokine release syndrome, Pembrolizumab, Intravenous immunoglobulin, Corticosteroid

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

PA41

第 I 期非小細胞肺癌的早期篩查與肺功能保留手術進展：來自醫學中心的十年數據分析

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Advances in Early Detection and Lung-Sparing Surgery for Stage I NSCLC: A Decade of Data from a Medical Center

Introduction: Lung cancer remains one of the leading causes of cancer deaths globally, with non-small cell lung cancer (NSCLC) being the most prevalent type. Early detection, particularly in Stage I, is essential for improving survival outcomes. The implementation of low-dose computed tomography (LDCT) screening has significantly increased the detection of smaller, asymptomatic tumors at earlier stages. Advances in surgical techniques, such as segmentectomy and wedge resection, have further enabled comparable survival outcomes to lobectomy in patients with small tumors while preserving lung function.

Methods: This retrospective study analyzed NSCLC patients treated at Kaohsiung Medical University Hospital from 2010 to 2022. Data were collected on Stage I NSCLC subgroups (IA1, IA2, IA3, IB) and surgical interventions. Kaplan-Meier survival analysis was used to assess overall survival, and ANOVA was employed to compare stage distribution and survival outcomes across different subgroups and surgical techniques.

Results: The proportion of Stage I NSCLC cases increased markedly, rising from 9.3% in 2010 to 33.8% in 2017. Stage IA1 saw the most notable increase, from 12.1% in 2018 to 38.2% in 2022, reflecting the impact of LDCT screening. Surgical interventions also shifted, with lobectomy rates declining from 75% in 2010 to 43.6% in 2022, while segmentectomy rose from 0% to 22.9% and wedge resection increased from 0% to 29.8% during the same period.

The 5-year survival rates showed a clear correlation with tumor size: Stage IA1 had the highest survival rate at 95.7%, followed by IA2 (90.7%), IA3 (77.4%), and IB (80.8%). Patients diagnosed in the earlier stages (IA1 and IA2) had significantly better overall survival outcomes compared to those diagnosed at later stages ($p = 0.00023$). Additionally, segmentectomy and wedge resection were shown to provide comparable survival outcomes to lobectomy in tumors ≤2 cm, while preserving lung function and reducing postoperative morbidity.

Discussion: LDCT screening has dramatically improved the early detection of NSCLC, particularly in Stage I disease. This has led to a significant shift toward lung-sparing surgeries, such as segmentectomy and wedge resection, which offer excellent survival outcomes in small tumors. These findings highlight the importance of early detection and the evolving role of tailored, minimally invasive surgical interventions in optimizing long-term survival for patients with Stage I 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)

PA42

由 2012 到 2018 年台灣健檢資料庫分析血脂肪數據與肺癌風險的相關性研究

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Lipid Levels and Lung Cancer Risk: Findings from the Taiwan National Data Systems from 2012 to 2018

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Background: Lipids are known to be involved in carcinogenesis, but the associations between the serum lipid profile and different lung cancer histological classifications remain unknown.

Methods: Individuals participating in the national adult health surveillance from 2012--2018 were included. For patients who developed lung cancer during follow-up, a 1:2 control group of non-lung cancer participants was selected after matching for age, sex, body mass index and year of health examination. Multivariate conditional logistic regression was used to explore the associations between lipid profiles, different lung cancer histological classifications and epidermal growth factor receptor mutation statuses. Subgroup, sensitivity, and dose response analyses were also performed.

Results: A total of 4,704,853 participants (30,337 lung cancer participants and 4,674,516 non-lung cancer participants) were included. In both the main analysis and sensitivity analysis, the associations remained constant between lower high-density lipoprotein (HDL) cholesterol levels and a higher risk of lung cancer (main analysis: OR: 1.13 [1.08 — 1.18]) and squamous cell carcinoma (1.29 [1.16 — 1.43]). Hypertriglyceridemia was associated with a lower risk of adenocarcinoma (0.90 [0.84 — 0.96]) and a higher risk of small cell lung cancer (1.31 [1.11 — 1.55]). Hypercholesterolemia was associated with a lower risk of squamous cell carcinoma (0.84 [0.76 — 0.94]). In the subgroup analysis, lower HDL cholesterol levels were associated with a greater risk across most subgroups. HDL cholesterol levels also demonstrated a dose response association with the development of lung cancer.

Conclusions: Lipids are linked to varying risks of lung cancer, and HDL cholesterol is particularly significant. Our findings could provide insights for population-based cancer prevention and 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)

PA43

腦部影像中囊性病變的分析：聚焦於具有表皮生長因子受體（EGFR）突變的肺癌

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Analysis of cystic lesions in brain imaging: a focus on lung cancer with epidermal growth factor receptor mutation

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Purpose: The purpose of this study is to analyze cystic lesions in brain imaging identified in our hospital between January 2019 and May 2024, with a specific focus on cases related to lung cancer, particularly those with epidermal growth factor receptor (EGFR) mutations.

Materials and Methods: This retrospective analysis included brain Magnetic Resonance Imaging (MRI) scans from patients in our hospital, where 195 cases presented with cystic lesions in the cranial cavity. The cases were classified as follows: lung cancer-related lesions (19 cases), brain parenchymal cystic lesions (140 cases, including pituitary adenoma and brain metastasis from other cancers like breast cancer), and non-brain parenchymal lesions (36 cases).

Results: Among the 195 cases, 19 (9.7%) were lung cancer-related, including 10 men and 9 women. Of these, 16 cases were adenocarcinoma, with 12 harboring EGFR mutations (such as exon 19 deletion, L858R, and T790M). One case, initially presenting with brain metastasis (EGFR G719X mutation), progressed to leptomeningeal carcinomatosis after 10 months of tyrosine kinase inhibitor (TKI) treatment.

Conclusions: Although most cystic lesions in brain imaging are benign, lung cancer with EGFR mutation, particularly adenocarcinoma, requires careful monitoring. There is a significant risk of progression to leptomeningeal carcinomatosis following TKI failure. This highlights the importance of vigilance in patients with lung cancer and brain metastasis, especially those with EGFR mutations.

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

PA44

氣切管位置不佳導致氣壓傷在成氣管憩室破裂併縱膈氣腫與皮下氣腫

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Barotrauma resulted from malposition of tracheostomy tube related trachea diverticulum rupture with pneumomediastinum and subcutaneous emphysema

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Introduction: Tracheal diverticulum is a type of paratracheal air cyst found in 1% of the population that is often asymptomatic and usually detected incidentally by imaging methods. Tracheal diverticulum are divided into two subgroups: congenital and acquired. Dysphagia, odynophagia, neck pain, hoarseness, hemoptysis, choking, and recurrent episodes of hiccups and burping can also be seen in symptomatic patients.

Case Report: We describe an 87-year-old female admitted to our hospital with symptoms of general malaise, productive cough, and difficulty breathing. Pneumonia was impressed and the patient received empirical antibiotics treatment. Due to bilateral vocal cord paralysis with stridor, tracheostomy was performed to prevent upper airway obstruction with asphyxia. However, acute onset of dyspnea and desaturation occurred 3 days after tracheostomy, then ambu bagging and mechanical ventilation were performed but low tidal volume and high pressure was noted. Chest X-ray showed pneumomediastinum and subcutaneous emphysema. Bronchoscopy revealed tracheal diverticulum in anterior aspect of trachea about 2 cm below tracheostomy wound. Then tracheostomy tube was changed to a prolonged type to prevent malposition. However, tracheostomy tube moved outward 3 days later and was assumed to move into the trachea diverticulum. Then this patient expired due to respiratory failure.

Discussion: It was assumed that tracheostomy tube malposition in the tracheal diverticulum caused barotrauma with pneumomediastinum and subcutaneous emphysema during ambu bagging and sputum suction. A 3D reconstruction of a CT scan was performed, which confirmed the clinical suspicion of a tracheal diverticulum in the anterior aspect of the trachea.

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

比較肺阻塞嗜酸性與非嗜酸性急性惡化之臨床預後及痰液微生物菌相變化的相關性

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Comparative Analysis of Outcomes and Changes of Sputum Microbiome Between Eosinophilic and Non-Eosinophilic COPD Acute Exacerbation

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Purpose: Recent studies suggest eosinophilic AECOPD as a specific phenotype; however, the clinical outcomes were inconsistent, and the short-term changes in sputum microbiome remain unclear.

Methods: We retrospectively included AECOPD patients admitted to National Cheng Kung Universal Hospital from January 2013 to December 2022. Patient data and clinical outcomes were obtained from electronic medical records. The primary outcome was respiratory failure rate. In addition, self-expectorated sputum was prospectively collected on days 1 and 5 of hospitalization between June 2020 and May 2021, and 16S rRNA gene segments (V3-V4) were extracted for sputum microbiome identification. Eosinophilic AECOPD were defined as blood eosinophils (bEOS) exceeding 2% at admission.
Results: From the analysis of 348 AECOPD hospitalizations, patients with bEOS ≥ 2% had shorter hospital stays and respiratory failure days (β-coefficient: -4.2 and -3.9, $P < 0.001$ and =0.037, respectively), a lower risk of respiratory failure and intensive care unit admission (odds ratio (OR): 0.21 and 0.39, $P < 0.001$ and =0.001, respectively). Additionally, these patients exhibited a lower incidence of pneumonia-related AE. In the sub-cohort of 30 AECOPD patients undergoing sputum microbiome analysis, a significant decrease in Shannon diversity was observed at the phylum and genus level in the bEOS < 2% group after 5 days of AECOPD treatment, leading to higher diversity in the bEOS ≥ 2% group at day 5.

Conclusions: Patients with eosinophilic AECOPD demonstrate better short-term clinical outcomes. Eosinophilic AECOPD is associated with a lower risk of pneumonia and a higher microbiome diversity after receiving treatment for AECOPD

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

OB02

硒在治療特發性肺纖維化之角色與相關機轉之探討

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Selenite selectively kills lung fibroblasts to treat bleomycin-induced pulmonary fibrosis

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Purpose: Interstitial lung disease (ILD) treatment is a critical unmet need. Selenium is an essential trace element for human life and an antioxidant that activates glutathione, but the gap between its necessity and its toxicity is small and requires special attention. Whether selenium can be used in the treatment of ILD remains unclear.

Materials and Methods: We investigated the prophylactic and therapeutic effects of selenite, a selenium derivative, in ILD using a murine model of bleomycin-induced idiopathic pulmonary fibrosis (IPF). We further elucidated the underlying mechanism using in vitro cell models and examined their relevance in human tissue specimens. The therapeutic effect of selenite in bleomycin-administered mice was assessed by respiratory function and histochemical changes. Selenite-induced apoptosis and reactive oxygen species (ROS) production in murine lung fibroblasts were measured.

Results: Selenite, administered 1 day (inflammation phase) or 8 days (fibrotic phase) after bleomycin, prevented and treated deterioration of lung function and pulmonary fibrosis in mice. Mechanistically, selenite inhibited the proliferation and induced apoptosis of murine lung fibroblasts after bleomycin treatment both in vitro and in vivo. In addition, selenite upregulated glutathione reductase (GR) and thioredoxin reductase (TrxR) in murine lung fibroblasts, but not in lung epithelial cells, upon bleomycin treatment. GR and TrxR inhibition eliminates the therapeutic effects of selenite. Furthermore, we found that GR and TrxR were upregulated in the human lung fibroblasts of IPF patient samples.

Conclusions: Selenite induces ROS production and apoptosis in murine lung fibroblasts through GR and TrxR upregulation, thereby providing a therapeutic effect in bleomycin-induced IPF.

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

OB03

使用生物製劑治療 T2 高型重度氣喘患者的第二型發炎標誌物與臨床結果的縱向變化

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Longitudinal Changes in Type 2 Inflammatory Markers and Clinical Outcomes in T2-High Severe Asthma Treated with biological agents

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Background: Type 2-high (T2) severe asthma is characterized by elevated T2 inflammatory markers, such as eosinophils and IgE. This study evaluates changes in these markers over time with omalizumab and mepolizumab treatment and their correlation with clinical outcomes.

Methods: Ninety patients with T2-high severe asthma, treated with either omalizumab (n=50) or mepolizumab (n=40), were prospectively followed. Clinical outcomes, including Asthma Control Test (ACT) scores, Forced Expiratory Volume (FEV1), acute exacerbations (AE), and steroid use, were assessed at baseline, 6, and 12 months. Changes in eosinophil counts and IgE levels were also analyzed for correlations with clinical outcomes.

Results: Both treatments significantly improved ACT scores and FEV1 at 6 and 12 months ($p < 0.05$). Reductions in AE and steroid use were also significant ($p < 0.0001$). Correlations between baseline eosinophils and IgE levels were observed for both treatments (omalizumab: $r = 0.31$, p = 0.0403; mepolizumab: $r = 0.44$, $p = 0.0182$). In the omalizumab group, higher baseline eosinophils correlated with greater FEV1 improvement at 6 and 12 months ($r = 0.65$, $p = 0.001$; $r = 0.53$, $p = 0.012$). In the mepolizumab group, reductions in IgE levels strongly correlated with FEV1 improvement ($r = -0.77$, $p = 0.042$; $r = -0.66$, $p = 0.02$).

Conclusion: Omalizumab and mepolizumab significantly improve clinical outcomes in T2-high severe asthma, with changes in T2 markers. Higher baseline eosinophil levels are associated with FEV1 improvement in patients treated with omalizumab, while reductions in IgE are linked to FEV1 improvement in patients treated with mepolizumab.

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

OB04

利用脂質奈米顆粒傳送抑制 Alox15 和 TGF-β1 之核糖核酸減輕肺纖維化

Dual Knockdown of Alox15 and TGF-β 1 by Lipid Nanoparticle-Delivered siRNA in Bleomycin-induced Pulmonary Fibrosis

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Idiopathic pulmonary fibrosis (IPF) is associated with high morbidity and mortality, highlighting the urgent need for more effective treatments with fewer adverse effects. Small interfering RNA (siRNA) delivered via lipid nanoparticles (LNP) has shown both safety and therapeutic potential as a novel treatment strategy. Alox15 and TGF-β 1 were both upregulated in the lung tissues of IPF patients and bleomycin-induced mice. LNP-delivered siRNAs demonstrated superior tissue distribution and efficacy in targeting molecules upregulated in IPF compared to naked siRNAs, and were used to treat bleomycin-induced pulmonary fibrosis in mice. Dual knockdown of Alox15 and TGF-β 1 was achieved using LNP-delivered dual siRNAs, significantly improving lung function, reducing fibrosis severity, and limiting hydroxyproline content in the lungs. The same effect could not be achieved by knocking down Alox15 or TGF-β 1 alone. Thus, dual knockdown of Alox15 and TGF-β 1 via LNP-delivered siRNAs effectively targeted bleomycin-induced IPD, offering a promising potential treatment approach for IPF.

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

OB05

心血管疾病作為非囊性纖維化支氣管擴張症患者死亡率的重要預測因子：來自台灣支氣管擴張症研究合作組織 (TBARC) 的數據

鄭文建[1], 許超群[2], 張嘉凌[3], 陳彥甫[4], 王秉槐[5], 謝孟亨[6], 彭忠衍[7], 詹明澄[8], 魏裕峰[9], 楊聰明[10], 藍胄進[11], 王誠一[12], 林智斌[13], 王耀東[14], 林慶雄[15], 劉世豐[16], 簡榮彥[17], 林鴻銓[6], 鄭世隆[5], 王鶴健[17], 徐武輝[1] 台灣支氣管擴張症合作研究團隊

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Cardiovascular Disease as a Critical Predictor of Mortality in Patients with Non-Cystic Fibrosis Bronchiectasis: Data from Taiwan Bronchiectasis Research Collaboration (TBARC)

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Background: This study aimed to evaluate the impact of cardiovascular disease (CVD)—including congestive heart failure, coronary artery disease, and arrhythmia—on clinical characteristics and outcomes in patients with non-cystic fibrosis bronchiectasis (NCFB). The study also sought to identify independent predictors of CVD and mortality among NCFB patients.

Methods: The study analyzed baseline characteristics and outcomes of 2,753 patients with NCFB, of which 648 had CVD. Univariate and multivariate analyses were performed to identify predictors of CVD and mortality. Patient data, including demographics, comorbidities, and pulmonary function, were compared between those with and without CVD.

Results: Patients with CVD were significantly older (mean age 76.4 vs. 68.8, $p < 0.001$), had higher BMI (22.9 vs. 21.5, $p < 0.001$), and a higher prevalence of comorbid conditions such as hypertension (61.9% vs. 24.5%) and diabetes (27.0% vs. 12.8%). Multivariate analysis identified age (HR: 1.046, $p < 0.001$), BMI (HR: 1.089, $p < 0.001$), and comorbidity score (HR: 1.698, $p < 0.001$) as independent predictors of CVD. For mortality, significant predictors included Pseudomonas aeruginosa infection (HR: 4.013, $p = 0.001$) and CVD (HR: 2.011, $p = 0.037$) in patients with NCFB.

Conclusion: CVD in NCFB patients is associated with more severe clinical profiles and worsened outcomes. Age, BMI, and comorbidity burden are crucial factors in predicting CVD, while CVD and Pseudomonas infection significantly increase mortality risk. These findings underscore the need for targeted management strategies in NCFB patients with cardiovascular 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)

OB06

以決策樹模式合併使用功能性運動指標與病患問卷量表進行肺纖維化存活風險預測：一項前瞻性觀察研究

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Risk Model for Predicting Survival Outcomes Using Functional Exercise and Patient-Reported Outcomes in Fibrotic Interstitial Lung Disease: A Prospective Observational Study

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Purpose: The study aims to develop a risk stratification model using routine patient-reported outcomes and exercise test parameters to predict the high-risk group for mortality in fibrotic interstitial lung disease (F-ILD), and correlate the model with the personalized treatment and follow-up plan.

Materials and Methods: Between December 2018 and December 2022, 246 patients enrolled in the ILD Prospective registry study (IRB no. CE18325, CG24056) and had at least 1-year follow-up except for death were recruited and had GAP, 1MSTS, 6MWD, mMRC, SGRQ, and SF36 parameters at baseline. A risk stratification was developed using tree-based learning method to predict overall survival in the training cohort (n=156) and validated in the testing cohort (n=90) by 2:1 randomly split. Cumulative survival curves were estimated using the Kaplan-Meier method (log-rank test), and the hazard ratio was performed based on Cox regression. A significance level of $P < .05$ was used for statistical significance.

Results: The very-high-risk group—characterized by an SGRQ >34.5 and 1MSTS <21—had a significantly higher hazard ratio (HR = 5.13; 95% CI: 2.54–10.35) compared to the non-very-high-risk group, and their cumulative mortality rates at 1 year, 2 years, and 5 years were 28.87% (95% CI, 19.25%-37.34%), 47.18% (95% CI, 36.06%-56.38%), and 82.42% (95% CI, 67.31%-90.55%), respectively. These estimates were comparable to those of GAP stage III but with narrower confidence intervals.

Conclusions: This study introduces a prognostic risk stratification model for ILD that integrates patient-reported outcomes with functional exercise data, revealing that the SGRQ total score is a strong predictor of overall survival. The model, which includes 6MWD and 1MSTS, outperforms GAP staging and offers benefits like reduced patient fatigue and improved monitoring, warranting further multi-center studies for validation.

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

OB07

嚴重氣喘患者的臨床緩解與小氣道功能的正常化

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Clinical remission in patients with severe asthma focusing on normalization in small airway function

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Purpose: Small airway dysfunction is associated with poor clinical outcomes in patients with severe asthma (SA). Our study aims to investigate the prevalence of clinical remission in patients with SA who completed 12-month follow-up with or without biologics treatment focusing on normalization in small airway function.

Materials and Methods: We retrospectively studied patients with SA who completed 12-month follow-up in Taipei Veterans General Hospital. Clinical remission rate including zero exacerbation, oral corticosteroid (OCS)-free, well-controlled symptoms (defined as asthma control test, ACT score ≥ 20), improvement on forced expiratory volume in 1 second (FEV1) ≥ 100 mL versus baseline, and normalized small airway function [nSAF, defined as reactance area (AX) less than 1.0 kPa·L-1·s-1 measured by impulse oscillometry] at the end of follow-up were analyzed.

Results: A total of 105 patients with SA were enrolled, including 46 (43.8%) patients received biologics treatment (25 patients with omalizumab, 21 patients with mepolizumab, and 3 patients with benralizumab) and 59 (56.2%) who received standardized care without biologics. Compared to patients without biologics treatment, those SA patients who received biologics treatment had a higher rate of OCS-free (30.4% v.s. 3.4%, p = 0.0001) and FEV1 improvement (39.1% v.s. 20.3%, p = 0.0353). There are total 30 patients (28.6%) achieved nSAF in the end of study, including 15 patients (32.6%) with biologics and 15 patients (25.4%) in patients without biologics treatment. Although the nSAF rate between two groups was not statistically different (p = 0.3695), more proportion of patients who received biologics treatment achieved nSAF. Furthermore, patients who received biologics and achieved nSAF had greater improvement in ACT score (+2.0 v.s. +0.0, p = 0.0062) and FEV1 (% predicted) (+11.0 v.s. +0.0, p = 0.0293), more rate of OCS-free (40.0% v.s. 0.0%, p = 0.0071), and significant reduction in blood eosinophil counts (BECs) (-85.0 v.s. -4.0, p = 0.0107) and fractional exhaled nitric oxide (FeNO) (-17.5 v.s. +6.0, p = 0.0375) compared to patients without biologics treatment yet still achieved nSAF.

Conclusions: Normalization of small airway function (nSAF) is an achievable goal in patients with severe asthma, which was found in 32.6% patients who received biologics treatment and completed 12-month follow-up. Compared to those patients without biologics yet still achieved nSAF, patients who received biologics had greater benefits on symptom and pulmonary function improvement, more chance to free from OCS, and significant reduction in T2-inflammatory biomarkers.

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

OB08

評估肺阻塞前期的小氣道功能障礙：來自參數反應映射、脈衝震盪測肺功能測定及氣道炎症模式在東亞族群中的見解

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Evaluating Small Airway Dysfunction in Pre-COPD: Insights from Parametric Response Mapper, Impulse Oscillometry, and Airway Inflammatory Patterns in an East Asian Population

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Purpose: Small airway dysfunction (SAD) is a key feature of chronic obstructive pulmonary disease (COPD). Pre-COPD represents an early stage in COPD progression, identified by SAD or emphysema on CT, even without airflow obstruction. This study evaluates the effectiveness of Impulse Oscillometry (IOS) and Parametric Response Mapping (PRM) in detecting SAD in pre-COPD patients, compared with smoker controls and COPD patients at varying stages of severity.

Materials and Methods: We conducted a prospective cohort study on smokers (>10 pack-years) with typical respiratory symptoms. Participants underwent spirometry, IOS testing, and high-resolution computed tomography (HRCT) in both inspiratory and expiratory phases to quantify PRM_{Emp} and PRM_{fSAD} areas. Bronchoalveolar lavage (BAL) samples were collected for cytokine analysis. Patients with asthma or structural lung diseases (e.g., ILD or bronchiectasis) were excluded.

Results: We analyzed 164 patients: 46 Pre-COPD patients (FEV_1/FVC >0.7, FEV_1 < 80%, and/or emphysema ≥ 5%), 27 mild COPD patients, 43 moderate-to-severe COPD patients, and 48 smoker controls (FEV_1/FVC> 0.7, FEV_1 > 80%, emphysema < 0.5%). IOS analysis revealed SAD prevalence increased from 32.6% in Pre-COPD to 86% in moderate-severe COPD, indicating its progressive impact. PRMfSAD increased with disease severity, ranging from 9.6% in smoker controls to 33.4% in moderate-severe COPD, while PRM_{Emp} rose to 8.3%, reflecting significant lung damage. Notably, 33% of smoker controls exhibited SAD despite minimal emphysema, underscoring the need for early detection beyond spirometry. Both PRM_{Emp} and PRM_{fSAD} demonstrated strong discriminative power between smoker controls and Pre-COPD with AUC = 0.841 ($p < 0.001$) and AUC = 0.731 ($p < 0.001$), respectively. The X5 parameter from IOS was the most effective for distinguishing Pre-COPD from COPD, with AUC = 0.668 ($p = 0.003$). Additionally, the BAL cytokine analysis revealed that IL-6, IL-8, and MCP-1 strongly correlated with disease severity, increasing progressively from Pre-COPD to COPD, emphasizing their role in early inflammation and airway damage.

Conclusion: PRM and IOS detect SAD in pre-COPD, distinguish it from smoker controls and COPD, and support early intervention. Proactive identification of SAD in at-risk populations may slow COPD 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)

PB01

比較不同定義下過量類固醇在高劑量吸入型類固純氣喘病人短期和長期的影響

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Comparison of short-term and long-term effects of excess steroids in patients with asthma on high-dose inhaled corticosteroids under different definitions

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Purpose: We aim to understand the short-term (90 days or three months) and medium-term (180 days or six months) effects of high-dose oral corticosteroids in asthma patients already on high-dose inhaled corticosteroids (ICS), focusing on the side effects within one year and over the long term.

Materials and Methods: To analyze the side effects of oral corticosteroids (OCS) in asthma patients, we selected two study periods: (1) A three-month period: Asthma patients who used high-dose inhaled corticosteroids (ICS) within 90 days, with the first day of this 90-day period as the starting point. Based on OCS usage, the asthma patients were further divided into two groups: (a) Control group: Asthma patients who did not use OCS within one year from the starting point. (b) High-dose group: Asthma patients who used at least 5 mg of OCS daily for at least three months within one year from the starting point (total OCS usage ≥450 mg within 90 days). (2) A six-month period: Asthma patients who used high-dose ICS within 180 days, with the first day of this 180-day period as the starting point. Based on OCS usage, the asthma patients were further divided into two groups: (a) Control group: Asthma patients who did not use OCS within one year from the starting point. (b) High-dose group: Asthma patients who used at least 5 mg of OCS daily for at least six months within one year from the starting point (total OCS usage ≥900 mg within 180 days). We then analyzed the short-term (within one year) and long-term side effects in these two groups.

Results: Studies have shown that even with short-term use of OCS for three months or long-term use for six months, patients face an increased risk of osteoporosis, diabetes, hypertension, infections, mental health issues (such as anxiety and depression), cardiovascular diseases, as well as sepsis, kidney disease, cataracts, and glaucoma. These risks are significantly elevated not only in the long term but also within a short period of one year.

Conclusions: Doctors must weigh the benefits of using OCS for asthma control against the potential health risks, and they should prioritize other treatment options for managing 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)

PB02

嗜酸性粒細胞對氣喘急性發作風險的影響

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The impact of the eosinophil on the risk of acute exacerbation in asthma patients

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Purpose: We aim to comprehensively evaluate the impact of eosinophil levels on the frequency and severity of acute exacerbation (AE) in asthma patients. This study will assess both the short-term (within one year) and long-term effects, providing insight into how varying eosinophil counts influence the overall management and prognosis of asthma over time.

Materials and Methods: Between 2015 and 2020, we identified asthma patients with available blood eosinophil data from the Taiwan Asthma Pay-for-Performance Program database. These patients were then categorized into two groups based on their blood eosinophil levels: the low eosinophil group, consisting of those with eosinophil counts of less than 300 cells/μL, and the high eosinophil group, comprising individuals with eosinophil counts of 300 cells/μL or higher. This classification allowed for a comparative analysis of the impact of eosinophil levels on asthma AE.

Results: A total of 407,725 patients were identified with eosinophil counts of 300 cells/μL or higher (high eosinophil group), while 961,268 patients had eosinophil counts less than 300 cells/μL (low eosinophil group). Using a 1:1 propensity score matching method, we created two subgroups with similar baseline characteristics, each comprising 50,429 patients. After propensity score matching, the incidence rate of severe AE (SAE) within one year was 0.148 per person-year in high eosinophil group compared to 0.107 per person-year in low eosinophil group, with an adjusted hazard ratio (HR) of 1.435. Additional HRs included 1.466 for overall SAE, 1.492 for moderate AE (MAE) within one year, 1.427 for overall MAE, 1.409 for all AE within one year, and 1.427 for overall AE. These findings underscore a consistently higher risk of acute exacerbations among asthma patients with elevated eosinophil levels, even after adjusting for confounding factors such as age, gender, Charlson score, and propensity score.

Conclusions: Elevated eosinophil levels are associated with a significantly higher risk of acute exacerbations in asthma patients, even after adjusting for key confounding factors, highlighting the importance of eosinophil counts as a critical marker in the management and prognosis of 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)

PB03

慢性阻塞性肺疾病 GOLD 與 STAR 肺功能分級穩定性之比較

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Comparison of stability of the GOLD and STAR lung function classification for chronic obstructive pulmonary disease

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Background: The diagnosis of chronic obstructive pulmonary disease (COPD) typically relies on spirometric measurements. The Staging of Airflow Obstruction by Ratio (STAR) classification, a newly proposed system for grading the severity of pulmonary function, has been suggested as a potentially better predictor of outcomes than other classifications. However, the long-term stability of the STAR classification, especially in comparison to the Global Initiative for Chronic Obstructive Lung Disease (GOLD) classification, remains unclear.

Methods: In this retrospective cohort study, we analysed data from 622 patients with COPD, enrolled in a pay-for-performance program at two university hospitals in Taiwan. Patients were classified according to the GOLD and STAR classifications, based on post-bronchodilator spirometry results. The study assessed the agreement between these classifications and the stability of each over a 3-year period, considering patterns of 'no change', 'progression', 'instability', and 'reversal'.

Results: The STAR classification system identified a higher proportion of patients with instability or reversal patterns (42.1%) compared to the GOLD classification (31.0%). While fair coherence was noted between the two classifications over 3 years, the STAR classification demonstrated greater variability. Compared with the GOLD classification, the STAR classification exhibited a higher proportion of instability or reversal patterns in stage 2 but a lower proportion of these patterns in stage 4.

Conclusion: Compared with the GOLD classification, the STAR classification demonstrated higher instability and reversal patterns, suggesting the need for careful consideration for its use in long-term COPD management. Further research is required to explore the clinical implications of these findings and to refine the use of these classifications.

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

PB04

塵肺症病人的白內障風險

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Risk of Cataract in Patients with Pneumoconiosis

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Background: Pneumoconiosis is widely recognized for its association with pulmonary and cardiovascular diseases; however, the link between pneumoconiosis and cataract remains poorly understood. This study aimed to investigate the connection between pneumoconiosis and the subsequent risk of cataract.

Methods: This nationwide retrospective cohort study utilized data from the National Health Insurance database in Taiwan, which includes 31,488,321 individuals. The pneumoconiosis cohort comprised 15,320 patients newly diagnosed between 2008 and 2019. The comparison group consisted of 61,280 individuals without pneumoconiosis, matched 1:4 for age, sex, and diagnosis date. The development of cataract was monitored until the end of 2019. Cox proportional hazard regression models were employed for risk assessment.

Results: The incidence of cataract was 1.68 times higher in the pneumoconiosis cohort than in the comparison cohort (53.3 vs. 30.8 per 1,000 person-years). After adjusting for age, sex, comorbidity, and medication, the adjusted hazard ratio (aHR) was 1.85 (95% confidence interval [CI] = 1.78–1.92). Compared to the comparison cohort, the age-specific aHRs in the pneumoconiosis cohort were 1.37 (95% CI 1.25–1.49) among individuals aged 20–64 years, 1.73 (95% CI 1.63–1.83) among individuals aged 65–74 years, and 2.57 (95% CI 2.39–2.77) among individuals aged ≥75 years. The sex-specific aHRs were 1.88 (95% CI 1.80–1.96) in men and 1.66 (95% CI 1.48–1.85) in women.

Conclusion: This study found that patients with pneumoconiosis are at a higher risk of developing cataract. Healthcare professionals should be more vigilant in monitoring for ocular health in patients with pneumoconiosis to facilitate early diagnosis and 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)

PB05

新一代多模態大型語言模型已經可以通過台灣胸腔科專科筆試

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The New Generation of Multimodal Large Language Models Is Now Capable of Passing the Written Exam for the Chest Medicine Specialty in Taiwan

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Purpose: The latest generation of large language models (LLMs) now includes visual capabilities, allowing them to interpret graphics, images, and videos that are critical in the medical field. This study aims to address the current gap in evaluating vision capabilities in LLM literature by assessing their performance using questions from Taiwan's pulmonary specialist board exam.

Materials and Methods: We obtained pulmonary specialist exam questions and answers from the Taiwan Society of Pulmonary and Critical Care Medicine (TSPCCM, Address, No. 1, Changde St., Zhongzheng Dist., Taipei City 100229. Website: https://www.tspccm.org.tw/), categorizing them into text-based and image-based sections. The dataset included a total of 1,100 questions from 2013 to 2023, with 1,059 being text-only and 41 consisting of both text and image components, with the majority written in non-English and only six in pure English language.

For evaluation, we used GPT-3.5-turbo, which lacks image processing capabilities, alongside GPT-4-turbo, GPT-4o, and Claude 3.5 sonnet, all of which have image processing functionalities. These models were evaluated as of September 3, 2024.

Results: For the text-only questions, totaling 1,059 from 2013 to 2023, GPT-3.5-turbo correctly answered 39, 38, 29, 37, 29, 40, 40, 41, 34, 36, and 41 questions, respectively. In contrast, GPT-4-turbo scored 68, 64, 61, 71, 69, 66, 65, 63, 64, 68, and 74, while Claude 3.5 sonnet achieved scores of 77, 77, 57, 75, 69, 69, 73, 64, 68, 73, and 79. GPT-4o outperformed all, with scores of 80, 77, 68, 85, 79, 78, 81, 70, 76, 76, and 78. For the combined text-and-image section, consisting of 41 questions from 2013 to 2023, GPT-4-turbo correctly answered 1, 2, 2, 3, 0, 0, 1, 1, 2, 1, and 6 questions. Claude 3.5 sonnet answered 1, 4, 0, 2, 1, 1, 1, 2, 2, 3, and 7, while GPT-4o scored 1, 3, 2, 1, 1, 0, 1, 2, 2, 3, and 4.

Conclusions: This study confirms that the latest generation of LLMs, including GPT-4-turbo, GPT-4o, and Claude 3.5 sonnet, significantly outperforms GPT-3.5-turbo in both text-based and text-plus-image tasks. Given the high accuracy of GPT-4o, which is publicly available, there is concern about the potential misuse of such powerful AI tools in cheating on specialty board exams, and caution is advised.

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

PB06

雙重 UNet 架構相較於單一 UNet 在胸部影像語意分割上不具備明顯優勢

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The Performance of the Dual U-Net Architecture Is Not Significantly Superior to the Single U-Net for Chest Image Semantic Segmentation

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Purpose: Medical imaging detection is the second most prominent application of Artificial Intelligence (AI) after large language models, and it is a rapidly advancing field. Machine learning has made significant strides in recent years in detecting diseases such as tuberculosis, pneumonia, and COVID-19. The major advancements in this area are primarily due to the development of Convolutional Neural Network (CNN) based U-Net architectures. This poster aims to compare the performance of single U-Net and double U-Net architectures using a dataset of image-mask pairs from chest X-rays (CXRs), which were never investigated in this field.

Materials and Methods: We utilized CXRs images collected by Pu-Xuan Lu et al. at Shenzhen No.3 People's Hospital, with segmentation masks manually created by Sergii Stirenko et al. A single U-Net model served as a baseline and was compared to a double U-Net architecture. The dataset of 400 training pairs was split into a 3:1 ratio for training and validation/calibration. We applied a cross-validation-like approach: out of four partitions, three were used for training and one for validation/calibration, repeating this process to train four semantic segmentation models, each for 20 epochs.

At the end of each epoch, the model was evaluated by running the test set images through the segmentation models to generate prediction arrays. These arrays were then thresholded from 0.1 to 0.9, producing nine different prediction masks. Evaluation metrics, including Dice score and Intersection over Union (IoU), assessed the similarity between prediction masks and ground truth masks. After evaluating all 166 images in the test set at each threshold, we averaged the Dice score and IoU values to obtain the mean Dice score (mDice) and mean IoU (mIoU) for that epoch. This process was repeated for all four models, generating four datasets, which were statistically analyzed to determine significant differences.

The Shapiro-Wilk test assessed the data distribution between the two groups. If both p-values were greater than 0.05, the data were considered normally distributed, and a t-test was used for significance testing. If either group was not normally distributed, the Mann-Whitney U test was used to determine statistical significance between the groups.

Results: Two metrics, Dice scores and IoU scores, were used for evaluation. For the Dice metric, the average of four mDice scores for a single UNet model with thresholds ranging from 0.1 to 0.9 at epoch 20 were 0.9364, 0.9482, 0.9529, 0.9546, 0.9546, 0.9531, 0.9500, 0.9444, and 0.9330. For the dual UNet model, the average scores were 0.9314, 0.9422, 0.9473, 0.9504, 0.9520, 0.9523, 0.9511, 0.9480, and 0.9405. The p-value from the Mann-Whitney U Test was 0.2648, indicating no significant difference between the single UNet and the dual UNet models.

For the IoU metric, the average of four mIoU scores for the single UNet with thresholds from 0.1 to 0.9 at epoch 20 were 0.8817, 0.9030, 0.9118, 0.9153, 0.9155, 0.9130, 0.9078, 0.8981, and 0.8786. For the dual UNet model, the average scores were 0.8729, 0.8924, 0.9020, 0.9078, 0.9111, 0.9119, 0.9103, 0.9052, and 0.8927. The p-value from the Mann-Whitney U Test was 0.3216, which also indicated no significant difference between the single UNet and the dual UNet models.

Conclusions: In our research, we have confirmed that a basic single UNet architecture performs quite well and is sufficient for handling lung field image segmentation problems. The use of multiple UNet architectures does not necessarily lead to better performance. This finding can serve as a reference for future researchers when developing larger and deeper architectures.

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

PB07

塵肺症與後續失智症風險

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Pneumoconiosis and Subsequent Risk of Dementia

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Background: Pneumoconiosis is well-established as a risk factor for pulmonary and cardiovascular diseases; however, its relationship with dementia has not been thoroughly investigated. This study aimed to explore the potential association between pneumoconiosis and the subsequent risk of dementia.

Methods: This nationwide retrospective cohort study utilized data from Taiwan's National Health Insurance database, encompassing 31,729,802 individuals. The pneumoconiosis cohort included 17,871 patients newly diagnosed between 2009 and 2020. A comparison cohort of 71,484 individuals without pneumoconiosis was matched 1:4 by age, sex, and diagnosis date. Dementia incidence was tracked until the end of 2020. Cox proportional hazards regression models were applied to evaluate the risk of dementia.

Results: The incidence of dementia was 1.44 times higher in the pneumoconiosis cohort compared to the matched cohort (17.6 vs. 12.3 per 1,000 person-years). After adjusting for age, sex, comorbidities, and medication use, the adjusted hazard ratio (aHR) was 1.38 (95% confidence interval [CI]: 1.30–1.46). Age-specific aHRs in the pneumoconiosis cohort were 1.26 (95% CI: 1.15–1.38) for individuals aged 65–74 years and 1.49 (95% CI: 1.38–1.60) for those aged ≥75 years. Sex-specific aHRs were 1.39 (95% CI: 1.31–1.48) in men and 1.30 (95% CI: 1.11–1.51) in women.

Conclusion: This study demonstrates that patients with pneumoconiosis are at an elevated risk of developing dementia. Healthcare providers should remain vigilant for cognitive or memory decline in these patients to ensure early detection and intervention.

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

PB08

非結核分枝桿菌肺病與肌肉質量的關聯以及支氣管擴張症低肌肉質量的危險因子

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The association of nontuberculous mycobacteria lung disease with muscle mass and risk factors of low muscle mass in bronchiectasis

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Purpose: There is scarce information about the relationship among bronchiectasis, non-tuberculous mycobacteria (NTM) lung disease (NTM-LD) and sarcopenia. The aim of the study was to investigate the correlation between NTM-LD and muscle mass and risk factors of low body muscle mass in bronchiectasis.
Methods: The participants of bronchiectasis with NTM-LD (NTM-LD group) were screened from NTM-LD patients in 2008-2020. Besides, bronchiectasis without NTM isolation were screened from outpatient clinics and CT report in 2017 – 2020 (non-NTM group). CT images were segmented to obtain the cross-section muscle area at the first lumbar vertebra (L1). L1 muscle index (L1MI) was corrected by height square, which was the indicator of whole-body muscle mass. Sex-specific thresholds of low L1MI were male: 34.6 and female: 25.9 cm2/m2

Results: The study population had 211 participants. There were 28 in the NTM group and 183 participants in the non-NTM group. Co-morbidities were not significant different between the two groups. Multivariate analysis illustrated decreased 13% risk of NTM in the increment of 1 cm2/m2 L1MI. The prevalence of low L1MI was 16.6% in the study population. However, the prevalences of low L1MI were similar between NTM and non-NTM groups (21.4 vs. 15.8%, p = 0.41). In view of low L1MI in the study population, male, BMI < 18.5 kg/m2 and exacerbation ≧ 3 times in one year were independent risk factors of low L1MI [adjusted hazard ratio (95% confidence interval): 6.83 (2.51 – 18.58), p < 0.001; 4.40 (1.58 – 12.27), p = 0.005, and 4.64 (1.44 – 14.93), p = 0.01, respectively]

Conclusions: Male with low BMI and frequent exacerbation were the risk factors of low L1MI in bronchiectasis. Though NTM-LD was not the risk factor of low L1MI, the increment of L1MI was associated with less risk of simultaneous NTM-LD.

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

PB09

不同職場的睡眠調查

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Sleep survey in three different workplaces

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Background: Obstructive sleep apnea (OSA) is characterized by intermittent pauses in airflow due to upper airway collapse during sleep. Although polysomnography is the gold standard for diagnosing OSA, its accessibility is limited. This study aimed to assess the prevalence of OSA among participants in different workplaces using the STOP-Bang screening questionnaire.

Methods: This cross-sectional study evaluated participants aged 20 years and older from May to December 2023. Participants completed the STOP-Bang questionnaire, which included questions about their sex, age, height, weight, snoring, tiredness, observed apnea, high blood pressure, and neck circumference. The STOP-Bang score was used to categorize participants into low, intermediate, or high risk for OSA. A total score of 2 or less indicated low risk, while a score of 3 or 4 indicated intermediate risk. A score of 5 or higher was defined as a high risk for OSA.

Results: A total of 234 participants took part in the sleep survey: 75 insurance salespeople, 121 real estate agents, and 38 graduate students. The average body mass index (BMI) of real estate agents was significantly higher compared to insurance salespeople and graduate students (25.9 ± 4.7 kg/m² for real estate agents vs. 24.2 ± 3.4 kg/m² for insurance salespeople and 23.2 ± 3.5 kg/m² for graduate students, P = 0.001). The mean age of insurance salespeople was higher than that of real estate agents and graduate students (43.0 ± 13.5 years for insurance salespeople vs. 37.2 ± 10.9 years for real estate agents and 37.4 ± 13.2 years for graduate students, P = 0.004). The real estate agents had the highest proportion of participants at intermediate or high risk for OSA (42.1% for real estate agents vs. 28.9% for graduate students and 25.3% for insurance salespeople, P = 0.04).

Conclusions: The study revealed that real estate agents had the highest BMI and the greatest proportion of participants at intermediate or high risk for OSA among the three workplace groups.
Keywords Obstructive sleep apnea (OSA), hypertension, STOP-Bang questionnaire, cross-sectional 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)

PB10

評估脈衝震盪肺功能偵測阻塞性肺病病患運動中吐氣流速限制之效用

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Detection of expiratory flow limitation during exercise in patients with obstructive pulmonary diseases by impulse oscillometry

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Purpose: We aim to compare conventional spirometry and impulse oscillometry (IOS) in detecting expiratory flow limitation during exercise among patients with obstructive pulmonary diseases. Healthy subjects were also recruited in order to evaluate the test-retest reproducibility.

Methods: Patients with an age of 40 years old or above, and obstructive pulmonary diseases (e.g., chronic obstructive pulmonary disease (COPD) or asthma) were enrolled. Conventional spirometry and impulse oscillometry were performed statically and every 2 minutes during incremental cycle ergometry before and 15 minutes after inhaled Fenoterol. Healthy subjects received static and exercise spirometry and IOS tests as well and repeated the whole protocol 30 minutes later without inhaled bronchodilator. Exercise spirometry and IOS parameters pre- and post-bronchodilator were compared using a two-way repeated measures ANOVA. The independent associations between peak exercise IOS measures and inspiratory capacity (IC) were assessed using Spearman's rank correlation. Test-retest reproducibility were assessed using mean difference, and intraclass correlation coefficient (ICC.)

Results: Five healthy subjects, 6 COPD patients and 5 asthma patients were prospectively enrolled from Jan 1st, 2022, to Dem 31st, 2023. Patients with COPD were older than the other two groups and had higher SGRQ scores. Resting respiratory resistance at 5Hz (R_5), peripheral airway resistance (R_5-R_{20}), and area of reactance (AX) were higher in COPD patients, while the respiratory reactance at 5Hz (X_5) was more negative in COPD group than in healthy subjects and patients with asthma. The resting FEV1 increased after bronchodilator treatment in both COPD and asthma group, and only patients with asthma had increased post-bronchodilator IC. The resting R_5, R_{20}, R_5-R_{20}, resonance frequency (F_{res}) and AX decreased while X5 increased after bronchodilator treatment. The test-retest reproducibility of exercise IOS measures was moderate to good (ICC 0.7-0.9) except for Fres (ICC 0.40, p= 0.346). Meanwhile, reproducibility of IC during exercise is relatively low (ICC 0.48, p= 0.224.) The IC measured every 2 minutes during incremental exercise gradually decreased, especially in COPD group. R_5 and reactance in expiratory phase (X_{ex}) at peak exercise have moderate correlations with IC at peak exercise (rho 0.50, 0.51; p= 0.003, 0.003 respectively.)

Conclusions: Current evidence supported that IOS is easy-to-perform and is a reliable tool for exercising tests. R_5 and X_{ex} at peak exercise have moderate correlations with IC at peak exercise.

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

PB11

睡眠呼吸中止症臨床和睡眠檢測特性的性別比較

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Sex Comparison of Clinical and Polysomnographic Characteristics in Patients with Sleep Apnea

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Background: Sleep apnea (SA), a serious sleep disorder, disrupts normal breathing patterns during sleep. SA leads to nocturnal hypoxia and triggers various clinical symptoms and comorbidities. However, studies comparing the clinical and polysomnographic characteristics between sexes in patients with SA are limited. This study aimed to investigate sex differences in clinical and polysomnographic characteristics in patients with SA.

Methods: The study included patients aged ≥18 years who underwent in-laboratory polysomnography at a sleep center between 2007 and 2015. SA was defined as an apnea-hypopnea index (AHI) of ≥5 events/hour. Patients who underwent CPAP titration or had incomplete data on age or sex were excluded from the analysis.

Results: A total of 6,670 patients (5,075 men and 1,595 women) received in-laboratory polysomnography. Among them, 4,589 patients (81.6% men and 18.4% women) were diagnosed with SA. Women were older (50.9 years vs. 45.58 years, $P < 0.001$) and had lower sleep efficiency (76.87% vs. 78.58%, $P = 0.004$) compared to men. Men exhibited a higher AHI (30.74 events/hour vs. 24.39 events/hour, $P < 0.001$) and lower oxygen saturation nadir (77.86% vs. 80.29%, $P < 0.001$) than women. In terms of clinical symptoms, a higher proportion of men experienced snoring (95.8% vs. 92.4%, $P < 0.001$) and bruxism (20.8% vs. 16.9%, $P = 0.011$). In contrast, women were more likely to report morning headaches (38.5% vs. 25.9%, $P < 0.001$), nocturia (60.2% vs. 44.0%, $P < 0.001$), and memory problems (63.1% vs. 52.9%, $P < 0.001$). Regarding comorbidities, women had a higher prevalence of diabetes mellitus (16.5% vs. 10.6%, $P < 0.001$) but a lower prevalence of hyperuricemia (8.1% vs. 19.5%, $P < 0.001$) compared to men.

Conclusions: This study highlights significant sex differences in both clinical and polysomnographic characteristics among patients with SA. Men demonstrated more severe AHI, lower SpO2, and higher rates of snoring and bruxism. Conversely, women were older, had lower sleep efficiency, and experienced more subjective symptoms, such as morning headaches, nocturia, and memory problems. Additionally, women had a higher prevalence of diabetes mellitus but a lower prevalence of hyperuricemia than men. These findings underscore the importance of considering sex-specific clinical presentations when diagnosing and managing SA.

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

PB12

羅馬提案及西班牙提案對於肺阻塞急性惡化嚴重度分級的不同臨床含意

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The differential implications of Rome proposal and GesEPOC recommendation in exacerbations of COPD

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Rationale: The Rome proposal and GesEPOC recommendation are classification schemes for chronic obstructive pulmonary disease exacerbations (ECOPD) severity, and the differences between them may be clinically significant.

Objectives: To test whether the classification of ECOPD severity by using the Rome proposal versus GesEPOC recommendation was associated with different patient outcomes.

Methods: A multicenter study was conducted, wherein hospitalized patients with ECOPD were categorized based on the two definitions for subsequent analysis.

Measurements and Main Results: Of the 379 participants, 53.8%, 33.0%, and 13.2% were divided into Rome-mild, moderate, and severe groups, respectively, and 3.7%, 37.5%, 54.1%, and 4.7% were divided into GesEPOC-mild, moderate, severe, and very severe groups, respectively. ECOPD severity classified using the Rome proposal was associated with length of stay (LOS) for the index exacerbation (P = 0.001), annualized rate of Global Initiative for Chronic Obstructive Lung Disease (GOLD)-severe exacerbation (P = 0.028), and COPD-related direct medical expenditure (DME) for emergency room (ER) visits and hospitalizations during the first-year follow-up (P = 0.006). ECOPD severity classified using the GesEPOC recommendation was associated with LOS for the index exacerbation (P = 0.001), annualized rates of GOLD-severe exacerbation (P < 0.001), GOLD-moderate or severe exacerbation (P = 0.042), all-cause hospitalization (P = 0.001), and COPD-related DME for ER visits and hospitalizations (P < 0.001) during the first-year follow-up. Additionally, 1-year (P = 0.025) and 3-year (P = 0.015) cumulative survival rates differed significantly.

Conclusions: This study suggests clinical use of the two proposed definitions for ECOPD severity classification are 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)

PB13

在台灣真實世界中使用肺昇朗 (Benralizumab) 治療嗜酸性白血球表現型嚴重氣喘患者之病人早期自述結果 (BEAT)

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Early Response in Patient-Reported Outcomes of Benralizumab in Real-World Use in Severe Eosinophilic Asthma Patients in Taiwan (BEAT)

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Purpose: This study aims to collect real-world data on severe eosinophilic asthma patients prescribed benralizumab to assess the improvement in patient-reported outcomes (PRO) in Taiwan.

Materials and Methods: This is an open-label, single-arm, non-interventional, prospective, and multicenter study in Taiwan. There are 42 patients diagnosed with severe eosinophilic asthma who have been prescribed benralizumab across eight medical centers from 2022 to the present. The interim analysis was conducted after all patients completed the initial 8-week study period. This study assesses the asthma status and severity using PROs (Asthma Control Questionnaire, five-question version [ACQ-5], Patient Global Impression of Severity [PGI-S], Patient Global Impression of Change [PGI-C]); and asthma treatments, especially oral corticosteroid use (OCS). The statistical analysis for assessing mean change from baseline involves using either paired t-test or Wilcoxon signed-rank test.

Results: Of the 42 patients, at Week 8 there was a significant reduction in ACQ-5 mean score from baseline (-1.2±1.24 points, p<0.0001), and increased percentage of well-controlled asthma (ACQ-5 score ≤ 0.75) from 19% to 40%. At Week 8, there was a significant change in the PGI-S mean score from baseline (-1.3±1.30 points, p<0.0001), and increased the proportion of patients feeling much better based on PGI-C (from 9.5% to 32.5%). Additionally, the mean daily OCS dose significantly decreased(-5.0±7.07 mg/day, p=0.0002). Three mild AEs were reported but no severe adverse events related to benralizumab were reported in this study.

Conclusions: Clinically meaning improvements in asthma symptom control began as early as 8-week post benralizumab initiation in patients with severe eosinophilic asthma, as well as patients' perception of their overall disease status and reduction in OCS use.

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

PB14

阻塞性睡眠呼吸中止症對慢性阻塞性肺病患者運動能力的長期影響：一項三年回顧性研究

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Long-Term Impact of Obstructive Sleep Apnea Severity on Exercise Capacity in COPD-OSA Overlap Syndrome: A Three-Year Retrospective Study

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Background: Patients with obstructive sleep apnea (OSA) commonly experience reduced exercise capacity. However, the long-term impact of OSA severity on walking capacity in patients with chronic obstructive pulmonary disease (COPD) and OSA overlap syndrome remains poorly understood.

Methods: We retrospectively studied 40 patients diagnosed with COPD from our sleep laboratory. To ascertain the trajectory of walking capacity in patients with overlap syndrome, none of whom were receiving continuous positive airway pressure (CPAP) therapy. All patients were followed for at least three years. We analyzed clinical characteristics, pulmonary function, acute exacerbation frequency, polysomnography results, and six-minute walk test (6MWT) outcomes at diagnosis and after three years of follow-up.

Results: Patients were categorized into two groups based on the apnea-hypopnea index (AHI). Those with overlap syndrome (AHI > 15.0/h) had higher body mass index (BMI), and were more frequently prescribed inhaled corticosteroids (ICS). Over three years, the change in walking distance was 63.9 ± 19.2 meters for patients with overlap syndrome (N=22), compared to 71.2 ± 31.5 meters for those with COPD alone (N=18, P=0.839). No significant differences in pulmonary function test results were observed between groups. Regardless of OSA severity, walking distance improved significantly over the follow-up period.

Conclusions: In patients with COPD-OSA overlap syndrome, exercise capacity did not deteriorate over time. Instead, both groups demonstrated improvements in walking distance, possibly due to better COPD management. Further research is necessary to validate these findings and explore the mechanisms behind these improvements.

Keywords: Obstructive sleep apnea, exercise capacity, chronic obstructive pulmonary disease

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

PB15

台灣全國範圍內非吸煙工業工人血清銦水平與保存比值受損肺功能 (PRISm) 之間的關聯：一項橫斷面研究

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Associations Between Serum Indium Levels and Preserved Ratio Impaired Spirometry Among Non-Smoking Industrial Workers: A Nationwide Cross-sectional Study in Taiwan

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Purpose: Indium, a rare heavy metal, extensively used in flat panel display manufacturing, poses potential respiratory health risks to workers. Preserved ratio impaired spirometry (PRISm), a term describing nonobstructive lung function abnormalities, is associated with adverse health outcomes. Despite known risks, the relationship between serum indium levels and PRISm remains underexplored.

Materials and Methods: A cross-sectional cohort study among non-smoking industry workers potentially exposed to indium in Taiwan was conducted in 2020. Demographic data and pulmonary function tests were collected comprehensively. Serum indium levels were quantified using inductively coupled plasma mass spectrometry, and respiratory symptoms were obtained via questionnaire. PRISm was defined as FEV1/FVC ≥ 0.7 with FEV1 < 80% predicted. Univariate, and multivariate logistic regression analyses were conducted to identify risk factors associated with PRISm.

Results: Among 2,575 eligible participants, those with abnormal serum indium levels (≥3 ng/mL) were older, predominantly male, and had longer total working duration. PRISm prevalence was significantly higher in individuals with abnormal indium levels (22.7% vs. 7.6%). PRISm subjects exhibited a higher proportion of abnormal indium levels. Multivariate analysis revealed that serum indium levels ≥3 ng/mL and female sex were significant risk factors for PRISm after adjusting sex, age, body mass index and working duration.

Conclusions: This study demonstrates a significant association between elevated serum indium levels and increased PRISm prevalence among non-smoking workers in Taiwan. Findings highlight the importance of assessing serum indium levels in occupational health surveillance and revising exposure standards to mitigate respiratory health risks associated with indium exposure.

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

PB16

嗜酸性白血球氣喘使用二合一吸入劑合併白烯三酸拮抗劑與格蘭氏陰性桿菌自發性菌血症

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Spontaneous Gram-Negative Bacteremia in a Case of Eosinophilic Asthma Treated with ICS+LABA and Leukotriene Antagonist: Exploring the Relationship between Eosinophil Count Decrease and Improved Lung Function

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Introduction: This case report presents a 42-year-old male with no prior medical history, a non-smoker, and a semiconductor engineer. He presented with a two-month history of cough, chest tightness, and difficulty breathing. Initial assessment included a chest X-ray showing no active lesions in the chest cavity. Pulmonary function tests revealed mixed obstructive and restrictive lung disease, which responded well to bronchodilator therapy. Blood tests showed an elevated IgE level (>25,000), positive inhalant allergen response, and a significantly high eosinophil count (9,967/mm3) in peripheral blood.

Materials and Methods: The patient was treated with inhaled corticosteroids (ICS) combined with a long-acting β 2-agonist (LABA) and a leukotriene antagonist for a duration of 18 months. Throughout the treatment period, the patient did not undergo any invasive procedures such as central venous catheter placement or urinary catheterization. Moreover, no valvular heart disease, oral or intravenous corticosteroid administration, or any biologic immunomodulating agents were administered. However, the patient did require peripheral intravenous injections due to the severity of his condition. Fortunately, appropriate measures were taken to manage three episodes of Gram-negative bacteremia.

Results: During the 18-month treatment period, the patient experienced a gradual improvement in respiratory symptoms, with a gradual decline in eosinophil count from its peak of 9,967/mm3 to 150. Additionally, pulmonary function transitioned from mixed obstructive and restrictive lung disease to hyperresponsive airway disease, ultimately reaching normal ventilator function.

Discussion: This remarkable case raises the question of whether the occurrence of spontaneous Gram-negative bacteremia is related to the decrease in eosinophil count following treatment with ICS+LABA and leukotriene antagonist therapy. Despite the significant improvement in clinical symptoms, eosinophil count, and lung function, the patient experienced three episodes of Gram-negative bacillus bacteremia. This finding is noteworthy as the patient had no evidence of immunocompromised status, HIV infection, long-term indwelling catheters, or other chronic diseases. Furthermore, no invasive procedures or examinations were performed.

Conclusion: This case highlights the potential association between the decrease in eosinophil count and the occurrence of spontaneous Gram-negative bacteremia in a case of eosinophilic asthma treated with ICS+LABA and leukotriene antagonist therapy. Further research is warranted to explore the relationships between eosinophil count, improved lung function, and clinical symptoms in the context of asthma treatment, as well as the potential risk factors contributing to the occurrence of spontaneous Gram-negative bacteremia.

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

PB17

探討慢性阻塞性肺病致病型與臨床表現間的關聯：前導性世代研究

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Association of Etiotypes and Clinical Manifestations of Chronic Obstructive Pulmonary Disease: A Pilot Cohort Study

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Background: The new taxonomy of "etiotype" for chronic obstructive pulmonary disease (COPD) was formally proposed by the GOLD Initiative in 2023. This study sought to determine the association between etiotypes and clinical manifestations of COPD patients.

Method: This pilot cohort study enrolled 306 patients with COPD that were involved in a pay-for-performance program by National Health Insurance in Taiwan. The "etiotypes" defined by specific exposure history through a structural interview with by the patients, were analyzed for symptom severity, extent of expiratory airflow limitation, and severe exacerbation in the past year before enrollment.

Results: More than two-thirds (n = 211, 69%) patients had a positive exposure history to either first-hand or second-hand cigarette smoking. Those who were exposed to both forms of smoking (n = 106) had more severe dyspnea symptoms (mMRC 1.7) and airflow limitation (predicted %FEV1 70%), and higher frequency of severe exacerbation (0.22/year), compared to those exposed to first-hand smoke alone (mMRC 1.52; predicted %FEV1 77%; severe exacerbation 0.17/year, respectively). Notably, more than half (n = 181, 59%) of our cohort exhibited an exposure history to biomass and more than one-third (n = 111, 36%) experienced occupational exposure. Intriguingly, COPD patients with a negative exposure history of cigarette smoking had worse symptoms and more exacerbations, compared to those with first-hand smoke (CAT 8.0 v. 6.4; severe exacerbation 0.23 v. 0.17/year, respectively).

Conclusions: In this pilot cohort study, different etiotypes of COPD presented diverse symptomatology and clinical features. Further investigation into different etiotypes of COPD was needed for prediction models of prognosis and potential application for personalized medicine.

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

PB18

台灣實施氣喘 P4P 指標（醫院品質績效量測指標系統與落實品質改善計畫指標）對醫療保健結果的影響：全國性回顧性群組分析

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The Effect of Implementing an Asthma Pay-for-Performance Program on Health Care Outcomes in Taiwan: A Nationwide Retrospective Cohort Analysis

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Purpose: Asthma is one of the most common noncommunicable diseases worldwide; it causes many burdens and lowers quality of life. Pay for performance (P4P) is a well-known reimbursement method that incentivizes health care providers based on the quality and efficiency of care they deliver. However, the effects of P4P on asthma care is unknown. This study therefore aimed to examine the effects of P4P on asthma care.

Materials and Methods: A cross-sectional study design was used. People who had been diagnosed with asthma in 2010 and 2019 were identified and included in this study. Taiwan's National Health Insurance claims data between 2010 and 2011 and between 2019 and 2020 were used to retrieve information on the study population's demographic characteristics, including enrollment in a P4P program, medication use, and outcome of asthma care, as well as the characteristics of the main treatment hospitals. To avoid selection bias, 1:1 propensity score matching was used as well.

Results: We identified 317,669 people diagnosed with asthma from 2010 and 493,508 from 2019. We found that the P4P program positively affects asthma care: people enrolled in the P4P program had fewer outpatient visits but a higher proportion of inhaled corticosteroid prescriptions and lower use of asthma-related hospitalization and emergency care services. We also found that demographic characteristics affected P4P program enrollment, but the impacts changed over time. Finally, we found that the effects of the P4P program varied at different hospital accreditation levels.

Conclusions: This study found that implementing the P4P program positively affects asthma care through prescription behavior change. However, variations existed among hospital accreditation levels. Eliminating the differences would be the next step.

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

PB19

戴奧辛之空間與時間暴露對於慢性阻塞性肺病患者呼吸困難嚴重程度的影響

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The Impact of Spatial and Temporal Dioxin Exposure on Dyspnea Severity in COPD Patients

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Purpose: Dioxins are pollutants of concern due to their toxic effects. Kaohsiung's industrial and transportation infrastructure may lead to higher dioxin levels than other cities. Our study aims to compare dioxin concentrations across different regions and investigate the impact of dioxin exposure on chronic obstructive pulmonary disease (COPD) patients.

Materials and Methods: We analyzed 65 COPD patients from an industrial region in southern Kaohsiung. Daily dioxin concentrations were originally obtained from the Taiwan Air Quality Monitoring Network, covering the year prior to and 90 days after the screening. A Geospatial Artificial Intelligence (Geo-AI)-based ensemble mixed spatial model was applied to assess spatial-temporal fluctuations in dioxin concentrations. Statistical analyses included a repeated-measures design and restricted cubic spline modeling to evaluate changes in pollutant exposure and their association with dyspnea severity.

Results: The mean age of the 65 participants was 63 years. Participants with higher dyspnea, indicated by Modified Medical Research Council (mMRC) scores of 2 and 3, had a significantly higher mean Body Mass Index (BMI) compared to those in the lower mMRC group ($p = 0.0441$). Moreover, participants in the mMRC 3 group showed a significant increase in least squares means difference: 3.66 (95% CI: 3.12-4.21, $p < 0.0001$) in daily exposure levels, 2.99 (95% CI: 2.36-3.62, $p < 0.0001$) for exposure from -365 to -1 days, and 6.38 (95% CI: 5.54-7.22, $p < 0.0001$) for the most recent 90-day period, compared to the reference group (mMRC 0 group). Additionally, the mMRC 2 group demonstrated an increase of 1.67 (95% CI: 0.83-2.51, $p < 0.0001$) during the 0-90 day period, while the mMRC 1 group showed no significant differences across all periods. High dioxin levels were detected near highways, ports, factories, airports, and roads surrounding Mass Rapid Transit (MRT) stations, with elevated respiratory symptoms observed in these areas. Interestingly, the highest concentrations were found along highways. In contrast, lower symptoms were associated with regions near parks that had more vegetation.

Conclusions: We discovered that higher dioxin exposure is associated with more severe respiratory symptoms in COPD patients, especially those with higher dyspnea scores. Patients living in areas with elevated dioxin levels, particularly near highways, experienced more pronounced symptoms. This highlights the link between pollution and respiratory health.

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

PB20

阻塞性睡眠呼吸中止症對氣喘的影響：台灣 22 年多中心隊列研究

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The Impact of obstructive sleep apnea in Asthma: A 22-year Multi-Institution Cohort Study in Taiwan

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Purpose: Asthma is a chronic inflammatory disease with complicated phenotypes. The neutrophilic inflammation and intermittent hypoxia associated with obstructive sleep apnea (OSA) may lead to difficult control asthma. Our study aimed to investigate the long-term outcomes of asthma combined with OSA.

Materials and Methods: We conducted a retrospective cohort study utilizing the Chang Gung Research Database, the largest electronic medical record-based in Taiwan, analyzing the patients aged ≥ 18 years with a diagnosis of asthma between 2002-2022. The diagnosis of OSA, clinical characteristics, asthma medication usage, pulmonary function variables and long-term outcomes were retrieved.

Results: A total of 11,156 asthma patients were included, 208 of them concurrently diagnosed with OSA. After applying 1:3 propensity score matching, patients with concomitant asthma and OSA demonstrated higher rates of high-dose inhaled corticosteroids use (53.42 vs 63.49, p = 0.0474), a trend of higher rate of OCS usage and long-term OCS usage (65.1% vs 70.7%, p = 0.1378; 29.56 % vs 36.05 %, p = 0.1454). Asthmatics combined with OSA more likely to experience acute asthma exacerbations and respiratory failure (54.65 vs 62.50, p = 0.0478; 14.10 vs 28.85, p <0.0001).

Conclusions: OSA had significant clinical impact in asthma, presenting as increased corticosteroid requirements and a higher incidence of acute exacerbations and respiratory failure in the long-term.

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

PB21

老年患者維生素 D 缺乏的風險因素與 STOP-Bang 問卷的相關性

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Risk Factors for Vitamin D Deficiency in Elderly Patients Related to the STOP-Bang Questionnaire

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Background: Vitamin D deficiency is a common disorder among elderly individuals associated with several of the same risk factors of Obstructive sleep apnea (OSA).Investigate the risk factors for vitamin D deficiency in elderly individuals via the STOP-Bang questionnaire.

Methods: This study is part of the Healthy Aging Project, a prospective observational study conducted by Chang Gung Memorial Hospital (CGMH). The study population consists of 451 individuals, all aged over 60 years. The aim is to investigate the risk factors for vitamin D deficiency in elderly individuals, using the STOP-Bang questionnaire to assess risk factors and measuring vitamin D levels through 25(OH)D concentration, which is analyzed using electrochemiluminescence immunoassay (ECLIA).

Results: There was a significantly greater proportion of female patients (P=0.002), patients with a smoking habit (P = 0.034), osteoarthritis patients (P = 0.03) in the vitamin D deficiency group than in the non-deficiency group, People with more daytime tiredness had significantly lower serum 25(OH)D levels than did those in the other group (P=0.029) .There was a significantly greater 25(OH)D level in participants with larger neck circumferences (P=0.023). There was a statistically significant inverse correlation between vitamin D levels and BMI. Participants with larger neck circumferences and female sex were significantly more likely to have vitamin D deficiency. People with more daytime tiredness had significantly lower serum 25(OH)D levels than did those in the other group

Conclusions: There is a potential relationship between vitamin D levels and neck circumference, and a significant inverse correlation between BMI and vitamin D levels was noted.We recommend considering vitamin D deficiency in OSA patients with larger neck circumferences, higher BMI, and increased daytime sleepiness.Further research is needed to explore the relationship between vitamin D deficiency and OSA risk in the elderly

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

PB22

結合臨床風險因子及肺功能檢測成功辨識潛在的肺阻塞術前病人

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Successfully Identify Potential Chronic Obstructive Pulmonary Disease Cases in Pre-Operation Population by Combination of Risk Factors and Pulmonary Function Test

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Purpose: Chronic obstructive pulmonary disease (COPD) bears high disease burden in clinical practice. Early discovery and intervention for potential COPD cases is very important and dispensable. How about the clinical setting of COPD in pre-operation population was unknown. We aim to move forward for early identifying newly diagnosed COPD case for population receiving surgery.

Materials and Methods: We initiated integrated caring program for pre-operation patients with integration of respiratory therapist and physician and case manager. We designed the algorithm with the aid of questionnaire and pulmonary function test. Aged at least 40 years old was included. We defined clinical risk factors for COPD as active symptoms including cough, phlegm and dyspnea on exertion. Smoking risk factors defined as exposure of at least 10 pack years. Once patients met the above criteria (clinical and exposure risks factors), we arranged pulmonary function test for further approach. Once obstructive ventilation impairment was found, COPD was diagnosed and further pharmaceutical and case management were introduced. We collected one year data of our program during October 2023 to September 2024 for further analyses.

Results: In our one year program, we collected 359 cases met the risk factors for potential COPD. 35 cases (10%) was already diagnosed as COPD before admission. Among the remaining 324 patients, 172 cases received pulmonary function test and 30 newly cases diagnosed as COPD group based on obstructive ventilation impairment. Th prevalence rate was around 17.4% (30/172). All new COPD cases received regular medication and case management.

Conclusions: Based on risk factors discovery for pre-operation group, we found around 20% of newly diagnosed COPD patients in our study. Prompt medical intervention and closely monitoring were cornerstone for managing COPD patients among peri-operative process.

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

PB23

呼氣一氧化氮的濃度與慢性阻塞性肺病急性惡化之風險分析

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The impact of fractional exhaled nitric oxide on risk of COPD acute exacerbation

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Purpose: From previous studies, we found the more COPD exacerbations, the more lung function decline. Bother quality of life and mortality were also increase after exacerbations. The risk factors of acute exacerbations were, age, increase sputum production, disease course, antibiotics usage, admissions due to acute exacerbation, elevation of blood eosinophil count, comorbitilities (DM or hypertension) and usage of theophylline. According to the ECLIPSE study, the more COPD exacerbation lead to increase frequency of exacerbation. In personalized medicine, we found some COPD patients had Th2 inflammation. We want use fractional exhaled nitric oxide (FENO) as a marker of eosinophilic inflammation to evaluation treatment response and exacerbation risk.

Materials and Methods: This is a retrospective cohort study and will be conducted in National Taiwan University Hospital in HsinChu branch from Jan 1, 2023 to Dec 31, 2023. This study will enroll all COPD patients aged over 40 year-old. Chart review will be performed in National Taiwan University Hospital in Hsin-Chu branch. Both patients in the ward and in the clinics were included. Admission or ER visit due to COPD AE were analysis for outcome evaluation.

Results: During the study period, 269 COPD patients were enrolled. Among them, 58 patients diagnosed with COPD agreed to join this study. Based on initial FeNO levels, 34 (58.6%) had higher FeNO levels (FeNO ≥20) and 24 (41.4%) had lower FeNO levels (FeNO <20). The two FeNO groups showed an equal distribution among gender, various age groups, pulmonary function test results, ICS usage, and comorbidities. Patients using ICS were more likely to experience AE with admission (hazard ratio [HR], 5.21; 95% CI, 1.05 to 25.82). Patients with moderate to severe pulmonary obstruction (FEV1 <50%) were more likely to visit the ER due to acute exacerbation (hazard ratio [HR], 4.94; 95% CI, 1.23 to 19.84), and this result was also observed in patients with CKD (hazard ratio [HR], 23.95; 95% CI, 2.37 to 242.26).

Conclusions: In conclusion, our analysis revealed that individuals with an FEV1 <50% and those with chronic kidney disease exhibited a higher likelihood of experiencing acute exacerbations leading to emergency room visits. FeNO levels did not emerge as an independent factor influencing acute 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)

PB24

使用負壓呼吸器改善慢性纖維化間質性肺病的預後：一項回顧性分析

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Enhancing Outcomes in Chronic Fibrotic Interstitial Lung Disease Through Negative Pressure Ventilation: A Retrospective Analysis

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Introduction: Fibrotic interstitial lung diseases (ILDs) encompass a diverse group of disorders characterized by inflammation and fibrosis, leading to progressive lung scarring and respiratory impairment. Idiopathic pulmonary Afibrosis (IPF) and systemic sclerosis-associated ILD (SSC-ILD) are particularly severe forms with high mortality rates. While anti-fibrotic treatments like nintedanib offer some benefit, the role of non-pharmacological interventions such as negative pressure ventilation (NPV) remains unclear. This study evaluates the impact of NPV on survival outcomes in patients with fibrotic ILD.

Method: This retrospective, single-center study analyzed data from 94 adults diagnosed with fibrotic ILD at a medical center in southern Taiwan between January 2016 and December 2022. Patients treated with nintedanib and confirmed to have fibrotic ILD by a multidisciplinary team were included. Data on NPV use, demographic factors, disease severity, pulmonary function, and acute exacerbations were collected. The primary outcome was all-cause mortality. Logistic regression analysis was used to identify significant predictors of mortality, and results were visualized using a forest plot.

Results: Out of 94 patients, 38 (40.4%) survived while 56 (59.6%) died during the study period. NPV use was significantly more common among survivors (23.7% vs. 3.6%, p=0.0062). Lower age, higher baseline FVC, and fewer acute exacerbations were associated with better outcomes. In multivariable analysis, absence of NPV (OR: 6.107, p=0.0402), older age (OR: 1.094, p=0.0043), lower baseline FVC (OR: 0.947, p=0.0042), and experiencing acute exacerbations (OR: 3.641, p=0.0332) were significantly related to mortality.

Conclusion: This study highlights the significant role of NPV in reducing mortality among patients with fibrotic ILD.

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

PB25

The risk of respiratory failure in patients with chronic obstructive pulmonary disease and a history of pneumothorax.

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Background: Chronic obstructive pulmonary disease (COPD) patients are at an elevated risk of respiratory failure compared to patients without COPD, and the presence of pneumothorax may further increase this risk. This study aims to assess the risk of respiratory failure (RF) among COPD patients with and without a history of pneumothorax.

Materials and methods: We conducted a retrospective cohort study that included 141,083 COPD patients from the National Health Insurance Research Database, with 1,018 having a prior history of pneumothorax. The risk of respiratory failure was compared between COPD patients with and without pneumothorax. Cox proportional hazards models were used to evaluate the crude and adjusted hazard ratios (HRs) for respiratory failure, controlling for relevant confounders such as age, comorbidities, and gender. Subgroup analyses were also performed based on age, comorbidities, and other factors.

Results: The overall risk of respiratory failure was higher among COPD patients with pneumothorax (22.4%) compared to those without (19.05%), although this difference was not statistically significant after adjustment (AHR 1.05, 95% CI: 0.93-1.20, p = 0.4263). Subgroup analysis revealed significantly higher risks of respiratory failure in certain age groups, particularly among younger COPD patients aged 40-49 and 50-59 years (AHR 2.59 and 1.70, respectively). Other factors, such as comorbid emphysema and lung cancer, also influenced the risk of respiratory failure in both groups.

Conclusion: COPD patients with pneumothorax showed a slightly elevated risk of respiratory failure, the overall difference was not significant after adjustment for confounding factors. Age and comorbidities, particularly emphysema and lung cancer, were important predictors of respiratory failure in COPD patients. This suggests that other factors beyond pneumothorax history may play a more prominent role in determining the risk of respiratory complications in this population.

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

PB26

台灣的特發性肺纖維化病患中 Pirfenidone 與 Nintedanib 在現實世界中的比較：7 年回顧性研究

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Real-world comparison of pirfenidone and nintedanib in patients with idiopathic pulmonary fibrosis in Taiwan: A 7-year retrospective study

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Background: Real-world studies on the comparison of two anti-fibrotic agents, pirfenidone and nintedanib, in treatment of idiopathic pulmonary fibrosis (IPF) are scarce. The aim of study was to investigate the differences in real-world treatment efficacy between the two anti-fibrotic agents.

Materials and Methods: The study enrolled 93 newly diagnosed IPF patients and treated with pirfenidone or nintedanib at least 6 months between September 2016 and December 2023.

Results: In the entire study, the all-cause mortality rate was 15% and acute exacerbation rate was 29%. Compared to the pirfenidone group, the nintedanib group had a lower saturation in 6 minutes walking test (6MWT) after one year of follow-up. In addition, there were no significant differences in other comparisons, including 6-minute walking distance, early desaturation in 6MWT, distance-saturation product, FVC, FEV1, and DLCO.

Conclusions: This real-world study demonstrated that both pirfenidone and nintedanib were equally treatment efficacy in 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)

PB27

以試驗序列分析法評估第 2 型鈉 - 葡萄糖共同轉運蛋白抑制劑用於慢性阻塞性肺病族群之心血管相關結果：系統性回顧與隨機對照試驗統合分析

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Impact of sodium-glucose cotransporter 2 inhibitors on cardiovascular outcome in chronic obstructive pulmonary disease: a systematic review with meta-analysis and trial sequential analysis of randomized control trial

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Purpose: We investigated the effectiveness and safety on Sodium–glucose cotransporter 2 inhibitor (SGLT2i) with cardiovascular (CV) outcomes in chronic obstructive pulmonary disease (COPD) population.

Materials and Methods: A comprehensive review of randomized controlled trials (RCTs) was conducted on the efficacy and safety of SGLT2i in COPD patients for meta-analysis. The interests of outcomes included the composite of CV mortality, all-cause mortality, total hospitalization for heart failure (HF), and adverse events (AE). Trial sequential analysis (TSA) was also performed to robust our finding.

Results: Finally, we enrolled three RCTs for total 1986 patients (including 1113 patients in SGLT2i group and 873 patients in control group) for analysis. The SGLT2i group had a lower risk of CV events (risk ratio [RR], 0.76; 95% confidence interval [CI], 0.65-0.87; $p < 0.001$), hospitalization for HF (RR, 0.69; 95% CI, 0.58-0.83; $p < 0.001$) compared to control group. In addition, a trend of lower all-cause mortality (RR, 0.89; 95% CI, 0.73–1.08; $p = 0.23$) and cardiovascular death (RR, 0.96; 95% CI, 0.74-1.24; $p = 0.73$) were also found. In terms of AE, no significant difference was observed between these two groups. TSA also provided a strong true-positive result for these finding.

Conclusions: The results from this study showed that SGLT2i may improve CV events and hospitalization for HF in patients with COPD without additional AEs. Further large-scale study is warranted to validate our findings.

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

PB28

修格蘭氏症候群與阻塞性睡眠呼吸中止症：一個臨床世代研究

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Sjogren's syndrome and obstructive sleep apnea: a clinical cohort

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Purpose: Primary Sjogren's syndrome (pSS) is a common chronic systemic autoimmune disease. In addition to keratoconjunctivitis sicca and xerostomia, pSS has significant negative impact on sleep and quality of life. Previous studies have shown pSS was associated with increased risks of obstructive sleep apnea (OSA). We hypothesized that patients with concomitant pSS and OSA had higher percentage of dry throat and fatigue and poorer sleep quality than patients with sole pSS. The present study aimed to identify factors associated with OSA in pSS.

Materials and Methods: Medical records of patients who underwent overnight polysomnography for suspect OSA from 2009 to 2019 were reviewed for study eligibility. Patients with ICD code on diagnosis matching Sjogren's syndrome (either ICD-9-CM code 710.2 or ICD-10-CM M35.00-M35.09) at least twice within a year prior polysomnography were eligible. Patients with ICD code on diagnosis matching either other autoimmune disease, hepatitis C, or HIV infection were excluded. The diagnosis of pSS was verified with anti-SSA or anti-SSB antibody. The clinical features between patients with and without OSA (apnea-hypopnea index, AHI 15/h) were compared to identified factors associated with OSA.

Results: From 94 eligible patients, 68 patients were enrolled with median age 61 y/o and 58.8% female, and AHI 12.7/h which 34 (52.9%) had OSA. 64.7% complained dry eye and 70.6% complained dry throat while 13 patients (19.1%) had anti-SSA or anti-SSB antibody. Compared to patients without OSA, patients with OSA had a higher proportion of witnessed apnea, unrefresh sleep, nocturia, dry throat at waking up, higher AHI and more severe hypoxia and arousal while proportion of female, on hypnotics, dry throat, dry eye, and comorbidities, and anthropometric and self-report sleepiness were similar.

Conclusions: We concluded in OSA was associated with more severe hypoxia and arousal at sleep in patients with pSS which the dry throat at waking up, nocturia, and unrefresh sleep could be suggestive 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)

PB29

慢性阻塞性肺病之支氣管擴張劑反應性與兩年肺功能變化之關係

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The Relationship Between Bronchodilator Responsiveness and Lung Function Decline in Patients with Chronic Obstructive Pulmonary Disease

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Purpose: This study aimed to investigate the changes in FEV1 and the frequency of acute exacerbation of chronic obstructive pulmonary disease(COPD AE) between patients with positive and negative bronchodilator test results over a two-year period.

Materials and Methods: A total of 756 COPD patients were enrolled at A Hospital between May 2017 and December 2023, with 732 having available bronchodilator test data. Among these, 93 patients were classified as bronchodilator test positive and 639 as negative. Due to the COVID-19 pandemic, 383 patients lacked follow-up FEV1 data, leaving 296 patients in the bronchodilator test negative group and 52 in the positive group for FEV1 analysis. Additionally, 498 patients from the negative group and 80 from the positive group were included in the COPD AE frequency analysis. Age, sex, smoking status, baseline FEV1, and COPD group category were also compared between groups. Statistical analysis was performed using t-tests to evaluate the differences in FEV1 decline and COPD AE frequencies.

Results: The bronchodilator test negative group had a higher average age (72.06 ±9.44 years) compared to the positive group (69.38 ±10.39 years). The percentage of patients who were still smoking at baseline was higher in the bronchodilator test positive group (38.4%) compared to the negative group (29.7%). The average annual FEV1 change in the bronchodilator test positive group was 75.09 ml, while the negative group was -23.61 ml, with a statistically significant p-value of 0.017. For the analysis of the frequency of COPD AE, the positive group had an average of 0.76 occurrences per year, compared to 0.90 in the negative group, yielding a non-significant p-value of 0.451.

Conclusions: This study indicates that patients with a negative bronchodilator test exhibit a significantly greater decline in FEV1 over two years compared to those with a positive test, despite a higher proportion of smokers at baseline in the positive group. This difference may be attributed to a greater number of patients in the negative group with COPD Group C or D. However, there was no significant difference in the frequency of COPD AEs between the two groups.

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

PB30

使用大氣質譜儀快速檢測胸腔內科病患表皮藥物檢測臨床分析

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Detection of Cutaneous Drugs Level by Rapid Screening Ambient Mass Spectrometry Method in various Chronic lung diseases

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Purpose: During our medical practice, the absorption efficacy of used drugs is well correlated to their clinical therapeutic response. The effective evaluation of drugs absorption is very important to our medical practice. To search a rapid, common and non-invasive method to evaluate the absorption efficacy is a very important issue for our clinical daily practice. Mass spectrometry is a common chemical analytic method, and it is frequently used to check the special chemical components but it takes long time. The adjusted ambient mass spectrometry method had been applied efficiently to some chemistry fields with good outcome with very quick reliable result recently.

Materials and Methods: We tried to apply this rapid test to medical field and we collect 190 adult stable medical patients to survey the non-invasive cutaneous brushing sampling of drugs and neurotransmitters from skin surface.

Results: In the group of stable examined 190 medical patients, only very few of 50 kinds of medical drugs cannot be measured from our sampling. The classification of measured drugs included: target therapy of cancer, respiratory drugs, pain killers, antibiotics, and lung fibrosis drug. The total examined positive number and rate were over 80% and the most positive rate was the highest cost of lung cancer EGFR target therapy drugs.

Conclusions: From our present limited data, application of ambient mass spectrometry can measure the metabolites of drugs used in stable medical patients (and also some neurotransmitters). This means the special test may apply the evaluation of metabolite of drugs or as new biomarker of patients 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)

PB31

一例伴隨常見間質性肺炎表現的抗合成酶綜合徵病例

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A Case of Antisynthetase Syndrome with Usual Interstitial Pneumonia Pattern

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Abstract: Interstitial lung disease (ILD) is often linked to environmental factors, viral infections, or autoimmune disorders. Antisynthetase syndrome (ASyS) can manifest as ILD. Diagnosis typically involves clinical assessment, detection of specific antibodies (e.g., anti-Jo-1, anti-EJ), and imaging studies. Treatment includes glucocorticoids and immunosuppressive therapies.

We discuss a case of 74-year-old man who presented with progressive exertional dyspnea. Chest X-rays and CT scans indicated a usual interstitial pneumonia (UIP) pattern. Further diagnostic tests confirmed autoimmune-related ILD, specifically Sjögren's syndrome and anti-EJ antibody syndrome.

Case presentation: A 65-year-old male with a history of hypertension, type 2 diabetes, and smoking presented with progressive exertional dyspnea. Chest X-rays and CT scans suggested a usual interstitial pneumonia (UIP) pattern. Pulmonary function tests revealed restrictive ventilatory defects and reduced diffusion capacity. Autoimmune testing confirmed Sjögren's syndrome and anti-EJ antibody syndrome. Initially, the patient was treated with antibiotics and corticosteroids for severe community-acquired pneumonia (CAP). Subsequent treatment included Rituximab, Mycophenolate Mofetil (MMF), Plaquenil, and continued corticosteroids, based on positive anti-SS-A and anti-EJ antibodies. Following immunosuppressive therapy, the patient's oxygen saturation and pulmonary function improved.

Discussion/conclusion: Interstitial lung diseases (ILDs) are typically characterized by inflammation or fibrosis, leading to progressive lung function decline and impaired gas exchange. Common causes include environmental exposures, viral infections, and autoimmune disorders, although idiopathic cases are also frequent [1]. Antisynthetase syndrome (ASyS), an autoimmune condition, frequently presents with ILD. Diagnosis is based on clinical evaluation, detection of specific antibodies (e.g., anti-Jo-1, anti-EJ), and imaging, such as high-resolution CT scans, which may show patterns like nonspecific interstitial pneumonia (NSIP) [4]. Treatment involves glucocorticoids and immunosuppressive agents like mycophenolate mofetil and rituximab, although managing recurrent disease remains challenging. Immunomodulatory therapies have shown promise in slowing disease progression and improving forced vital capacity (FVC) over 12 months in connective tissue disease-associated ILD [2]. Key serological risk factors include antibodies such as anti-synthetase, anti-MDA5, and anti-PM-Scl. Antisynthetase antibodies, particularly anti-Jo-1, are strongly linked to myositis and ILD, while antibodies like anti-EJ and anti-PL7 are associated with skeletal muscle involvement [3].

In conclusion, interstitial lung diseases associated with antisynthetase syndrome often involve specific antibodies, such as anti-Jo-1 and anti-EJ, with high-resolution CT scans probably revealing a usual interstitial pneumonia pattern. Treatment usually includes glucocorticoids and immunosuppressive agents like mycophenolate mofetil and rituximab.

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

PB32

移植臍帶間質幹細胞使一長期呼吸器依賴的嚴重肺纖維化病人成功脫離呼吸器

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Transplantation of Umbilical Mesenchymal Stem Cell Successfully Weaned off Chronic Ventilator dependent status in Severe Pulmonary Fibrosis Patients – A Case Report

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Pulmonary fibrosis is a refractory disease with high morbidity and mortality rates caused by the progressive breakdown of pulmonary architecture, which ultimately results in respiratory failure. Currently, there are no efficacious treatments for pulmonary fibrosis and stem cell transplantation provides a promising strategy for the treatment of pulmonary fibrosis.

Here we demonstrated a 75 years old woman, who suffered from chronic progressively worsening cough and dyspnea for over 1 years and was diagnosed as idiopathic pulmonary fibrosis and received regular twice daily nintedanib since 7 years ago. She had received surgery of thoracic aortic aneurysm and then got respiratory failure with following chronic ventilator dependent status after thoracic surgery 3 years ago. We delivered four successive transplantation of high dose mesenchymal stem cells (MSCs) with 3-4 days interval at ICU, and then the patient discharged and got clinical conditions improved slowly. The patient finally successfully weaned off ventilator 6 months after transplantation of MSCs.

The MSCs possibly make the organ regeneration to repair the previous damage of airway and lung parenchyma in chronic ventilator dependent patients. They may play some important roles of correcting chronic ventilator dependent status in these patients. More studies should be arranged to verify its effect and mechanism in future 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)

PB33

葛瑞夫茲氏症併發左鎖骨下靜脈血栓和隨後的乳糜胸：一個獨特的病例報告

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Graves' Disease complicated with Left Subclavian Vein Thrombosis and subsequent Chylothorax: A Unique Case Report

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Case Presentation: A 52-year-old man with a history of irregularly controlled hyperthyroidism presented with exertional dyspnea, left upper limb swelling, and rapid weight loss. Diagnostic imaging revealed diffusely enlarged goiter, a right lower lung pulmonary embolism, left subclavian vein thrombosis, bilateral massive pleural effusion, and massive ascites. Graves' disease was diagnosed based on compatible symptoms, signs, elevated free thyroxine, suppressed thyroid-stimulating hormone (TSH), and positive thyrotropin-binding inhibitor immunoglobulin (TBII). Graves' disease was then treated with carbimazole. Diagnostic thoracentesis, and paracentesis revealed chylothorax and chylous ascites. Lymphangiography showed slowed passage of lymph, abnormal reflux of lymph into mediastinum, and dilated thoracic duct that end at thrombosed segment of left subclavian vein. Despite interventions including thoracentesis, nil per os (NPO) status, total parenteral nutrition (TPN), and anticoagulation therapy, the patient showed limited improvement, necessitating advanced interventions such as thrombectomy and catheter-directed thrombolysis. Follow-up showed a decreasing trend in pleural effusion, and the patient was then discharged smoothly.

Discussion: Chylothorax, a rare form of pleural effusion, can develop from central venous thrombosis including left subclavian vein thrombosis, which is a recognized, though rare, etiology for chylothorax. Existing literature suggests an association between chylothorax and an increased risk of thromboembolism. Moreover, substernal goiter may precipitate chylothorax even without thrombosis. The link between hyperthyroidism and thromboembolism, particularly cerebral thrombosis, is well-documented but the underlying pathophysiology remains complex and is not fully understood.

Conclusion: This case exemplifies the rare presentation of Graves' disease with subsequent left subclavian vein thrombosis, complicated by bilateral chylothorax and chylous ascites, not previously reported 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)

PB34

以咳血和腎損傷為表現的 ANCA 相關性血管炎

楊嘉林 [1]

Case Report: ANCA-associated Vasculitis Presenting with Hemoptysis and Renal Dysfunction

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Background: Antineutrophil Cytoplasmic Antibody-Associated Vasculitis (AAV) is a rare condition. A study using Taiwan's National Health Insurance Database estimated the annual incidence to be about 1.64 cases per million people. Among the subtypes, microscopic polyangiitis (MPA) is the most prevalent, followed by granulomatosis with polyangiitis (GPA), while eosinophilic granulomatosis with polyangiitis (EGPA) is less common. The kidneys and lungs are frequently affected organs.

Case presentation: A 74-year-old man presented with hemoptysis and dyspnea. He was admitted to the intensive care unit for massive hemoptysis and respiratory failure and was treated with high-flow nasal cannula oxygen therapy (HFNC). A chest X-ray (CXR) revealed ground-glass opacities, more prominent over the right lung. Urinalysis showed microscopic hematuria and dysmorphic red blood cells (RBCs), and the patient was complicated by acute kidney injury. The patient tested positive for p-ANCA (67), raising a strong suspicion of ANCA-associated vasculitis. He received double filtration plasmapheresis (DFPP) along with methylprednisolone, hydroxychloroquine, and immunosuppressive therapy (endoxan). Due to worsening renal function and oliguria, emergency dialysis was initiated. Following treatment, his p-ANCA levels decreased. On the 11th day of hospitalization, the patient was transferred out of the intensive care unit.

Conclusions: This case highlights the severe respiratory and renal complications of ANCA-associated vasculitis (AAV), particularly in elderly patients. Early diagnosis and aggressive treatment, including plasmapheresis, immunosuppressive therapy, and dialysis, were critical in stabilizing the patient's condition. This case underscores the importance of early intervention to manage life-threatening complications and improve patient outcomes in AAV.

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

PB35

阻塞性睡眠呼吸中止症和週期性腿部抽動症

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Obstructive Sleep Apnea and Periodic Leg Movement Disorder

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Purpose: We aim to highlight the negative health impact by frequent arousal and basal sympathetic hyperactivity due to apnea hypopnea induced arousal and PLMS-induced arousal in patients having both disorders.

Case Description and Summary: A 65-year-old man came to sleep medicine OPD for chief complaint of daytime sleepiness, and periodically involuntary and repetitively stereotypic leg movement during sleep for 2-3 years. He also had frequent snoring and impaired restorative sleep for few years. He had HTN, nightly insomnia. He denied DM, CKD, neurodegenerative disorder and intake of anti-depressants. EPSS was 6. BW was 90 kg and Ht. of 170 cm, BMI of 31, neck circumference of 37 cm was noted. On PE, no pallor, Mallampati score of 2 and tonsillar hypertrophy of Gr.2, marked lateral peritonsillar narrowing were noted. Firstly, we prescribed clonazepam for the initial 3 weeks. On 2nd time visit, nocturnal leg symptoms still unimproved, therefore we arranged nighttime PSG as we suspected both sleep related movement and breathing disorders. TST was 5.8 h, N2 stage was 70%. AHI of 19.6/h, OHI of 17/h, and Snore index was 284/h. His ODI was 12.8/h and mean SpO2 was 92%. The periodic limb movement index (PLMI) was 15.5/h, and non-PLMI was 77/h, and respiratory arousal index is 6/h. Periodic leg movement of sleep (PLMS) mostly occurred during deep sleep (N2 and N3 stages). The final diagnosis was OSA (moderate) and PLMD. Then, we shifted to pregabalin in daily dose of 100mg as he also had nightly insomnia and HTN and anxiety disorder which are common side effects of dopamine agonists. Serum Fe profile and Mg level were WNL. Then, we titrated the dose up to 300mg upon leg symptoms and omitted sedatives. On 3rd month of daily pregabalin dose in 300 mg, leg symptoms improved significantly and EPSS down to 3 but snoring persisted and did not complain of any adverse effect of pregabalin. For OSA, he chose adoption of lifestyle modification and regular physical activities for body weight reduction as initial choice. We will do follow up post-pregabalin PSG and will suggest CPAP therapy for pneumatic splint of upper airway if worsened OSA symptoms and/or worsening AHI.

Discussion: Nightly insomnia and non-restorative sleep with daytime sleepiness are probably related to frequent nocturnal sleep disruption due to frequent, short lasting, repetitive PLMS and apnea and hypopnea related arterial O2 desaturation and arousal. PLMS's etiology had been explained by striatal dopaminergic and its receptor deficiency, thalamic glutamate hyperactivity, and cortico-subcortical-striatal pathway dysfunction in past numerous studies. Physiologically, sleep influences cardiovascular homeostasis (that is cardiac physiology and vascular tone) through autonomic nervous system and circadian rhythm. Sympathetic hyperactivity related to both PLMS and OSA-induced respiratory related arousal, lead patients more vulnerable to greater heart rate variability and substantial basal sympathetic predominance during the whole sleep time, and sleep deprivation. Sleep deprivation and obesity have related to each other as the former led patients to decreased physical activity and increased body energy partitioning to body adipose fat tissue mass

while promoting lean body mass wasting, thereby increasing hunger. Finally, increased coagulation dysfunction and further detrimental effects like increased risk of CV morbidity and mortality are consequential negative health impact in overall aspect if his OSA and PLMD were not diagnosed in time and not under adequate control.
Conclusions: Physical inactivity, obesity, male gender and AHI are positively correlated with PLMS in patients with both OSA and PLMD. HTN also correlates with severity and duration of PLMS. Selection of therapy for PLMD depends on disease severity, patient age, comorbidities (e.g. IDA), drug side effects and patient preferences after exclusion of RLS, RBD and narcolepsy. The goals of therapy are to reduce symptoms, improve daytime function, sleep and quality of life, and lessen detrimental consequences on health.

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

PB36

肥胖相關睡眠通氣不足及伴隨阻塞性睡眠呼吸中止症

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Obesity-associated Sleep Hypoventilation and Concomitant Severe Obstructive Sleep Apnea

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Purpose: We aim to provide mindfulness about the possible consequential occult retention of PaCO2 in morbidly obese patients with concomitant obstructive sleep apnea, leading to more severe sleep-disordered breathing signs and symptoms with nighttime hypoxemia, and the determination of which kind of PAP therapy (either CPAP or Bi-pap) use as initial option depending on AHI severity and PaCO2 with serum bicarbonate level.

Case Description and Summary: A 46 years-old man with underlying HTN had had chief complaint of non-refreshing sleep with excessive daytime sleepiness, morning headaches and memory lapses over last 1-2 yrs. He had also been facing troublesome symptoms like loud snoring, apneic episodes with gagging and choking sense on nocturnal sleep, and sense of breathlessness on climbing up above 2nd floor. On physical examination, 102 kg in BW, Ht. of 154 cm, BMI of 43, neck circumference of 46 cm, macroglossia, excessive throat tissue density and lateral peri-tonsillar narrowing, Mallampati score of 3 and grade 3 tonsillar hypertrophy were noted. ESS score was 15. Then we arranged nighttime PSG including TCO2 monitoring for him. TST was 6 hours 47 mins. AHI was 157/h, OAI of 127.2/h, MAI of 23/h, OHI of 5.9/h and snore index of 216.7/h. His ODI was 148.6/h. Mean SpO2 was 73% and minimal SpO2 of 34%. Total arousal index (TAI) was 72.4/h and respiratory arousal index (RAI) of 52.5/h. Mean awake TCO2 was 32.6 mmHg. TCO2 monitoring showed TCO2 of > 50 mmHg on sleep for 41.1 min, the highest one to 58.4 mmHg. Highest HR was 415 bpm and average HR during sleep of 96 bpm. So, he was diagnosed with obesity-associated sleep hypoventilation with hypoxemia and concomitant severe OSAH. On split night PSG study, appropriate CPAP level for him was 10 cmH2O at which AHI residue of 10/h. We suggested taking regular CPAP therapy on night-time sleep, and adopting constant and regular healthy lifestyle modification, BW reduction, and taking regular physical activity. He lost BW of 6 kg over 6 months but BMI still 40. PSG followed up 3 months after CPAP use showed residual AHI of 10/h and EPSS down to 9. PFT results showed mild degree of restrictive airway dysfunction with FVC in 2.73 L (65%), FEV1/FVC ratio was 0.71 and FEV1 was 3.0 L (72%), DLCO/VA is 88% and RV/TLC of WNL. The 6MWT distance was only 480 meters. Please see the following PSG graphics.

Interpretation: That patient was morbidly obese, and he had nocturnal hypercapnia due to nocturnal hypoventilation although he had no daytime hypercapnic evidence, so he belonged to stage I of hypoventilation in obesity (that is Obesity-Associated Sleep Hypoventilation) which means intermittent nocturnal hypercapnia get fully recovery on daytime. However, we had not checked his daytime serum HCO3 level or ABG then. Concurrently, he also had severe OSA with AHI >30/hr. Therefore, our treatment plan was initially aimed at splinting of upper airway where frequent complete or partial collapse happened on sleep due to excessive local fat mass in his throat and Oro-pharyngeal tissue. So, we titrated and started to treat him with CPAP therapy. On titration study, we found an appropriate CPAP level for him at 10 cmH2O. Till so far, he has been on the improved way in OSA signs and symptoms. His nocturnal hypercapnia is due to decreased pharyngeal luminal size and increased upper airway collapsibility due to excessive fat depositions surrounding upper airway, around the chest and abdominal walls cast which led him vulnerable to concomitant ventilatory mechanical constraints affecting the chest wall and diaphragmatic mechanics, nocturnal rostral fluid shift from leg to neck, and also reduced central respiratory drive by impaired leptin level and sensitivity secreted from plentiful adipose tissue to stimulate neural ventilatory center in addition to prolong sleep apnea hypopnea and inter-apneic hypoventilation and diurnal hypoventilation. So, he exhibits marked positive response to CPAP therapy. Although effective weight reduction is the essence for both OHS and OSA therapy, but patient can't achieve it very well that he needs to put more effort on to decrease his BMI down to below 30.

Conclusions: We should keep mindful of obesity-associated sleep hypoventilation (that is Stage I and II of hypoventilation in obesity) in grossly morbid obese patients though they do not meet with criteria for obesity hypoventilation syndrome (that is combination of BMI >30 with sustained daytime hypercapnia (PaCO2 >/= 45 mmHg) and sleep hypoventilation (PaCO2 > 55 mmHg for 10 minutes during sleep or increase of PaCO2 by 10 mmHg and more than that of awake supine value up to more than 50 mmHg for 10 minutes during sleep) and cardiometabolic abnormalities. In those patients, measuring daytime serum bicarbonate level is another alternative to detect whether it is less than 27 mmol/L (i.e. complete wash out of nocturnally accumulated CO2) or more than 27mmol/L (i.e. incomplete wash out) in the situation of arterial blood gas analysis is not easily available. If AHI severity of >30/h without sustained daytime hypercapnia with serum HCO3 less than 27 mmol/L, CPAP should be the initial PAP therapy option. If AHI of <30/h but sustained daytime hypercapnia with serum HCO3 >/= 27 mmol/L, then should consider Bi-pap therapy first. Anyhow, healthy dietary and lifestyle adoption with regular physical activity is an important adjunctive therapeutic modality as positive airway pressure therapy (either CPAP or Bi-level PAP therapy) and pulmonary rehabilitation plays critical roles in such 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

細胞程式死亡蛋白 -1 在非結核分枝桿菌肺病的驗證與運用：從血液標記、肺組織到細胞實驗

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Investigation and application of programmed cell death-1 (PD-1) protein in nontuberculous mycobacterial lung disease: from blood biomarkers to lung tissue and cell-based experiments.

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Purpose: In patients with nontuberculous mycobacterial lung disease (NTM-LD), membrane-bound PD-1 on CD4 T lymphocytes (mPD-1+CD4) has been identified as a marker of immune exhaustion and soluble PD-1 (sPD-1) as a potential antagonist for its ligand, PD-L1. This study aims to evaluate the relationship between mPD-1 and sPD-1 with NTM-LD, the correlation between mPD-1 and PD-L1 in patients' lung tissue, and the influence of PD-1 treatment on NTM survival in a cell model.

Materials and Methods: Between 2023 and September 2024, NTM-LD patients and healthy control were enrolled prospectively. Blood samples were collected; flow cytometry was employed to assess the percentage of mPD-1+CD4/CD8 cells, and sPD-1 levels were measured. Immunohistochemistry (IHC) staining was used to visualize PD-1 and PD-L1-expressing cells in lung tissues obtained from patients. In a cell model, the stimulated THP-1 cells were infected with *Mycobacterium abscessus* (Mabs) and co-cultured with the Jurkat cells, followed by PD-1 protein treatment. The colony forming unit (CFU) of Mabs from PD-1-treated THP-1 cells was assessed as treatment response.

Results: Forty participants were enrolled for mPD-1 and sPD-1 measurement. The level of mPD-1+CD4 T cells was higher in patients with NTM-LD (n=22) than in the controls (n=18) (20.3% ±12.3 vs 12.7% ±6.5, p=0.017) but mPD-1+CD8 and sPD-1 levels were not. In participants with mPD-1+ CD4 T cells >15.2%, 82% (14/17) had NTM-LD, whereas, among individuals with mPD-1+ CD4 T cells ≤15.2%, 46% (6/13) of those with sPD-1 ≤40 pg/ml had NTM-LD and only 20% (2/10) of those with sPD-1 >40 pg/ml did (p for trend= 0.003). Notably, mPD-1+ CD4 >15.2% alone was correlated with 8-fold odds for NTM-LD (OR 8.75, 95% CI 1.93-39.75, p=0.005). Among patients with NTM-LD, those with mPD-1+ CD4 >15.2% (n=14) had a higher radiographic score, indicating more lung areas involved, compared to those without (n=8) (7.14 ± 2.57 vs. 5.0 ± 1.3, p=0.018). In lung tissues from NTM-LD patients, IHC staining revealed the presence of mPD-1 positive cells, primarily identified as lymphocytes (CD3+), surrounding PD-L1 positive macrophages (CD86+) within granulomas. In the Mabs-infected cell experiments (n=3 replicates), the CFU from THP-1 cells decreased when co-cultured with Jurkat cells, and further declined with the addition of PD-1 protein to the culture media (p=0.22 and p=0.47 for M.O.I = 5 and 10, respectively).

Conclusions: The correlation between NTM-LD and PD-1 pathway activation is supported by the co-expression of mPD-1 and PD-L1 positive cells in lung tissue. Antagonizing this pathway with PD-1 protein may help reverse immune exhaustion and enhance NTM clearance by immune 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)

OC02

運用標靶導向次世代定序於重症肺炎患者檢測呼吸道病原菌

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Detecting Respiratory Pathogen in Severe Pneumonia by Target Enrichment Next-Generation Sequencing

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Purpose: Severe pneumonia remains the global leading infectious cause of death. Sputum culture is time-consuming nature and with suboptimal sensitivity, therein hampering prompt pathogen detection. Advanced molecular diagnostic measures, including polymerase chain reaction (PCR) and next-generation sequencing, rapidly identify pathogen and antimicrobial resistance (AMR) genotypes. Nevertheless, the performance of hybrid capture-based target enrichment NGS by Respiratory Pathogen ID/AMR Enrichment Panel (RPIP) in patients with severe pneumonia remains uncertain.

Materials and Methods: We conducted a multi-center prospective study enrolling adults with severe pneumonia. Respiratory samples from the lower respiratory tract were collected via bronchoalveolar lavage, bronchial washing, or endotracheal tube suction. The performance of RPIP in pathogen and AMR-associated gene detection was compared to that of conventional culture methods and the multiplex PCR-based FilmArray Pneumonia Panel (FilmArray-PN).

Results: A total of 83 subjects were enrolled. The most prevalent pathogens detected by RPIP were Rothia mucilaginousa, Stenotrophomonas maltophilia, and Pseudomonas aeruginosa; Herpes simplex virus-1, Cytomegalovirus, and Epstein-Barr virus; and Pneumocystis jirovecii. The overall positive and negative agreement rates for bacterial detection were 63.6% and 97.5% between RPIP and culture methods, and 55.8% and 99.4% between FilmArray-PN and culture methods, respectively. Compared to FilmArray-PN, RPIP exhibited significantly better detection rates for bacteria (p=0.03), viruses (p<0.001), and fungi (p<0.001), and identified additional blaOXA and blaCMY extended-spectrum beta-lactamase genes and blaOXA and blaSHV carbapenemase genes.

Conclusions: RPIP sensitively profiles respiratory pathogens and serves as a promising tool for detecting multiple microorganisms and AMR-associated genes in patients with severe pneumonia.

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

OC03

使用微滴式數位聚合酶連鎖反應診斷結核肋膜積水

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Using droplet digital polymerase chain reaction for diagnosing tuberculous pleural effusion

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Background: Despite a gradual trend towards controlling tuberculosis (TB), it remains one of the most common infectious diseases globally. Currently, diagnosing tuberculous pleural effusion, is challenging and contributes to significant mortality rates. The current diagnostic criteria primarily rely on microbiological methods, which can take weeks and have a sensitivity of only 40-60%. Thus, the use of droplet digital PCR (ddPCR) to detect cell-free DNA (cfDNA) from pathogenic *Mycobacterium tuberculosis* (Mtb) might offer a highly sensitive and specific approach. However, there is limited research on applying ddPCR in diagnosing tuberculous pleural effusion.

Methods: This study collected samples of inflammatory pleural effusion, extracted cfDNA and conducted ddPCR analysis targeting the Mtb IS 6110 gene, with a focus on its diagnostic efficacy (sensitivity/specificity).

Results: During the study, 101 samples were collected, including 53 from tuberculous pleural effusion, 18 from cancer-related effusions, and 30 from other inflammatory or infectious causes. DdPCR could detected significantly higher Mtb cfDNA in tuberculous pleural effusion than others (41.85 [TB] vs. 10.00 [other infections] vs. 6.00 [malignant PE], $p < 0.001$). ROC curve analysis showed an area under the curve (AUC) of 0.875 (95% CI: 0.807-0.942). Additionally, the levels of interferon-gamma, interleukin-6, myelopriodixdase, and decoy receptor 3 in pleural fluid were better at distinguishing tuberculous pleural effusion. Using a positive reaction count of 10 in ddPCR test (by the Youden index method) yielded a sensitivity of 87% and specificity of 78%, which was better than commercial Xpert Mtb PCR and in-house real time PCR.

Conclusions: Using ddPCR to detect Mtb cfDNA in tuberculous pleural effusion demonstrated a sensitivity of 87% and an AUC of 0.875, making it a promising rapid diagnostic method worthy of further validation and development. This approach could significantly enhance the early detection and treatment of 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)

OC04

以全基因定序分析鳥型分枝桿菌的基因型與群聚和臨床開洞表現的相關性

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Using Whole Genome Sequencing to Analyze the Association between Genotype, Clustering and Cavitation in *Mycobacterium Avium* Complex Lung Disease

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Purpose: *Mycobacterium avium* complex (MAC) is one of most common species leading nontuberculous mycobacterial lung disease (LD). However, the association between genotype of MAC and clinical clustering as well as phenotype of cavitation formation remain poorly understood.

Materials and Methods: We recruited MAC-LD in two medical centers and retrospectively collected their index MAC isolates. After we extracted the MAC DNA, we sent them for whole genome sequencing (WGS). We reviewed the clinical and radiographical characteristics from the MAC-LD patients and analyzed the association between the MAC genotype and clustering as well as radiographical cavitation.

Results: We analyzed 215 MAC-LD and among them, 152 (71%) were *M*. intracellulare, and the remaining 63 (29%) were M. avium. By applying genetic algorithm (GA), a model with finally selected 10 single nucleotides polymorphism (SNP) for *M. intracellulare* predicted the phenotype of radiographical cavitation with AUC of 0.802, and balance accuracy of 0.773. A model with 12 SNPs had AUC of 0.960, and balance accuracy of 0.956 for *M. avium* lung disease with cavitation. For clustering analysis using minimal spanning tree method, 89 (59%) isolates of *M. intracellulare*, and 4 (6%) of *M. avium* were classified as having clustering association (SNP < 20). Particularly, 89 isolates of *M. intracellulare* with clustering association had high potential with radiographical cavitation (odds ratio of 1.956, 95% CI: 0.86 – 4.45) although the significance was only borderline (p=0.12).

Conclusion: In the present study, we found that genetic model of MAC by WGS might predict the phenotype of MAC-LD with cavitation, which correlates with poor prognosis. In addition, high clustering was found in *M. intracellulare* rather than that in *M. avium*, and might be associated with cavitation development although it requires future validation and mechanism 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)

OC05

Th 17 和白細胞介素 23 在肺阻塞病人合併潛伏性結核病中的可能作用

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Possible roles of Th 17 and interleukin-23 in latent tuberculosis of COPD population

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Purpose: Chronic obstructive pulmonary disease (COPD) has 2 to 4 folds of risk to get active tuberculosis (TB). Latent tuberculosis infection (LTBI) is an early phase of active TB. It is important to understand more about the underlying immune cross-reactions of LTBI in COPD. The aim of the study was to investigate Th1 and Th17 immune cascades in LTBI of COPD population, compared to non-LTBI.

Materials and Methods: It is a prospective observational study. The participants are COPD patients aged more than 40 years who agree to receive gamma-interferon releasing assay (IGRA) tests (QuantiFeron TB Gold Plus) The participants were divided into LTBI and non-LTBI according to the interpretation criteria of IGRA tests setting by the manufactory. Subjects with indeterminate results were excluded. Soluble Th1(IFN-γ and TNF-α) and Th17 (IL-6, IL-17, IL-21 and IL-23) markers in plasma were checked

Results: A total of 203 subjects were enrolled. Of them, there were 67 subjects (33%) with positive IGRA. The other 131 subjects (64.5%) had negative results of IGRA. The remaining five subjects (2.5%) had indetermined results of IGRA, which were excluded from the analysis. Demographic factors, COPD assessment test scores, lung function, and exacerbation in previous one year were similar between LTBI and non-LTBI groups. The soluble immune markers about Th1and Th17 were also all no significant differences between LTBI and non-LTBI groups. Though IL-23 level was not significantly different in LTBI and non-LTBI groups, it was associated with the IFN-γlevel of TB1tube minus negative control tube(TB1-Nil) and TB2 - Nil ($p = 0.047$ and 0.056, respectively). Additionally, IL-23 was also significantly related to TNF-α, IL-6, IL-17 and IL-21 ($R2 = 0.59, 0.57, 0.57, 0.62$, respectively, p all < 0.001)

Conclusions: The immune interaction of LTBI is complicated especially in COPD. The data surprisingly suggested IL-23 and Th17 immunity might join the complexity of LTBI. It needs further investigation to elucidate the mechanism and phenomenon.

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

OC06

台灣非結核分枝桿菌肺炎之免疫路徑轉錄組學分析：前導研究

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Transcriptomic analysis of immune pathways in NTM lung disease in Taiwan: a pilot study

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Purpose: Although prior studies have explored the molecular mechanisms of the host immune response to nontuberculous mycobacteria lung disease (NTM-LD), the data remain limited and inconsistent. This pilot study aims to identify key pathways and hub genes involved in the host immune response to NTM-LD in the Taiwanese population.

Materials and Methods: Newly diagnosed NTM-LD patients and healthy controls (HC) without NTM infection were prospectively enrolled from two medical centers in Taiwan. Peripheral blood mononuclear cells (PBMCs) were isolated from blood samples for next-generation sequencing (NGS). Treatment outcomes, categorized as stable/remission or progression, were assessed after a minimum of one year of anti-NTM therapy. Differential expression analysis, combined with bioinformatics analysis, was conducted to compare NTM-LD patients with HC and to explore differences between NTM-LD patients who experienced disease progression and those who achieved stable/remission outcomes.

Results: A total of 43 participants were included, consisting of 34 NTM-LD patients and 9 non-NTM healthy controls (HC). Differential expression analysis identified 382 up-regulated and 121 down-regulated differentially expressed genes (DEGs) in NTM-LD patients compared to HC. The identified DEGs were associated with the activation of various immune pathways, such as IL-4 and IL-13 signaling, IL-10 signaling, and TREM1 signaling, with chemotaxis also predicted to be activated in the NTM-LD group. Additionally, chemotaxis was predicted to be activated in the NTM-LD group. Network analysis identified several hub genes, including IL6, TNF, IL1B, CXCL8, IL10, and CCL3. Further analysis comparing NTM-LD patients with disease progression to those with stable/remission outcomes revealed activation of immune pathways such as the complement cascade and IL-15 signaling in those with disease progression.

Conclusions: Using an integrated bioinformatics approach, this study identified key immune pathways and hub genes involved in the host response to NTM-LD, highlighting potential molecular targets associated with disease progression and treatment outcomes.

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

OC07

具有不同影像學表現的非結核分枝桿菌肺病患者的單細胞轉錄組學研究

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Single-Cell Transcriptomics in Nontuberculous Mycobacterial Lung Disease Patients Exhibiting Diverse Radiographic Patterns

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Purpose: Patients with nontuberculous mycobacterial lung disease (NTM-LD) can present with various radiographic patterns, including nodular bronchiectatic (NB), cavitary NB (cNB), and fibrocavitary (FC) forms. The prognosis varies among these patterns, with survival rates being highest in patients with the NB pattern and lowest in those with the FC pattern. However, the underlying reasons for these differences remain unclear. Previous studies suggest that the host immune response to NTM-LD may vary depending on the radiographic pattern. Therefore, this study aims to evaluate the transcriptomic profile of immune cells in NTM-LD patients with different radiographic patterns.

Materials and Methods: Peripheral blood mononuclear cells (PBMCs) were isolated from four adults, including one healthy control (HC) and three NTM-LD patients, each presenting with NB, cNB, and FC patterns, respectively. The cells were subjected to single-cell RNA sequencing (scRNA-seq). Unsupervised clustering of the cells was performed based on gene expression profiles using the Seurat package, and clustering was visualized using UMAP. Differential gene expression (DGE) analysis and gene set enrichment analysis (GSEA) were then conducted to identify potential immune signatures associated with the different radiographic patterns of NTM-LD. Real-Time PCR (qPCR) was used to validate the finding identified by scRNA-seq.

Results: Cluster analysis based on DGE revealed five major cell groups: myeloid, T, B, NK, and other cells. Comparison of the scRNA-seq datasets from HC, NB, cNB, and FC patients showed a notable variation in T cell subsets, particularly in terms of cellular abundance. As a result, we focused on the T cell subsets and identified a gradual decrease in Granzyme K (GZMK) expression within GZMK-expressing CD8 T cells, progressing from HC to NB, cNB, and FC patients. Further analysis of downregulated genes in GZMK-expressing CD8 T cells from cNB and FC patients showed enrichment in apoptotic signaling GO terms. Finally, qPCR of PBMCs from 12 HC and 5 NTM-LD patients confirmed significantly lower GZMK expression in NTM-LD patients ($P < 0.05$).

Conclusion: We found that the reduced GZMK expression in GZMK-expressing CD8+ T cells is possibly associated with NTM-LD and the cavitary radiographic pattern, which reflects higher disease severity. Understanding this immune signature might assist physicians in predicting patient prognosis and offer insights into potential future therapeutic interventions.

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

OC08

對於流感或新冠肺炎導致急性呼吸窘迫症候群之呼吸器機械功率與臨床預後的相關性：多中心世代研究

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Correlation between Ventilator Mechanical Power and Clinical Outcomes in Influenza or COVID-19 Related Acute Respiratory Distress Syndrome: A Multicenter Cohort Study

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Purpose: The mechanical power (MP) of the ventilator refers to the energy delivered to the lungs, which may induce lung injury. Patients infected with either influenza or COVID-19 may induce acute respiratory distress syndrome, and the ventilator is the cornerstone for supporting the respiratory system. In this study, we compare the difference in mechanical power in patients with influenza or COVID-19-induced acute respiratory distress syndrome (ARDS).

Materials and Methods: The Taiwan Severe Influenza Research Consortium (TSIRC) comprises 8 hospitals, and all patients who were admitted to the ICUs due to influenza pneumonia-related ARDS from October 2015 to March 2016 were screened. The Taiwan Severe and Critical COVID Consortium (TSCCC) included 24 hospitals, and all patients who were admitted to the ICUs due to COVID-19-related ARDS from May 2021 to July 2021 were screened. All data was obtained from the electronic medical records of each hospital by using a standard case report form. MP was calculated as follows: MP (J/min) = $0.098 \times V_T \times RR \times (P_{peak} 1/2 \times \Delta P)$.

Results: We included 282 influenza-related ARDS patients and 524 COVID-19-related ARDS patients. Influenza patients had significantly higher MP on the day of starting the ventilator than COVID-19 patients (22.0 ± 8.7 vs. 16.9 ± 6.4 J/min, $p < 0.001$). After 1 day of the ventilator, the MP was decreased in influenza patients and increased in COVID-19 patients, and the change value was significantly different (-1.6 ± 8.9 vs. 9.7 ± 41.9 J/min, $p < 0.001$). The influenza patients had a lower 28-day mortality rate (23.0% vs. 30.2%, $p = 0.032$) and higher 28-day ventilator-free days (10.5 ± 9.9 vs. 9.1 ± 10.2, $p = 0.040$). Moreover, among COVID-19 patients, the 28-day mortality patients had a significantly higher increase of MP after 1 day of ventilator (6.5 ± 33.4 vs. 17.6 ± 57.1, $p = 0.020$).

Conclusions: The worse clinical outcomes of COVID-19 ARDS patients than influenza ARDS patients may relate to significantly worse MP 1 day after starting the ventilator.

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

PC01

A 型流感肺炎合併急性呼吸窘迫症候群呼吸照護經驗

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Case Report: Influenza A Pneumonia with Acute Respiratory Distress Syndrome

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Severe Influenza A infection significantly increases the risk of developing acute respiratory distress syndrome (ARDS) or multiple organ dysfunction, with a high mortality rate of 20-30%. Research supports the early use of prone positioning (PP) in combination with lung protective ventilation strategies to improve oxygenation and reduce mortality. This case discussion examines the management of a patient with Influenza A induced ARDS, highlighting the critical role that prone positioning and tailored ventilator settings played in enhancing oxygenation and enabling successful weaning from mechanical ventilation.

A 59-year-old woman presented with a one-week history of fever and dyspnea. The chest X-ray revealed bilateral infiltration, and a positive Influenza A rapid test confirmed the diagnosis. She developed acute respiratory failure with septic shock and was admitted to the intensive care unit. Blood gas analysis showed a low PaO2/FiO2 (P/F) ratio of less than 150, raising concern for ARDS. Prone positioning was initiated and maintained for 1 day. As the P/F ratio improved, ventilator weaning trial was started. The patient tolerated the spontaneous breathing trial (SBT) and was extubated on day 11 of admission.

Influenza A is an RNA virus capable of undergoing antigenic shift and drift, most commonly circulating during autumn and winter. It can cause damage to host epithelial cells, trigger an excessive inflammatory response, downregulate Toll-like receptors (TLRs), and deplete alveolar macrophages. Following a viral infection, the risk of bacterial pneumonia increases, which, in severe cases, can progress to ARDS. In addition to lung protection strategies, PP is a viable respiratory technique for several reasons: (1) When in the supine position, the lungs are compressed by the heart and abdominal organs, but in the prone position, this compression is reduced, enhancing gas exchange and lung function. (2) In ARDS, there is a mismatch between blood flow and ventilation, leading to poor gas exchange. PP can redistribute both, improving gas exchange. (3) It also increases venous return to the right ventricle and decreases pulmonary vascular constriction, allowing the heart to pump more efficiently, thereby improving oxygen delivery. (4) Additionally, the PP facilitates better secretion clearance, as secretions can drain more easily with the mouth and nose facing downward. This case was successfully stabilized following prone positioning therapy. The care experience described in this report can serve as a valuable reference for managing similar cases, reducing further lung injury and aiding in successful ventilator weaning.

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

PC02

台灣年度堪薩斯分枝桿菌藥物敏感性測試結果報告

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Annual drug susceptibility profiles of *Mycobacterium kansasii* in Taiwan

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Introduction: *Mycobacterium kansasii* (M. kansasii) is a prevalent species of nontuberculous mycobacteria (NTM) responsible for both pulmonary and extrapulmonary diseases. Due to its high virulence, intensive treatment is recommended, but research on the drug susceptibility of *M. kansasii* remains limited, primarily due to the scarcity of available strains. This study aims to examine the drug susceptibility profiles of *M. kansasii* isolates in Taiwan and to assess trends in drug resistance over time.

Method: This retrospective cohort study analyzed medical records and clinical isolates from patients with *M. kansasii*-related pulmonary and extrapulmonary diseases between 2011 and 2022 at Kaohsiung Medical University Hospital and Taichung Veterans General Hospital. The minimum inhibitory concentration (MIC) was determined using the Broth Microdilution Method, as recommended by the Clinical and Laboratory Standards Institute (CLSI). Predictors of drug resistance in respiratory site strains were evaluated using multivariate logistic regression analysis.

Results: A total of 377 isolates (361 from respiratory sites and 16 from non-respiratory sites) of *M. kansasii* were included in the analysis. Overall, the resistance rates for rifampin (RIF), ethambutol (EMB), ciprofloxacin (CIP), and clarithromycin (CLR) were 9%, 100%, 44.6%, and 2.9%, respectively. The annual resistance rates for CIP and CLR showed a noticeable increase. Compared to isolates from Kaohsiung, those from Taichung demonstrated greater in vitro susceptibility to the tested drugs. Pulmonary cavitation emerged as an independent risk factor for drug resistance in patients with *M. kansasii* lung disease.

Conclusion: This study reports an annual rise in drug resistance rates for *M. kansasii* treatment regimens and highlights geographic differences in resistance patterns. Our findings offer potential insights into optimizing treatment strategies for *M. kansasii* infections, and we recommend further research into the genotype of *M. kansasii* and the genetic mechanisms underlying drug resistance.

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

PC03

臨床似肺癌表現經手術診斷並接受抗生素根治的肺部類鼻疽：一病例報告與文獻回顧

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Pulmonary Melioidosis Mimicking Lung Cancer Diagnosed by Surgical Resection and Cured by Adequate Antibiotic Eradication Therapy: A Case Report and Literature Review

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Introduction: Melioidosis is an infectious disease caused by the gram-negative bacterium Burkholderia pseudomallei, prevalent in southeast Asia and northern Australia. Several risk factors had been identified for melioidosis infection, while it is still challenging to diagnose melioidosis owing to its wide variations of clinical manifestations. Treatment of melioidosis requires appropriate antibiotics therapy and, if necessary, surgical interventions for diagnosis or treatment should be considered.

Case Description: This is a 71-year-old male with chronic obstructive pulmonary disease and bronchiolitis obliterans with organizing pneumonia. He had been diagnosed as pulmonary squamous cell carcinoma of right upper lobe and was cured through videœassisted thoracoscopic surgery (VATS) wedge resection (WR) on June, 2019. A chest computed tomography in November 2021 revealed a fresh 9.9 mm nodule in right middle lobe (RML). A subsequent positron emission tomography–computed tomography in May 2022 revealed the nodule had low glucose metabolism despite increasing in size. In suspicion of malignancy, VATS WR of RML was performed. The pathology report showed chronic granulomatous inflammation with necrosis. The tissue bacterial culture revelaed Burkholderia pseudomallei infection. Under the diagnosis of pulmonary melioidosis, the patient was cured by a 5-month-long antibiotics treatment with Trimethoprim-Sulfamethoxazole (TMP-SMX) then doxycycline plus amoxicillin-clavulanate.

Discussion: Burkholderia pseudomallei are Gram-negative, aerobic bacilli widely found in soil and water in tropical and subtropical regions. Many host risk factors for melioidosis have been identified, including diabetes mellitus, alcoholism, chronic kidney disease and lung disease. The clinical spectrum of melioidosis ranges from nonspecific symptoms to fatal septicemia with multi-organ involvement. Pneumonia was found to be the most common presenting feature in previous studies. A definite diagnosis requires a positive culture of Burkholderia pseudomallei. Successful management of melioidosis involves prolonged courses of antibiotics, typically consisting of an initial intensive followed by an eradication therapy. The mortality rate of melioidosis depends on whether rapid diagnosis and early implementation of optimal antibiotic therapy are available. As a result, raising clinical awareness and arranging proper bacteriological diagnosis of melioidosis in suspected patient are important for early diagnosis of the rare 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)

PC04

探討 CEFOPERAZONE-SULBACTAM 合併治療在加護病房 CRAB 血流感染的療效

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THE EFFICACY OF CEFOPERAZONE-SULBACTAM COMBINATION THERAPY FOR CRAB BLOODSTREAM INFECTION IN ICU

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Background: This study aimed to evaluate the efficacy of cefoperazone-sulbactam-containing (CSC) combination therapy for carbapenem- resistant Acinetobacter baumannii (CRAB) bloodstream infections (BSI) in patients admitted to the intensive care unit (ICU).

Methods: In this multicenter, retrospective cohort study, 407 ICU patients with CRAB BSI from 2015 to 2019 were initially included. The patients were divided into two groups: CSC and non-cefoperazone-sulbactam-containing (NCSC). Outcomes such as mortality, clinical failure, and microbiological eradication were compared after adjusting for time-window bias and conducting propensity score matching.

Results: After propensity score matching, there were no significant differences in baseline characteristics or disease severity between the CSC (n=50) and NCSC groups (n=150). On day 28, the CSC group showed significantly lower all-cause mortality (30.0% vs. 50.0%, p = 0.014) and clinical failure rates (32.0% vs. 52.0%, p = 0.015) compared to the NCSC group. The CSC regimen was identified as an independent protective factor against clinical failure on day 28 (adjusted odds ratio (aOR) = 0.281, 95% confidence interval [CI] = 0.091–0.864, p = 0.027). Kaplan-Meier analysis demonstrated significantly longer survival times in the CSC group compared to the NCSC group (log-rank test, p = 0.028). Subgroup analysis of factors associated with 28-day mortality revealed that female patients, those with a body mass index (BMI) over 25, non-smokers, and patients with C-reactive protein (CRP) levels below 30 especially benefited from the CSC regimen compared to the NCSC regimen.

Conclusions: Cefoperazone-sulbactam could be considered an alternative to ampicillin-sulbactam as part of combination therapy for critically ill patients with CRAB BSI.

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

PC05

接受 nirmatrelvir/ritonavir 治療 COVID-19 病患的病毒反彈研究

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The COVID-19 viral rebound study in patients treated with nirmatrelvir/ritonavir

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Purpose: Concerns about the viral rebound have restricted the use of nirmatrelvir/ritonavir in patients with acute coronavirus disease 2019. There is contradictory evidence about the relationship between virologic rebound and nirmatrelvir/ritonavir therapy for acute coronavirus disease 2019. This study aimed to examine the incidence of viral rebound in acute coronavirus disease 2019 patients treated with and without nirmatrelvir/ritonavir.

Methods: All of the included studies were conducted during the Omicron predominance period. Only studies that directly examined the effectiveness of nirmatrelvir/ritonavir compared to a placebo in the treatment of adult patients with the COVID-19 Omicron variant were considered suitable for inclusion. When symptoms of COVID-19 recurrence or a previously negative viral test turns out to be positive, this is known as a "rebound." The following information was extracted: author, year of publication, region, study design, total number of nirmatrelvir/ritonavir-treated patients, total number of placebo-treated patients, and COVID-19 rebound.

Results: COVID-19 rebound was reported in four studies comprising 16118 individuals (575 received nirmatrelvir/ritonavir therapy, and 15543 received placebo). Patients who received nirmatrelvir/ritonavir compared to placebo were associated with a higher incidence of COVID-19 rebound (RR=1.62, P=0.02, I2=0%). COVID-19 rebound was reported in five studies comprising 14981 individuals (11468 received nirmatrelvir/ritonavir therapy, and 3513 received molnupiravir). The incidence of COVID-19 rebound did not differ significantly between the two groups (RR=1.00, P=1.00, I2=65%).

Conclusions: According to the current study, the incidence of COVID-19 rebound was higher in patients receiving nirmatrelvir/ritonavir compared to those receiving placebo. Larger studies are needed to further investigate the phenomenon of COVID-19 rebound and its implications for patient management and treatment strategies.

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

PC06

COVID-19 合併呼吸衰竭成人患者的臨床結果分析

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Clinical Outcomes in COVID-19 adult Patients Requiring invasive Mechanical Ventilation

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Purpose: Our objective is to explore the clinical outcome of prolonged mechanical ventilation in patients with COVID-19-associated respiratory failure in a single center.

Methods: The current retrospective, single-center study included all hospitalized COVID-19 adult patients with acute hypoxemic respiratory failure required admission to the intensive care unit in Dalin TzuChi hospital, as well as invasive mechanical ventilation. Data on patients requiring invasive mechanical ventilation were collected, including age, sex, comorbidities, and clinical outcome.

Results: Between 1 January 2022, and 31 December 2022, ninety-three hospitalized COVID-19 adult patients with acute hypoxemic respiratory failure required admission to the intensive care unit in our hospital, as well as invasive mechanical ventilation. Patients with acute hypoxemic respiratory failure were divided into four groups based on their outcomes: nonsurviving in the intensive care unit (ICU) (n = 34), surviving in the ICU (n = 26), nonsurviving in respiratory care center (RCC) (n = 14), and surviving in RCC (n = 19). The incidence of prolonged mechanical ventilation in COVID-19–related acute hypoxemic respiratory failure was 35.5%. The ICU mortality rate was 36.6%, the in-hospital mortality rate was 51.6%, and the RCC mortality rate was 42.4%.

Conclusions: There is little reported clinical experience with prolonged mechanical ventilation in patients with COVID-19-associated respiratory failure in the literature. Additional studies will be conducted to provide clinical evidence and establish associations with COVID-19-associated respiratory failure patients on prolonged mechanical ventilation.

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

PC07

Nirmatrelvir/ritonavir 治療 SARS-CoV-2 Omicron 感染的臨床療效：統合分析

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Clinical real-world effectiveness of nirmatrelvir/ritonavir for the treatment of SARS-CoV-2 infection: A meta-analysis

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Purpose: The current meta-analysis aimed to evaluate the therapeutic effectiveness of nirmatrelvir/ritonavir for partially or fully immunized coronavirus disease 2019 (COVID-19) patients, including hospitalization, and all-cause mortality.

Methods: Studies that directly examined the clinical effectiveness of nirmatrelvir/ritonavir compared to a placebo in the treatment of adult patients with severe acute respiratory syndrome coronavirus 2 infection Omicron variant were enrolled. Studies were included if any key words, such as hospitalization and all-cause mortality could be identified. We performed subgroup analyses based on vaccination history and age.

Results: All-cause mortality was reported in eighteen studies comprising 1284514 individuals. Nirmatrelvir/ritonavir performed favorably compared to placebo in terms of all-cause mortality. In the subgroup analysis of all-cause mortality between patients aged ≥65 years and those aged <65 years, there was no significant difference between the two groups in terms of all-cause mortality. Hospitalization was reported in fifteen studies that included 1099730 individuals. Patients who received nirmatrelvir/ritonavir compared to placebo had substantially lower hospitalization rates. In the subgroup analysis of hospitalization rates between patients aged ≥65 years and those aged <65 years, six studies involving 158480 patients aged < 65 years reported hospitalization rates. Patients who received nirmatrelvir/ritonavir compared to placebo had substantially lower hospitalization rates. Nine studies involving 941250 patients aged ≥ 65 years reported hospitalization rates Patients who received nirmatrelvir/ritonavir compared to placebo had substantially lower hospitalization rates. Patients aged ≥ 65 years showed a reduction of 59% in all-cause mortality risk and only 36% in hospitalization risk. The reduction in all-cause mortality and hospitalization risk was similar among patients with low COVID-19 vaccination coverage and patients with high COVID-19 vaccination coverage.

Conclusions: The current meta-analysis of twenty-six studies indicated that adult patients with COVID-19 treated with nirmatrelvir/ritonavir reduced the risk of hospitalization by 53% and all-cause mortality by 57% compared to placebo.

A. ☐ 原著論文 (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 CA 19-9 持續性升高的支氣管擴張症病人

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Persistent elevation of CA 19-9 in a patient with bronchiectasis

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Introduction: Carbohydrate Antigen 19-9 (CA 19-9) is a tumor marker primarily used to diagnose and monitor gastrointestinal malignancies, particularly pancreatic cancer. It can also be elevated in nonmalignant conditions involving the liver, bile ducts, or gastrointestinal system. However, limited studies have shown that chronic bronchiectasis-related inflammation, rather than malignancy, can also lead to elevated CA 19-9 levels. This report presents a 61-year-old woman with a history of chronic cough secondary to bronchiectasis and persistent elevation of CA 19-9.

Case Report: A 61-year-old female presented with a chronic productive cough and significant weight loss over a three-month period. Initial imaging with a chest X-ray revealed tram-track abnormalities and ring shadows in both lower lung fields, suggestive of bronchiectasis. Blood tests showed an elevated serum CA 19-9 level of 70.4 U/mL (normal range <37 U/mL) and a CEA level of 1.24 ng/mL on October 31, 2022. Further evaluation with an abdominal ultrasound did not reveal any lesions in the pancreas, liver, or biliary tract. A chest computed tomography (CT) scan showed bronchial wall dilation, tram-track signs, and signet ring signs, consistent with bronchiectasis in both lower lobes. No evidence of pancreatic lesions was noted. Sputum cultures confirmed the presence of non-tuberculous mycobacteria. Follow-up CA 19-9 levels were persistently elevated: 66.8 U/mL (January 31, 2023), 79.8 U/mL (April 28, 2023), 86.9 U/mL (September 16, 2023), 79.6 U/mL (March 12, 2024), 80 U/mL (May 16, 2024). Repeat abdominal ultrasounds over this period did not show any abnormalities in the pancreas, liver, or biliary tract, confirming the absence of gastrointestinal malignancy.

Discussion: CA 19-9 is a sialylated Lewis blood group antigen and is widely used as a tumor marker for epithelial-type gastrointestinal cancers, particularly pancreatic cancer. However, elevated levels can also occur in benign conditions, including pancreatitis, liver diseases, and respiratory conditions. There are several reports of increased CA 19-9 levels in patients with nonmalignant lung diseases such as chronic obstructive pulmonary disease (COPD), interstitial lung disease, fibrosis, and bronchiectasis. Bronchiectasis is characterized by irreversible dilation of the bronchi and often involves bronchial wall thickening and mucoid impaction, leading to chronic infection and inflammation. The elevated CA 19-9 levels in these patients are likely due to the inflammatory response in the respiratory epithelium. While CA 19-9 is usually produced by gastrointestinal tissues, the respiratory tract can also produce it under conditions of chronic inflammation or infection, explaining why patients with bronchiectasis may have persistently elevated levels. In this case, the patient's elevated CA 19-9 levels persisted over an extended period, despite the absence of malignancy, further supporting the link between chronic bronchiectasis and increased CA 19-9 levels.

Conclusion: Persistent elevation of CA 19-9 in patients with bronchiectasis, even in the absence of malignancy, highlights the need for careful interpretation of this marker in the context of respiratory diseases. Chronic inflammation in the lungs can lead to elevated CA 19-9, emphasizing that elevated levels are not exclusive to malignancy. Regular monitoring and thorough clinical evaluation are essential to distinguish benign causes from potential malignancy in patients with elevated CA 19-9 levels.

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

PC09

使用 EKOS™ 血管內系統進行導管引導溶栓治療類風濕性關節炎患者嚴重肺栓塞：病例報告

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Catheter-Directed Thrombolysis via EKOS™ Endovascular System for Massive Pulmonary Embolism in a Patient with Rheumatoid Arthritis: A Case Report

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Case Presentation: A 50-year-old man with rheumatoid arthritis (RA) presented with progressive dyspnea for one month, which worsened with left leg pain and severe exertional dyspnea. On examination, he had tachycardia and a positive Homan's sign. ECG showed sinus tachycardia with a Q3T3 pattern, and labs revealed elevated D-dimer, NT-proBNP, and Troponin-T. CT scans identified thrombi in the main and bilateral pulmonary arteries, as well as in the left deep femoral, popliteal, and posterior tibial veins, along with right ventricular dilation. Catheter-directed thrombolysis (CDT) using the Ekosonic Endovascular System (EKOS) with urokinase was administered. Autoimmune testing revealed elevated RA factor levels. After three days, his oxygenation and hemodynamics improved, and he was discharged on dabigatran. Follow-up CT confirmed resolution of the pulmonary embolism.

Discussion: Studies show that patients with rheumatoid arthritis (RA) face an increased risk of venous thromboembolism (VTE), with relative risks ranging from 3 to 6 times higher than in non-RA individuals. Hospitalization is a major VTE risk factor for both groups. The VTE risk remains consistent across RA subgroups, regardless of age, sex, or RA duration.

Pulmonary embolism (PE) remains a serious concern, with symptoms ranging from mild dyspnea to life-threatening instability. Early detection and treatment, including anticoagulation and catheter-directed thrombolysis, are crucial. The EKOS® system, using ultrasound-guided thrombolysis, offers an efficient treatment option with reduced complication risks due to shorter infusion times and lower thrombolytic doses.

Conclusions: RA significantly increases the risk of VTE, and advanced treatments like the EKOS® system improve outcomes by efficiently reducing clot burden with fewer 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)

PC10

運用通訊科技提升偏鄉緊急醫療品質

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Enhancing the Quality of Emergency Medical Care through Communication Technology in Rural Areas

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Purpose: It is well known that out-of-hospital cardiac arrest (OHCA), ST-elevation myocardial infarction (STEMI), and acute ischemic stroke are time-sensitive emergencies that require rapid intervention, particularly in rural areas. Establishing a comprehensive emergency medical response system is therefore essential.

Materials and Methods: Since 2023, our hospital has partnered with 9 nearby fire brigades to create a communication group, which provides real-time image interpretation and medical advice. This group also helps expedite the readiness of our hospital's emergency medical team to take over patient care. We evaluated the outcomes of OHCA, STEMI, and acute ischemic stroke cases with and without the use of this communication group (case group and control group).

Results: From January 2023 to March 2024, in the case group, there were 13 OHCA cases, with 9 patients (69.2%) achieving return of spontaneous circulation (ROSC). In the control group, there were 123 OHCA cases, with 22 patients (17.9%) achieving ROSC. In the case group, 8 STEMI patients underwent emergency cardiac catheterization, with 6 patients (75%) achieving door-to-wire time within 90 minutes; 7 patients survived to discharge. In the control group, 33 STEMI patients underwent emergency cardiac catheterization, with 18 patients (54.5%) achieving door-to-wire time within 90 minutes; 30 patients survived to discharge. In the case group, 7 acute stroke patients were eligible for thrombolytic therapy, and all 7 patients (100%) received the therapy within 60 minutes, with an average administration time of 29.9 minutes. In the control group, 30 acute stroke patients were eligible for thrombolytic therapy, and 24 patients (80%) received the therapy within 60 minutes, with an average administration time of 54.1 minutes.

Conclusions: Communication technology can enhance both pre-hospital rescue and post-hospital care by reducing patient handling time and improving treatment outcomes. In the future, we aim to develop more extensive services, extending medical care to the front lines.

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

PC11

嚴重特殊傳染性肺炎在玉山登山就醫者的角色

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The Role of COVID-19 for Hikers Requiring Medical Care on Jade Mountain

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Purpose: COVID-19 is known to cause various short-term and long-term complications, with the most significant impacts on the respiratory, cardiovascular, and nervous systems. However, the effects of a prior COVID-19 infection on high-altitude mountaineering remain unclear. This study analyzes medical records from the Jade Mountain medical station to assess the impact of a history of COVID-19 infection on mountaineers.

Materials and Methods: Since 2004, the Pai-Yun Clinic has been established at the Pai-Yun Lodge, providing both general and emergency medical services every weekend. We conducted a retrospective study using medical records from the Pai-Yun Clinic in 2023. The history of COVID-19 infection was specifically recorded in these records.

Results: A total of 461 patients were enrolled, of which 54.4% were male. The distribution across different age groups was 59.6% aged 20-39, 33.4% aged 40-59, and 7.0% aged 60 and above. Among these patients, 279 (60.5%) were diagnosed with acute mountain sickness (AMS), with 132 (47.3%) having the mild type and 147 (52.7%) having the severe type. Among the 346 patients who had a history of COVID-19, 52.0% were male. The age distribution was 58.6% aged 20-39, 34.8% aged 40-59, and 6.6% aged 60 and above. Of these, 213 (61.5%) were diagnosed with AMS, with 97 (45.5%) being mild cases and 116 (54.5%) severe cases. Additionally, there were 115 patients who had never contracted COVID-19, of which 61.7% were male. The age distribution was 62.7% aged 20-39, 29.1% aged 40-59, and 8.2% aged 60 and above. Among them, 66 (57.4%) were diagnosed with AMS, with 35 (53.0%) having the mild type and 31 (47.0%) the severe type.

Conclusions: This study found that among high-altitude hikers seeking medical care, those who had never contracted COVID-19 had a higher proportion of males, a lower rate of AMS diagnosis, and a higher proportion of mild cases. However, larger sample sizes and different study designs are needed to accurately determine the impact of COVID-19 on mountaineers.

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

PC12

腎移植族群潛伏結核感染的發生因子和介入報導

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The associated factors of latent tuberculosis infection and its intervention in kidney transplant recipients

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Background: The status and intervention of latent tuberculosis infection (LTBI) in patients with kidney transplant recipient remains unclear.

Methods: In this prospective study, we enrolled kidney transplant recipients (KTRs) from 2014 to 2023. We defined LTBI as a positive result of QuantiFERON-TB Gold In-tube or Gold Plus assays (QFT). We analyzed the predictors for LTBI acquisition and monitor LTBI positive conversion for 2 years among those initially without LTBI. We reported the treatment completion rate and adverse rate in the KTRs with LTBI treatment.

Results: During study period, a total 276 KTR patients were prospectively enrolled and of them, 31 had positive LTBI status (11.2%). Tacrolimus was protective whereas azathioprine and cirrhosis were associated with LTBI by multivariable logistic regression. Among 140 KTR with initial negative LTBI and follow up (mean: 1.93 years), 19 (13.6%) developed incident LTBI (positive conversion) in an average of 1.08 years. By multivariable Cox proportional hazard regression, use of everolimus (adjusted hazard ratio [aHR]: 0.09 [0.02-0.45]), dialysis duration before transplant (aHR: 1.10 [1.00-1.20] per year), and initial value of QFT (aHR: 1.07 [1.03-1.12] per unit) were independent factors for new incident LTBI. Of those with LTBI, 35 (70%) received LTBI treatment including 24 with 9 months of daily isoniazid regimen, and 11 with rifamycin-containing short-course regimen. There was no severe ADR. The level of tacrolimus affected by rifamycin was all adjustable without related kidney injury. Only one of daily isoniazid group had not completed LTBI treatment due to personal cause. The incompletion rate was insignificant difference between different regimen. There was no occurrence of active TB for all participants during this study.

Conclusions: In the present study, high prevalence and incidence of LTBI were reported in the KTR and were influenced by immunosuppressant and underlying disease. Particularly, the initial high QFT response correlated with LTBI positive conversion and might be cautious at the initial. Excellent adherence and few adverse drug events as well as no TB reactivation were reported regardless treatment regimens. Taken together, LTBI surveillance and intervention are indicated in KTR.

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

PC13

一位 71 歲女性罹患鼻腦白黴菌病併發眶尖症候群

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A 71-year-old woman of rhinocerebral mucormycosis complicated with orbital apex syndrome

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Rhinocerebral mucormycosis is a rare but highly aggressive fungal infection predominantly affecting immunocompromised individuals, particularly those with uncontrolled diabetes or hematological disorders. This opportunistic pathogen invades blood vessels, leading to tissue necrosis, and progresses rapidly if not promptly diagnosed and treated. Initial clinical manifestations often include nasal discomfort, headaches, fever, facial swelling, and nasal discharge, which can be misleading due to their nonspecific nature, often resembling common sinusitis. The condition's rarity and overlapping symptoms make early diagnosis challenging, contributing to a high mortality rate, which can reach up to 62% if treatment is delayed. Computed tomography (CT) scans play a crucial role in evaluating the extent of the disease, often revealing mucosal thickening, sinus opacification, bone destruction, and potential orbital or intracranial involvement. We report this 71-year-old female with poorly controlled diabetes who presented with persistent fever, nasal congestion, and thick, yellowish nasal discharge for two weeks. Despite two clinic visits with no improvement, her condition was finally identified as rhinocerebral mucormycosis, confirmed by CT imaging and endoscopic examination, and complicated with orbital apex syndrome. Her treatment required a multifaceted approach, involving aggressive diabetes management and a combination of antifungal therapy with lipid formulation amphotericin B and isavuconazole. Due to the severity of the infection, she underwent seven endoscopic sinus surgeries for debridement to control the spread of the fungus and reduce tissue necrosis. This aggressive management led to a significant improvement, and she was ultimately discharged successfully. For immunocompromised patients presenting with sinusitis symptoms, headaches, and vision changes, clinicians must maintain a high suspicion for mucormycosis, as early detection is vital for survival. Prompt CT imaging to evaluate lesion extent, coupled with endoscopic sampling for definitive culture, is essential for accurate diagnosis. Treatment should commence immediately with lipid formulation amphotericin B as the first line, while isavuconazole can be added in cases with insufficient response or concerns about nephrotoxicity. Endoscopic sinus debridement is equally critical for infection control, facilitating antifungal penetration and reducing fungal load, emphasizing the importance of a multidisciplinary approach in managing this life-threatening 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)

PC14

重症病人自發性低血糖與死亡風險的探討

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Spontaneous Hypoglycemia and Risk of Death in Critically Ill Patients

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Rationale: Prior research has indicated that adopting strict glycemic control might elevate the risk of hypoglycemia and result in higher mortality rates. However, some patients may develop spontaneous hypoglycemia even without using glucose-lowering agents. We thus conducted a retrospective study to investigate the association between spontaneous hypoglycemia and mortality among critically ill patients.

Methods: All adult patients admitted to the medical intensive care units (ICUs) of Taichung Veterans General Hospital (TCVGH) from 2015 to 2023 were enrolled and followed up to the date of discharge. During ICU admission, glycemic status as well as demographic information, laboratory results, and illness severity assessments were collected. We classified the occurrence of hypoglycemia into two groups: iatrogenic and spontaneous hypoglycemia, based on whether glucose-lowering medications were used within 24 hours preceding hypoglycemia. The primary goal was to investigate the outcomes of patients with spontaneous hypoglycemia.

Results: A total of 22,554 critically ill patients were included, with 63.2% being male and a mean age of 64.4±15.9 years. There were 2,703 (12%) cases of hypoglycemia, with 49.8% being iatrogenic and 50.2% occurring spontaneously. In comparison to the non-hypoglycemic group, the hypoglycemic group has a greater in-hospital mortality rate (50.4% vs 16.5%). Compared to iatrogenic hypoglycemia patients, spontaneous hypoglycemic patients have fewer diabetics, more medical patients, sepsis, and higher lactate levels. Among all hypoglycemic patients, the spontaneous group develops earlier after ICU admission, last longer and more severe hypoglycemia than those in the iatrogenic group. Patients with spontaneous hypoglycemia had a greater death probability (adjusted HR: 1.775, 95% CI: 1.626-1.936, $p<0.001$) compared to those with iatrogenic hypoglycemia (adjusted HR: 1.120, 95% CI: 1.016-1.234, $p=0.023$) after adjusting confounders.

Conclusions: Our results demonstrated that nearly half of patients experiencing hypoglycemia developed it spontaneously. Patients with hypoglycemia exhibit a greater mortality risk, especially those experiencing spontaneous hypoglycemia, in contrast to those with iatrogenic hypoglycemia. These findings emphasize the need for vigilance glycemic monitoring for those with risks of spontaneous hypoglycemia.

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

PC15

案例報告：以 Nirmatrelvir/Ritonavir 治療一位非新冠肺炎冠狀病毒引起的急性呼吸窘迫症候群患者

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Case Report: Nirmatrelvir/Ritonavir Treatment in a Patient with Acute Respiratory Distress Syndrome Due to a Non-SARS-CoV-2 Coronavirus Infection

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Introduction: Nirmatrelvir/ritonavir is widely used for the treatment of Coronavirus Disease 2019. Molecular docking analysis has demonstrated that nirmatrelvir exhibits significant antiviral activity against various human coronaviruses. However, no clinical studies have been conducted using nirmatrelvir to treat non-SARS-CoV-2 coronavirus infections. This case report highlights the use of nirmatrelvir/ritonavir in treating acute respiratory distress syndrome (ARDS) caused by a non-SARS-CoV-2 coronavirus infection.

Case Report: This case involves a 97-year-old female with a medical history of sick sinus syndrome, hypertension, diabetes, and mild dementia. Due to fever, leukocytosis and pyuria, this patient was admitted with a diagnosis of a urinary tract infection. On the 10th day of hospitalization, the patient developed labored breathing. Chest X-rays revealed increased bilateral lung infiltrates, raising concerns of hospital-acquired pneumonia. As a result, her antibiotic regimen was upgrade to cefepime. Four days later, her oxygenation deteriorated further, necessitating high-flow nasal cannula oxygen therapy at 60% and 60 L/min. Antibiotics were adjusted to meropenem plus levofloxacin, and methylprednisolone was initiated for ARDS. Despite poor-quality sputum samples, the FilmArray Pneumonia Multiplex PCR Panel detected a coronavirus, though SARS-CoV-2 antigen rapid test were negative. On the advice of an infectious disease specialist, a 5-day course of nirmatrelvir/ritonavir was started for coronavirus infection. After 3 days of treatment, the patient's oxygen requirements gradually decreased, and by day 8, her oxygen saturation was 100% on 3 L/min via nasal cannula. In the days that followed, she remained fever-free, and her oxygenation improved steadily. Antibiotics were discontinued accordingly, and she was discharged in stable condition after a 28-day hospital stay.

Conclusions: This case demonstrates the effectiveness of nirmatrelvir/ritonavir in treating severe non-SARS-CoV-2 coronavirus infection. Further research is needed to assess the efficacy of nirmatrelvir/ritonavir in treating different human coronaviruses.

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

PC16

心臟類肉瘤症：50 歲男性以端坐呼吸與心搏過緩作為初步表現

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Cardiac Sarcoidosis Diagnosed in a 50-Year-Old Man Presenting with Orthopnea and Bradycardia

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Sarcoidosis is a systemic granulomatous disease of unknown etiology that can affect nearly any organ, with the lungs and lymphatic systems being most involved. When sarcoidosis infiltrates the heart, the manifestations can vary, but one of the most serious and potentially life-threatening complications is a complete atrioventricular (AV) block. This can precipitate sudden cardiac death, underscoring the importance of early recognition and prompt intervention to mitigate risk. Here we reported a 50-year-old man with a known history of dyspnea, who was initially diagnosed with heart failure in a cardiology outpatient clinic in other hospital approximately eighteen months prior to this ER visit. Despite this diagnosis, he did not maintain regular follow-up visits. Recently, he was presented to the ER with worsening dyspnea and was promptly hospitalized. Upon admission, his electrocardiogram revealed a complete AV block, necessitating the urgent placement of a temporary pacemaker. Further imaging, including a chest CT scan, identified multiple enlarged lymph nodes in the mediastinal and bilateral hilar regions. Given these findings, an endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) was performed, which confirmed non-caseating granulomatous inflammation within the mediastinal lymph nodes.

Echocardiography showed left ventricular systolic dysfunction, with an ejection fraction (EF) of less than 50%, consistent with systolic heart failure. With the presence of a complete AV block and characteristic granulomatous inflammation, the patient was diagnosed with cardiac sarcoidosis. Unfortunately, he succumbed to his condition before definitive treatment could be initiated.

This case highlights the critical need for clinicians to consider sarcoidosis as a differential diagnosis in patients presenting with new-onset AV block and heart failure. Timely diagnosis and treatment of cardiac sarcoidosis are essential, as delays can lead to irreversible cardiac damage or sudden death. Recognizing this rare but serious complication can facilitate early intervention, which may improve patient outcomes.

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

PC17

結核病完治後呼吸道檢體抗酸染色或聚合酶鏈反應陽性：到底是不是結核病

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Positive acid-fast staining or TB polymerase chain reaction in respiratory specimen after completing TB treatment: TB or not TB

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Purpose: Reinfection with pulmonary tuberculosis (PTB) is relatively uncommon in individuals with a history of the disease. The presence of positive acid-fast staining (AFS) in patients who have previously undergone a complete course of anti-PTB treatment presents a clinical challenge. This study aims to delineate the characteristics associated with PTB reinfection in patients exhibiting positive AFS or tuberculosis polymerase chain reaction (PCR) results in respiratory specimens.

Methods: This investigation was conducted as a retrospective multicenter study. Patients diagnosed with or treated for PTB between 2011 and 2020 at two tertiary care institutions were evaluated. Those with positive AFS or TB PCR results in respiratory specimens following the completion of anti-PTB therapy were included in the study. Based on culture outcomes, participants were classified into a TB group and a non-TB group [comprising nontuberculous mycobacteria or no growth]. AFS scores of 1+ to 2+ were classified as weakly positive, while scores of 3+ to 4+ as strongly positive.

Results: A total of 97 patients were included in the analysis, with 30 (31%) patients in the TB group and 67 in the non-TB group. The TB group was significantly younger (61.6 ± 14.2 years vs. 69.2 ± 13.2 years, $p = 0.013$), had a higher proportion of active smokers (40% vs. 14.9%, $p = 0.024$) and higher AFS scores (1.92 ± 1.40 vs. 1.29 ± 0.99, $p = 0.014$) than the non-TB group. Furthermore, the TB group exhibited a greater tendency for strong positive AFS (33.3% vs. 13.4%, $p = 0.072$). Radiologically, the incidence of cavitation was significantly higher in the TB group (73.3% vs. 25.4%, $p < 0.001$). Cavitation was the only independent factor of PTB re-infection (adjusted OR: 6.46, 95% CI: 2.24 – 18.59, $p = 0.001$). The positive predictive value of TB PCR was only 51.6%, while the negative predictive value was 95.8%. The sensitivity and specificity for identifying TB reinfection using strongly positive AFS or a combination of weakly positive AFS and cavitation were 70% and 72%, respectively.

Conclusions: The positivity of AFS and TB PCR alone are low specific for the diagnosis of PTB reinfection. The diagnostic efficacy of TB PCR in this context is inferior to that observed in treatment-naïve PTB patients. High AFS scores and the presence of cavitation might provide enhanced predictive value for PTB reinfection and subsequent adequate 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)

PC18

不同姿位是否影響 ARDS 患者的最佳吐氣末正壓？一 一位電阻抗斷層掃描的個案報告

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Do Different Positions Affect the Optimal Positive End-Expiratory Pressure in ARDS Patients? — A Case Report Using Electrical Impedance Tomography

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Introduction: Acute Respiratory Distress Syndrome (ARDS) is a severe pulmonary condition where optimal positive end-expiratory pressure (PEEP) plays a crucial role in keeping lung open and maintain oxygenation. Electrical Impedance Tomography (EIT) is a non-invasive tool that provides real-time assessment of lung ventilation, which can help in the determination of optimal PEEP settings. Prone positioning has been shown to improve outcomes in ARDS patients by promoting the recruitment of dorsal lung regions and achieving a more homogeneous distribution of ventilation. Based on this observation, we hypothesized that the optimal PEEP setting might be lower in patients in the prone position compared to the supine position. However, the accuracy of this hypothesis remains uncertain. This case report explores the use of EIT-guided PEEP titration in both supine and prone positions in a patient with ARDS.

Case Presentation: An 81-year-old female with a history of hypertension, type II diabetes mellitus, and coronary artery disease presented with COVID-19 infection complicated with respiratory failure and ARDS. The patient was intubated and admitted to the ICU, where she required PEEP titration using EIT in both supine and prone positions. EIT revealed improved dorsal ventilation and a more homogeneous regional distribution of lung impedance in the prone position. However, the optimal PEEP was determined to be 14 cmH2O in the supine position. After 16 hours in the prone position, the optimal PEEP unexpectedly increased to 16 cmH2O.

Conclusion and Interpretation: This case demonstrated a higher optimal PEEP in the prone position compared to the supine position, contrary to our hypothesis. This observation underscores the significant individual variability among ARDS patients. Therefore, the optimal PEEP setting during prone positioning should be evaluated carefully, and EIT may offer valuable insights to assist clinicians in making informed decisions.

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

PC19

Mycobacterium abscessus complex smooth and rough morphology clinical presentation and outcomes

Background: Mycobacterium abscessus complex (MABC) displays phenotypic heterogeneity. There were two phenotypically morphotypes in the MABC cell wall, which were noted as smooth form and rough form. The smooth variants produce glycopeptidolipids, which theoretically prevent recognition by immune cells. The two types of MABC clinical manifestation and clinical outcomes were seldom reported.

Methods: The present study was conducted in single medical centers in northern Taiwan. We enrolled patients with MABC-LD and investigated the clinical manifestations and outcomes in two morphotypes in MABC.

Results: Among 115 patients with MABC-LD subspecies data, 78 patients were smooth form MABC. In the smooth variant patients, there were higher prevalence of smoking, underlying disease with COPD, but lesser rate of showing fibrocavitary pattern in the chest image. The persistence positivity of the AFS and clinical progression rate did not show association with the two phenotypes.

Conclusions: Rough form MABC showed more severe in the chest image and has a higher rate of having fibrocavitary pattern. However, the two phenotypes were not related with persistence AFS positivity or clinical 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)

PC20

嚴重肺部奴卡氏菌病：一名 70 歲女性以慢性咳嗽與惡病質為表現

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Severe pulmonary Nocardiosis: A 70-year-old woman presented with chronic cough and cachexia

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Pulmonary nocardiosis is an opportunistic infection caused by Nocardia species, a type of aerobic actinomycete commonly found in soil, decaying organic matter, and water. It primarily affects the lungs, especially in immunocompromised individuals, such as those with HIV/AIDS, cancer, chronic lung disease, or those receiving long-term corticosteroid or immunosuppressive therapy. Severe cases or those with disseminated disease may require combination therapy with other antibiotics like amikacin, imipenem, or linezolid. Early diagnosis and appropriate treatment are crucial, as delayed management can lead to a higher risk of complications and mortality. We reported a 70-year-old woman diagnosed with pulmonary nocardiosis caused by Nocardia cyriacigeorgica, following her initial presentation with cough and poor appetite. Her condition, complicated by community-acquired pneumonia and respiratory failure, necessitated intubation and vasopressor support. Chest CT found extensive nodules and mass-like lesions. Her medical history included long-term steroid use, which likely contributed to her immunocompromised state, making her susceptible to opportunistic infections. Recurrent fever and the severity of her condition prompted further investigation through bronchoscopy, which revealed the presence of Gram-positive branching rods, leading to the diagnosis of pulmonary nocardiosis caused by Nocardia cyriacigeorgica. A brain CT was performed to rule out metastasis or potential dissemination of the infection to the central nervous system, which is a concern in nocardiosis but, fortunately, was negative in this case. Treatment included Sevatrim, Baktar, amikacin, linezolid, and imipenem. She faced challenges in weaning off mechanical ventilation, leading to a tracheostomy. With ongoing antibiotics, her condition improved, allowing her transfer to a respiratory rehabilitation center.er. The prognosis of severe pulmonary nocardiosis can be quite guarded, especially in immunocompromised patients. Mortality rates can range from 14% to 40%, with worse outcomes in cases of delayed diagnosis, disseminated disease, or CNS involvement. Factors such as timely diagnosis, early initiation of appropriate antibiotic therapy, and addressing the underlying immunosuppressive condition are crucial for improving outcomes. Despite the challenges, patients who receive prompt, aggressive treatment often have a better prognosis, although prolonged antibiotic therapy, typically lasting 6 to 12 months, is necessary to prevent relapse.

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

PC21

波特氏病被誤診為潛伏結核感染：病例報告

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Misdiagnosis of Pott's disease as latent tuberculosis infection: a case report

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Background: Spinal tuberculosis (TB), or Pott's disease, is a common form of osteoarticular TB and can present with chronic back pain, which may be mistaken for non-specific musculoskeletal issues. Correct differentiation between latent TB infection (LTBI) and active TB is essential, as inappropriate LTBI treatment in active TB cases risks bacterial replication and the development of drug-resistant strains.

Case Presentation: We report the case of a 72-year-old female with dermatomyositis who underwent interferon-gamma release assay (IGRA) testing, yielding a positive result. She was treated for LTBI with a 3-month regimen of rifampin and isoniazid (3HR). Shortly after completing treatment, the patient developed TB pleurisy and was referred to our hospital for suspected rifampin-resistant TB. While hospitalized, she reported persistent back pain that had been present for several months.

Spinal magnetic resonance imaging (MRI) revealed osteomyelitis spanning T10 to L1, along with osteoporosis and multiple compression fractures. A biopsy of the spinal lesion confirmed necrotizing granulomatous inflammation, but no acid-fast bacilli were identified. Orthopedic evaluation did not indicate the need for surgical intervention, and the patient was started on a regimen of isoniazid, rifampin, and ethambutol (HER). The pleural effusion and back pain were gradually alleviated during the treatment. She remains under outpatient follow-up and continues HER therapy.

Conclusion and Educational Pearl: This case underscores the critical importance of evaluating persistent symptoms, such as chronic back pain, in patients with IGRA-positive findings to rule out active TB-particularly spinal TB. Reliance solely on chest X-ray and airway symptom screening may overlook non-pulmonary TB, leading to misdiagnosis and the use of inadequate regimens. Current diagnostic methods, such as IGRA and the tuberculin skin test (TST), cannot reliably distinguish between latent and active TB, highlighting the need for heightened clinical suspicion and thorough evaluation in cases with atypical 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)

PC22

導引嚴重社區型肺炎高齡患者 DNR 決策的臨床因素：多中心回顧性研究

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The clinical score composite of six factors can guide DNR decisions in elderly patients with severe community acquired pneumonia: a retrospective multicenter cohort study.

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Purpose: The mortality of severe community acquired pneumonia (SCAP) is high in aged patients and do-not-resuscitate (DNR) decisions is a common issue during admission. In critically ill patients, a time-limited trial (TLT) of intensive care treatment can be helpful to identify who will benefit from life-sustaining interventions. In this study, we aim to identify factors associated with DNR decisions, 60-day mortality, and prognostic scores after TLT in aged adults hospitalized with SCAP in the intensive care unit (ICU).

Materials and Methods: Patients diagnosed with SCAP aged 65 and older were retrospectively enrolled in nine medical centers in Taiwan. DNR decisions and 60-day mortality were estimated with univariate and multivariate regression models. Cox regression analysis was used to assess factors associated with mortality.

Results: We enrolled 840 older adults, and 382 (45.5%) had a DNR directive. Among these patients, 18.9% experienced treatment failure, and 15.8% died within 60 days. The multivariate analysis identified six factors associated with mortality: CURB-65, comorbid heart failure, uremia, dementia, metastatic solid tumors, and failure of TLT within the first week. With these six factors, a novel clinical prognostic score was developed to predict mortality risk. 60-day mortality was significantly higher in those with prognostic score ≥4 than < 4 (51.3% & 93.42%, $p<0.001$).

Conclusions: In patients with SCAP, a clinical prognostic score composite with TLT can assist physicians and relatives in deciding to DNR.

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

PC23

住院病人及早給予鋅治療的臨床價值

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Benefit from Early Correction of Zinc Deficiency in In-Patients of Chest Medicine

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Background: Zinc deficiency is often overlooked by clinicians, including chest physicians in regional teaching hospitals. Identifying in-patients with zinc deficiency in chest medicine wards and investigating the impact of early correction through clinical studies is essential.

Materials and Methods: A retrospective clinical study was conducted at a regional teaching hospital. Patients admitted from the emergency room and outpatient departments between July 1 and September 31, 2024, were included. Patients with malignancy and those requiring prolonged mechanical ventilation were excluded. Zinc deficiency was defined as a serum zinc concentration below 700 µg/L. Zinc, T3, free T4, TSH, and vitamin D levels were measured within 48 hours of admission. All patients received daily zinc supplementation of 20-30 mg, and the primary outcome was the length of hospital stay (LOS) difference between patients with and without zinc deficiency.

Results: Of the 86 total in-patients, 31 were eligible for analysis. The mean age of patients was 75.4 years, with a male-to-female ratio of 16:15. Zinc deficiency was present in 77.4% of cases, and low T3 syndrome occurred in 51.6%. Vitamin D deficiency was common, with 88.9% of patients with vitamin D levels below 20 ng/mL exhibiting zinc deficiency. The LOS for patients with zinc deficiency who received zinc supplementation was significantly shorter (8.1 days) compared to those with normal zinc levels (12.1 days).

Conclusions: Zinc deficiency is prevalent among in-patients in chest medicine wards, and early correction with zinc supplementation can reduce the length of hospital stay. Further studies are needed to confirm these findings and explore the optimal dosage and duration of zinc therapy.

Table:

zinc deficiency (<700 ug/L)	77.4%
low T3 syndrome (<0.8 ng/ml)	51.6%
vitamin D >30 ng/mL (persons)	6
vitamin D 20-30 ng/mL (persons)	4
vitamin D <20 ng/mL (persons)	9
zinc deficiency in vitamin D< 20	88.9%
Length of stay in Hospital (LIH) (days)	9.0
LIH after Zinga Rx in Zinc deficiency (days)	8.1
LIH after Zinga Rx in normal Zinc (days)	12.1

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

PC24

在台灣使用「非結核分枝桿菌」中文名稱的挑戰：醫療人員觀點調查

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Challenges in Using the Chinese Term "Nontuberculous Mycobacteria" in Taiwan: A Survey of Healthcare Professionals' Perspectives

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Purpose: The Chinese term for "nontuberculous mycobacterium (NTM, 非結核分枝桿菌)" can be confusing for Taiwanese people, as it often mistaken for tuberculosis, making it challenging for clinicians to explain NTM-lung disease to patients. This study aims to explore the perspectives of clinical personnel, including medical students, PGY doctors, and respiratory therapists, on the Chinese term for NTM, alternative names, and the potential for confusion with tuberculosis through a questionnaire.

Materials and Methods: An online questionnaire was emailed to 571 individuals who received clinical training in the Department of Chest Medicine at this hospital between 2022 and 2024. The survey included both a pre-test and post-test, collected basic demographic information, assessed participants' understanding of NTM, and gathered opinions on various Chinese translations of alternative terms for NTM, such as "Environmental Mycobacterium (環境分枝桿菌)," "Atypical Mycobacterium (非典型分枝桿菌)," and "Mycobacterium Other Than Tuberculosis (結核以外分枝桿菌)." After the pre-test, participants were given a brief introduction to NTM, and the post-test reassessed their views on these translated terms using similar questions.

Results: A total of 41 responses were collected, including 15 medical students (clerks, 36.5%), 16 PGY1 and PGY2 doctors (39.0%), and 10 respiratory therapists (24.4%). Almost all participants had heard of the term NTM, and 43.9% had experience caring for patients with NTM-lung disease. Over 90% believed that the Chinese term of "NTM (非結核分枝桿菌)" could lead patients and their families to confuse it with tuberculosis. More than 80% felt that this term was not easily understood by the general public, and over 70% believed it could create difficulties when explaining NTM-lung disease to patients and their families. In the pre-test, 63.4% of respondents indicated that the term "Environmental Mycobacterium (環境分枝桿菌)" was the least likely to be confused with tuberculosis, compared to 29.3% for "Atypical Mycobacterium (非典型分枝桿菌)" and 4.9% for "Mycobacterium Other Than Tuberculosis (結核以外分枝桿菌)." In post-test, 70.7% considered "Environmental Mycobacterium(環境分枝桿菌)" to be the most helpful alternative term for doctor-patient communication, taking into account factors such as professional accuracy, public comprehension, and ease of explanation.

Conclusion: Our survey found that the direct translation of NTM presents challenges when explaining the diagnosis and is easily confused with tuberculosis. Similar to how the Chinese name for chronic obstructive pulmonary disease has been simplified to " 肺阻塞 " in Taiwan, adopting a simplified Chinese term for NTM could help facilitate public health education.

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

PC25

肺放線菌感案例介紹

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台中醫院胸腔內科 [1]

A Case Study on Pleural Effusion and Actinomycosis in a 73-Year-Old Female Patient with Asthma and Schizophrenia

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Introduction: This case study aims to discuss the diagnosis, treatment, and management of a 73-year-old female patient with a medical history of mild asthma and schizophrenia. The patient presented with pleural effusion that persisted for four months. Through diagnostic tests, including chest X-ray and bronchoscopy, the presence of bilateral infiltrations and pleural effusion was confirmed. Further investigation revealed Actinomycosis in the lung alveolar lavage fluid. The patient's symptoms improved with oral amoxicillin, but regular follow-up treatment was necessary.

Materials and Methods: The patient's medical records, including laboratory results and diagnostic tests, were analyzed. The diagnostic methods utilized in this study included chest X-ray, chest ultrasound, bronchoscopy, and culture of lung alveolar lavage fluids. The treatment involved the administration of oral amoxicillin, and the patient's response to the medication was assessed through regular follow-up appointments.

Results: The chest X-ray showed bilateral infiltrations and pleural effusion, while the chest ultrasound confirmed the presence of pulmonary effusion. The bronchoscopy revealed Actinomycosis in the lung alveolar lavage fluid culture. The patient's symptoms, such as pleural effusion and difficulty breathing, improved after starting oral amoxicillin treatment.

Discussion: The coexistence of asthma, schizophrenia, and Actinomycosis in this patient posed unique challenges for diagnosis and treatment. While pleural effusion is common in patients with asthma, the presence of Actinomycosis required further investigation and specific antibiotic therapy. The use of bronchoscopy and culture of lung alveolar lavage fluids played a crucial role in confirming the diagnosis. Furthermore, the patient's medical history of schizophrenia raised concerns regarding medication interactions and adherence to treatment. Careful monitoring and follow-up were necessary to ensure the patient's compliance with the prescribed medication regimen.

Conclusion: This case study highlights the importance of considering multiple factors, such as medical history, diagnostic tests, and treatment regimens, when managing complex cases like this. The successful diagnosis and treatment of Actinomycosis in a patient with asthma and schizophrenia demonstrated the significance of a multidisciplinary approach in providing optimal care.

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

PC26

非典型分枝桿菌症復發之臨床特徵

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Recurrent NTM Infection and its Association with Changes in Lung Function and Clinical Symptoms: A Case Study

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Introduction: In this case study, we present the clinical profile of a 70-year-old male patient with a history of pulmonary tuberculosis, cardiac arrhythmias, bronchiectasis, and right lung cavitation. The patient had previously exhibited positive NTM cultures on two occasions, which were successfully treated with a combination of clarithromycin and doxycycline. However, the patient experienced a mild pneumothorax after 10 months of treatment, which was subsequently resolved with oxygen therapy. This paper aims to emphasize the association between recurrent NTM infection and changes in lung function, as well as its correlation with clinical symptoms.

Materials and Methods: The patient's medical history, including previous lung infections and treatments, is thoroughly reviewed. Clinical assessments, such as chest X-rays, sputum cultures, and lung function tests, are documented at specific time points. The response to treatment is tracked through regular follow-up visits, and relevant laboratory data are collected and analyzed.

Results: After 15 months of successful treatment, the patient's sputum cultures showed NTM negativity, leading to the discontinuation of antibiotics. However, after 7.5 months of treatment cessation, the patient experienced a deterioration of respiratory symptoms, and a sputum culture revealed the recurrence of NTM. Pulmonary function tests indicated a transition from restrictive lung disease to hyperresponsive airway disease.

Discussion: This case highlights the association between recurrent NTM infection and changes in lung function and clinical symptoms. The reintroduction of clarithromycin further supports the potential role of this antibiotic in treating NTM infections. The transition from restrictive lung disease to hyperresponsive airway disease suggests the progressive nature of the infection and the need for prompt intervention. Furthermore, the recurrence of NTM infection in this patient underscores the importance of long-term monitoring and close follow-up after achieving culture negativity. Previous studies have also highlighted the association between chronic NTM infections and lung function decline.

Conclusion: This case study demonstrates the recurrent nature of NTM infection and its impact on lung function and clinical symptoms. Long-term follow-up, meticulous monitoring, and early intervention are crucial in managing NTM infections effectively. Further research is warranted to explore preventive measures and alternative treatment strategies for patients at high risk of NTM recurrence.

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

PC27

結核病逆向反應回朔性臨床研究

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Clinical Characteristics and Paradoxical Reaction in Pulmonary Tuberculosis: retrospective Case Studies

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Introduction: Pulmonary tuberculosis is a highly prevalent infectious disease that can manifest with various clinical presentations. Delayed diagnosis and treatment initiation can lead to complications and paradoxical reactions. We present two case reports highlighting the clinical similarities, risk factors, and the occurrence of paradoxical reactions during anti-tuberculosis treatment.

Case A: A 48-year-old male, employed as a construction worker exposed to high levels of dust, presented with a persistent cough, chest tightness, and difficulty breathing. Initial evaluation revealed diffuse lung opacities on chest X-ray, consistent with chronic pneumoconiosis. Pleural TB was confirmed by checking his pleural effusion ADA. Lung function tests showed mixed severe obstructive and restrictive lung disease, which did not improve with bronchodilator therapy. Further investigations revealed positive ANA and chest CT findings of multiple lung nodules, consolidation, and pleural effusion. Acid-fast staining and culture were negative, delaying the diagnosis by two months. The appearance of a growing necrotic lesion in the right lower lung prompted a lung biopsy, which confirmed acid-fast staining positive tuberculosis.

Case B: An 85-year-old male, a retired physician with a history of hypertension, presented with a persistent cough. Chest X-ray showed multifocal pulmonary infiltrates suggestive of pneumonia. Acid-fast staining and culture of sputum samples were positive for Mycobacterium tuberculosis. After three months of anti-tuberculosis therapy, a 2.5 cm round lesion appeared in the right upper lung, which did not resolve. Lung biopsy confirmed tuberculosis, and subsequent lung function tests showed mixed obstructive and restrictive lung disease. Delayed diagnosis by three months was observed, without prior use of steroids.

Discussion: These two cases share several clinical similarities and risk factors. Both patients had structural lung diseases and experienced delayed diagnoses. Factors contributing to the delay included non-specific initial symptoms, lack of suspicion for tuberculosis, and negative initial acid-fast staining and culture results. Paradoxical reactions, characterized by the appearance or worsening of tuberculosis-related lesions during treatment, were observed in both cases. The occurrence of paradoxical reactions is multifactorial and can be associated with immune reconstitution, host factors, and the presence of other chronic diseases.

Conclusion: Early recognition and diagnosis of pulmonary tuberculosis are crucial in preventing complications and reducing delays in treatment initiation. Healthcare providers should maintain a high index of suspicion, especially in patients with structural lung diseases and other risk factors. Understanding and managing paradoxical reactions during anti-tuberculosis treatment are essential, as timely intervention can improve patient outcomes.

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

PC28

以新月徵兆作診斷的侵入性肺麴菌感染：一病例報告

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Invasive Pulmonary Aspergillosis with Air Crescent Sign: A case Report

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Background: Invasive pulmonary aspergillosis (IPA) is challenging to diagnose. In recent years, the IPA patient has been increasing. New risk factors have been identified, including novel cancer therapies, prolonged use of corticosteroids, and viral pneumonia. Due to high mortality rate, timely identifying IPA is important using radiographical findings. Among them, air crescent sign is a notable but easy ignore finding.

Case Report: A 55-year-old male has hypopharyngeal cancer (cT2N2b Mo, stage IVA) underwent concurrent chemoradiotherapy. He developed upper respiratory symptoms for a week and then admitted for chills and fever (39.3°C). Leukocytosis was found and chest X-ray revealed right a right upper lobe consolidation. Empirical Ampicillin/sulbactam and azithromycin was prescribed for community acquired pneumonia. However, fever persisted accompanied productive cough with purulent sputum. Chest X-ray showed worsening consolidation and no positive pathogen isolated from sputum culture. Chest computed tomography without contrast show a consolidation, over right upper lung, with cavitation. In addition, some soft tissue density lesion with cavity, showing an air crescent sign. Serum Aspergillus galactomannan index (GM) testing was examined and yielded of 0.7. Bronchoalveolar lavage (BAL) at right upper lung showed GM index of 4.764. The diagnosis of invasive pulmonary aspergillosis (IPA) was confirmed. The patient was treated with voriconazole combined with levofloxacin. After one week, his fever subsided, the serum GM index decreased to 0.395. He was discharged on oral voriconazole and remained stable with long-term outpatient follow-up.

Conclusion: The clinical manifestations of IPA are often nonspecific and radiographic finding is important for further workup. In addition, BAL analysis rather than blood aspergillus GM index might be more diagnostic.

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

PC29

一位神秘的栗粒性肺結核合併肺癌病人

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A Case of Concurrently Cryptic Military Tuberculosis and lung cancer

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Introduction: Cryptic miliary tuberculosis (TB) is a form of disseminated TB resulting from hematogenous spread after either primary infection or reactivation of latent TB. Few studies have reported the co-occurrence of miliary tuberculosis and lung cancer. This report presents a case with concurrent cryptic miliary tuberculosis and lung cancer.

Case Report: A 46-year-old migratory laborer visited our outpatient clinic following an abnormal chest X-ray detected during a routine health examination. He had been working in Taiwan for five years, engaged in stone breaking. The chest X-ray revealed a miliary pattern in both lung fields. Three consecutive sputum tests for acid-fast bacilli and mycobacterial cultures yielded negative results. TB Blood culture also did not yield Mycobacterial tuberculosis. A chest computed tomography (CT) scan showed miliary lesions in both lung fields and a nodular lesion with cavitation in the left lower lobe (LLL). A CT-guided lung biopsy confirmed well-differentiated adenocarcinoma. Subsequently, we performed a wedge resection of the B6 segment of the LLL. Pathological examination of the lymph nodes revealed caseating necrosis with multinucleated Langhans giant cells, consistent with TB lymphadenopathy. We diagnosed the patient with adenocarcinoma of the left lower lobe (LLL), classified as cT1bN0M0, stage IA2 (AJCC 9th edition). Adjuvant chemotherapy was not required. Additionally, he underwent a standard 6-month course of anti-tuberculosis therapy.

Discussion: A miliary pattern on chest X-ray is characterized by multiple small nodules (<3 mm in diameter) randomly distributed across both lungs. This pattern usually indicates hematogenous spread, commonly seen in infections, pneumoconiosis, or malignancy. Initially, there was no clear evidence of TB, and the patient's five-year history of stone breaking work suggested pneumoconiosis as a possible cause. However, the chest CT revealed a 1.5 cm nodular lesion with cavitation in the LLL, along with the miliary pattern in both lungs. A CT-guided biopsy confirmed adenocarcinoma.

After shared decision-making, the patient opted for surgical intervention to treat his lung cancer and determine the presence of TB or pneumoconiosis. The pathology results confirmed TB lymphadenopathy. He subsequently completed a standard 6-month course of anti-tuberculosis treatment.

Conclusion: This case highlights the rare co-occurrence of cryptic miliary tuberculosis and lung cancer in a patient, emphasizing the importance of thorough diagnostic evaluation in patients presenting with a miliary pattern on chest imaging. Although initial tests for tuberculosis were negative, further investigation through CT scans and biopsy revealed both adenocarcinoma and TB lymphadenopathy. The case underscores the need for clinicians to consider multiple possible diagnoses, especially in individuals with occupational exposure and risk factors. Early diagnosis and appropriate management, including surgical intervention for cancer and anti-tuberculosis therapy, can lead to favorable outcomes.

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

PC30

輔助性類固醇治療於肺囊蟲肺炎之效果及臨床特徵

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Clinical Characteristics and Role of Adjunctive Steroid in Pneumocystis jirovecii pneumonia

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Purpose: Steroids are commonly administered in patients with Pneumocystis jirovecii (PJ) pneumonia either indicated by underlying diseases or as adjunctive treatment, while the efficacies remained undetermined. Our study aimed to delineate the clinical settings in which steroids are used and determining the role of steroids.

Materials and Methods: A multi-center study was conducted from November 2016 to December 2023. The inclusion criteria were designated as individuals received treatment for PJ pneumonia and followed for at least 60 days. Pediatrics or patients administered with anidulafungin were excluded. The cohort was grouped based on steroid use. Propensity score matching (PSM) with a caliper width of 0.2 times of the pooled standard deviation was performed to balance age, sex body mass index, hypertension, diabetes, cerebrovascular accident, heart failure, chronic kidney disease, dialysis, cirrhosis, asthma, chronic obstructive lung disease, intestinal lung disease, absolute lymphocyte count, hematological malignancy, peripheral blood stem cell transplantation, solid cancer, solid organ transplantation, autoimmune disease, human immunodeficiency virus (HIV) infection, shock, PaO2/FiO2, respiratory failure, and initial Ct value. The primary outcome was defined as 60-day mortality. Stratified analysis was conducted based on PaO2/FiO2, trimethoprim dose, cancer, and HIV.

Results: A total of 384 patients were enrolled, and 154 subjects (half administered with adjunctive steroids) were analyzed after PSM. Individuals under steroid exhibited substantially lower PaO2/FiO2 and higher incidence of shock, respiratory failure, mechanical ventilation, intensive care unit admission, and in-hospital mortality (all $p<0.001$). Kaplan-Meier curve illustrated worse survival in steroid user before ($p<0.001$) but not after PSM. 60-day mortality rate was nevertheless still higher in patients receiving steroids (relative risk [RR] 2.48, 95% confidence interval [CI] 1.60-3.86, $p<0.001$). Additionally, subgroup analysis suggested a trend of benefits by steroid only in PaO2/FiO2 150-300 (RR 0.91, 95% CI 0.33-2.47, $p=0.85$) and subjects with cancer (RR 0.69, 95% CI 0.20-2.35, $p=0.56$). The effects in patients without HIV was neutral (RR 1.00, 95% CI 0.55-1.82, $p=1.00$).

Conclusions: Individuals with severer PJ pneumonia are more likely to receive adjunctive steroids, which effects are largely confounded by indication. Steroids might be only appropriate for 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)

PC31

非結核分枝桿菌菌血症之特徵及預後：醫學中心七年經驗之分析研究

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CLINICAL CHARACTERISTICS AND OUTCOMES OF NONTUBERCULOUS MYCOBACTERIAL BACTEREMIA: A 7-YEAR EXPERIENCE AT A MEDICAL CENTER

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Purpose: The incidence of nontuberculous mycobacteria (NTM) infection has been increasing, yet knowledge about primary NTM bloodstream infections remains limited. The risk factors, clinical features and outcomes of NTM bacteremia remain unclear. This study aims to investigate patients with NTM bacteremia treated at a medical center over the past seven years, focusing on their characteristics and outcomes.

Materials and Methods: Patients with positive blood cultures for NTM were included between 2018 and 2024 at a medical center in Northern Taiwan. Primary bacteremia was defined as the absence of any NTM infection source outside the bloodstream. Clinical characteristics, disease severity, treatment, and outcomes were recorded. Factors associated with in- hospital mortality were analyzed.

Results: A total of 32 patients with NTM bloodstream infections were identified. Among them, 15 (46.9%) had an identifiable infection focus, while 17 (53.1%) were classified as having primary bacteremia. Patients with primary NTM bacteremia were older (median age 68, IQR 59-86) compared to the non-primary group (median age 55, IQR 31-74) (p = 0.027). They also tended to have a higher body mass index (BMI) (24.94 vs 21.26, p=0.073) and a lower prevalence of acquired immunodeficiency syndrome (AIDS) (0% vs 33%, p=0.015). Primary NTM bacteremia was more frequently caused by rapidly growing NTM, such as Mycobacterium abscessus and M. chelonae (94.1% vs 53.3%, p=0.013), and less often by M. avium complex (5.9% vs 40.0%, p=0.033). The primary bacteremia group were less likely to receive macrolide-based therapy (23.5% vs 93.3%, p<0.001) and had a higher in-hospital mortality rate (47.1% vs 6.7%, p=0.018). Overall, 9 patients (39.1%) died during hospitalization, with 66.7% of them passing away within 28 days. In mortality group, a higher proportion of patients had primary NTM bacteremia (88.9% vs 39.1%, p=0.018) and were more frequently infected with rapid growing species (100% vs 65.2%, p=0.070). After adjusting for age>60 years, sex and NTM species, primary NTM bacteremia was independently associated with in-hospital mortality (OR 12.02, 95% CI 1.12-129.18, p=0.04).

Conclusions: Patients with primary NTM bacteremia were older, less likely to have AIDS and more frequently infected with rapid growing NTM species. Primary NTM bacteremia, less likely to receive macrolide-based therapy, was independently associated with a 12-fold increased risk of in-hospital mortality. In order to improved outcomes, further studies are needed to investigate timely treatment strategy for patients with NTM bacteremia without a clear infection focus.

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

PC32

肺結核和組織胞漿菌共感染：首例 HIV 陰性伊凡斯症候群病例

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Concurrent Pulmonary Tuberculosis and Histoplasmosis in a HIV-negative Patient with Evan's Syndrome: A First Case Report

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Introduction: Tuberculosis and histoplasmosis remain significant clinical burdens. Concurrent infection with both pathogens, though rarely reported in HIV-negative population, poses an even greater challenge in diagnosis and treatment. However, their associations with hemolysis and platelet destruction (Evan's syndrome) have never been documented.

Case Presentation: A 74-year-old male presented with a two-month history of fever, productive cough, and unintentional weight loss. He worked as a cement laborer and had underlying disease of hypertension. On examination at arrival to Emergency department, the patient appeared cachectic, and auscultation revealed coarse crackles over left lung field. A chest computed tomography showed a 2.2 cm lobulated, solid subpleural mass with a spiculated margin in the left lower lobe, along with paratracheal lymphadenopathy. Endobronchial ultrasound-guided transbronchial needle aspiration of group 4R lymph node was performed, revealing positive polymerase chain reaction of Mycobacterium tuberculosis complex. Pathology demonstrated anthracosis and histiocytes without atypical cells but positive for acid-fast bacilli. Further ultrasound-guided biopsy of the hypoechoic lung nodule showed caseating granulomatous inflammation with intracellular budding yeasts within histiocytic aggregates and a few acid-fast bacilli. Accordingly, the patient was diagnosed with concurrent pulmonary tuberculosis and histoplasmosis, although recent travel or contact with individuals from endemic regions were denied. Treatment with rifampicin (later substituted with levofloxacin because of hyperbilirubinemia and drug-drug interaction), isoniazid, pyrazinamide, ethambutol, and itraconazole was initiated. Meanwhile, the patient had been diagnosis as autoimmune hemolytic anemia and idiopathic thrombocytopenic purpura, rendering Evan's syndrome. Isoniazid was discontinued because his hemolytic anemia progressed. Furthermore, dexamethasone and azathioprine were administered for Evan's syndrome. His infection symptoms were resolved by ongoing anti-tuberculosis therapy and antifungal agent.

Conclusions: This is the first reported case of concomitant tuberculosis and histoplasmosis possibly complicated by Evan's syndrome. The diagnosis and treatment for tuberculosis, histoplasmosis and immunological diseases are complicated and have many interactions although the causal relationship requires future research.

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

PC33

病例報告：嚴重黴漿菌肺炎併發急性呼窘迫症候群

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Case Report: Severe Mycoplasma Pneumonia Complicated by Acute Respiratory Distress Syndrome

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Mycoplasma pneumoniae is a common cause of community-acquired pneumonia, particularly in young adults. Complications are generally considered rare in individuals with normal immune function. We present the case of a 34-year-old woman diagnosed with severe Mycoplasma pneumoniae pneumonia, complicated by acute respiratory distress syndrome (ARDS).

Case presentation: A 34-year-old woman, with no reported history of travel, occupation, contact, or cluster (TOCC), presented to the emergency department in June 2024 with persistent high fever, dry cough, and shortness of breath. Laboratory tests revealed elevated C-reactive protein (CRP), and a chest X-ray showed infiltration in the left lower lobe of the lung. Chest computed tomography confirmed consolidation in the same area. Due to rapidly worsening respiratory failure, an endotracheal tube was inserted. Bronchoscopy was performed to obtain samples for next-generation sequencing (NGS), which identified Mycoplasma pneumoniae and Enterobacter cloacae complex. Doxycycline was continued, and additional antibiotics were prescribed based on culture sensitivity. On day 8 of her stay in the intensive care unit, she was successfully extubated. The patient recovered from respiratory failure and was discharged from the hospital.

Discussion/conclusion: Acute respiratory distress syndrome (ARDS) caused by Mycoplasma pneumoniae is rarely reported. ARDS is associated with a high mortality rate. Severe ARDS and respiratory failure occur in 0.5–2% of all cases of Mycoplasma pneumoniae pneumonia, primarily affecting young adults. Early and rapid diagnosis of severe Mycoplasma pneumoniae pneumonia with ARDS can be achieved through next-generation sequencing (NGS) tests on samples from the lower respiratory tract or pleural effusion. When early antimicrobial therapy is combined with adequate respiratory support, these patients have a high survival rate.

Reference

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

PC34

痰液培養持續陽性之非結核分枝桿菌肺病在人類免疫缺乏病毒陰性患者的預後表現

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Prognosis of HIV-Negative patients with nontuberculous mycobacterial lung disease and persistent sputum culture positivity

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Purpose: Nontuberculous mycobacterial lung disease (NTM-LD) has been increasing its significance yearly on threating to global health and leading mortality. Decision on initiation of treatment against NTM-LD is crucial; however, still challenging and requires accumulating evidence for clinical practice. Little is known about the prognosis of the patients with persistent culture positivity of sputum for NTM during follow-up. We therefore aimed to study the clinical significance of persistent culture positivity on survival of the patients with NTM-LD.

Materials and Methods: A multi-center retrospective study was conducted between 2006 and 2020. NTM-LD patients were enrolled in accordance with microbiological criteria by American Thoracic Society guidelines. We analyzed the association between sputum persistently positive for NTM and the mortality with adjustment by clinical characteristics and underlying comorbidities.

Results: During the study period, 2486 adult NTM-LD patients were enrolled. The mean age was 67.4 years, and 52.4% were male. 24.0% had a low body mass index (BMI < 18.5 Kg/m2) and 21.6% were ever-smokers. In addition, 5.4% had comorbid pulmonary cavitation. The mean follow-up period was 1030.02 days, and the overall 5-year mortality was 31.66%. Primary end-point analysis showed 5-year mortality was significantly higher in patients with ≥ 5 isolations for the same NTM species, defined as the persistent positivity (PP) group, compared with those with ≤ 4 isolates (non-persistent positivity [NPP] group) (40.56% vs 30.33%, $p < 0.001$). Multivariate Cox regression analysis showed PP group was an independent risk factors for 5-year mortality in NTM-LD (adjusted hazard ratio, 1.33; 95% CI, 1.06–1.67) in addition to the other associated factors.

Conclusions: Persistent sputum positivity (≥ 5 isolations) was firstly reported as an independent poor prognostic factor for higher 5-year mortality in NTM-LD patients. Medical personnel should pay attention to NTM-LD patients and might prioritize them for further treatment if they have persistent sputum culture positivity ≥ 5 isolations within one year.

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

PC35

肺鳥型分枝桿菌覆發與次發性肺麴菌感染案例介紹

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Recurrent Mycobacterium avium Complex Infection with Subsequent Aspergillus Superinfection: A Case Study in a Patient with Severe Restrictive Lung Disease

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Introduction: Mycobacterium avium complex (MAC) infections are frequently encountered in patients with underlying pulmonary conditions, especially those with a history of tuberculosis. Aspergillus superinfection in the context of MAC adds complexity to treatment and management, often leading to poor prognosis. This case presents a 67-year-old man with a recurrent MAC infection, followed by Aspergillus infection, highlighting the challenges in diagnosis and treatment decisions.

Objective: This case aims to explore the clinical course of recurrent MAC infection, superimposed with Aspergillus infection, in a patient with pre-existing severe restrictive lung disease. It discusses the diagnostic difficulties, therapeutic approaches, and the potential role of early intervention strategies, including bronchoscopy and surgical options, in improving clinical outcomes.

Materials and Methods: A 67-year-old male, with a medical history of hypertension and treated pulmonary tuberculosis, presented with a persistent cough and yellow sputum. Imaging studies, including chest X-rays and CT scans, revealed left lung volume loss and a fibrocavitary lesion in the left upper lobe, with extensive bronchiectasis and calcifications suggestive of previous tuberculosis. Acid-fast staining and culture confirmed MAC infection, despite negative TB PCR. Bronchoscopy with bronchoalveolar lavage (BAL) was performed to confirm the diagnosis. The patient underwent 18 months of treatment with clarithromycin, ethambutol (EMB), and rifampin (RIF), followed by periodic follow-up and sputum cultures.

Results: Initial MAC treatment resulted in clinical improvement, with sputum conversion to negative status for acid-fast bacteria after five months of therapy. However, the patient developed recurrent symptoms eight months post-therapy, and a subsequent sputum culture confirmed MAC reinfection. The patient was re-treated with the same regimen for 17 months. Despite symptomatic control, a bronchoscopy revealed Aspergillus antigen positivity in BAL fluid, prompting a switch to antifungal therapy. Unfortunately, the patient developed complications, including pleural effusion and peripheral edema, before passing away five weeks later due to a sudden event.

Discussion: This case illustrates the chronic, relapsing nature of MAC infections in patients with significant lung damage from prior tuberculosis. The co-infection with Aspergillus further complicates management, as highlighted by the delayed diagnosis due to non-specific symptoms. Early bronchoscopy and BAL might have identified Aspergillus earlier, potentially altering the therapeutic course. The utility of antifungal therapy, surgical intervention, and whether earlier bronchoscopy or invasive treatments could have improved the patient’ s prognosis remain areas for further discussion.
In conclusion, recurrent MAC infection in conjunction with Aspergillus superinfection in patients with severe restrictive lung disease poses significant treatment challenges. Early aggressive diagnostic strategies and consideration of surgical options may offer better outcomes, though individualized care is essential given the patient's frail condition..

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

PC36

以 Rifapentine 血漿濃度評估每日高劑量 Rifapentine 四個月結核治療中的影響：一項前瞻性多中心研究

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Using Rifapentine Plasma Levels to Evaluate the Impact of High-Dose Four-Month Daily Rifapentine Tuberculosis Treatment: A Prospective Multicenter Study

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Purpose: To achieve a shorter tuberculosis (TB) treatment, a four-month anti-TB treatment with high-dose daily rifapentine (1200mg/day) has been recommended by World Health Organization. However, its safety in Taiwan is uncertain. This study aimed to analyze plasma rifapentine concentrations and their association with treatment outcomes and side effects.

Materials and Methods: This three-year, prospective, single-arm, multicenter trial evaluated the safety and efficacy of a four-month TB treatment regimen consisting of isoniazid (H), pyrazinamide (Z), rifapentine (P), and moxifloxacin (M) (2HZPM/2HPM). Patients with newly diagnosed pulmonary TB were enrolled from five medical centers. Rifapentine plasma concentrations were measured by LC-Mass and analyzed for associations with adverse events using a linear mixed model.

Results: Among the enrollees, a total of 59 participants underwent plasma concentration testing for rifapentine, resulting in 105 blood samples collected at various time points (29 at the 3rd hour, 4 at the 6th hour, and 72 at the 24th hour post-dose). Of these participants, 33 (55.9%) discontinued treatment, with those who discontinued being significantly older than those who did not (67.0 ± 17 vs. 57.4 ± 17 years, $p = 0.034$). Although rifapentine plasma concentrations were not significantly associated with treatment discontinuation, higher concentrations at the 24th hour during the second week were associated with an increased incidence of skin rash ($p = 0.036$, Mann-Whitney U test). The linear mixed model revealed significant correlations between rifapentine concentrations and time, sex, and age ($p = 0.03$, <0.01, and 0.01, respectively). Plasma concentrations decreased over time, while higher levels were observed in females and older participants.

Conclusions: Higher plasma rifapentine concentrations were linked to an increased risk of skin rash but not drug discontinuation. Tailoring drug dosages based on individual metabolic profiles, sex, and age might potentially reduce side effects and improve treatment adherence. Further research with comprehensive pharmacokinetic monitoring is needed to confirm these findings.

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

PC37

肺炎鏈球菌尿液抗原陽性與肺炎鏈球菌疫苗接種對於新冠肺炎重症患者的預後價值

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Prognostic Value of Pneumococcal Urine Antigen Positivity and Pneumococcal Vaccination in Critically Ill COVID-19 Patients

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Introduction: The pneumococcal urine antigen test is routinely recommended in the management of severe community-acquired pneumonia. However, the prognostic value of the pneumococcal urine antigen test in critically ill COVID-19 patients remains controversial. This study aims to evaluate the prognostic significance of the pneumococcal urine antigen test in COVID-19 patients requiring intensive care unit (ICU) admission.

Materials and Methods: We conducted a retrospective study involving patients with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections at a single tertiary medical center in southern Taiwan from May 2022 to July 2022, a period during which the Omicron variant predominated. Electronic medical records were reviewed to assess baseline characteristics, disease severity, pneumococcal vaccination status, laboratory test results (including the pneumococcal urine antigen test), treatment modalities, and clinical outcomes. Fisher's exact test and unpaired Student's t-test were used to examine differences between variables.

Results: A total of 101 patients were included in the analysis. The incidence of positive pneumococcal urine antigen was 18% (18/101). Patients with positive pneumococcal antigen had significantly higher APACHE II scores (mean 22.17 vs. 17.2, p = 0.02) compared to the antigen-negative group. The pneumococcus-positive group also demonstrated a higher risk of requiring high-flow nasal cannula (HFNC) or mechanical ventilation (77.8% vs. 49.4%, p = 0.036). Procalcitonin levels were markedly elevated in the pneumococcus-positive group (mean 11.8 vs. 3.3, p = 0.005). However, no significant differences were observed between the groups in terms of ICU stay duration, mechanical ventilation duration, overall hospital stay, or 30-day mortality. The incidence of COVID-19-associated pulmonary aspergillosis (CAPA) was extremely low in both the pneumococcus-positive and negative groups. Pneumococcal vaccination did not reduce the mortality rate (38.1% in the vaccinated group vs. 38.3% in the non-vaccinated group, p = 0.99), mechanical ventilation duration (mean 5.9 days in the vaccinated group vs. 7.2 days in the non-vaccinated group, p = 0.52), or disease severity (APACHE II scores: 19.5 in the vaccinated group vs. 18.5 in the non-vaccinated group).

Conclusion: A positive test result on admission was associated with elevated procalcitonin levels, higher APACHE II scores, and an increased need for advanced oxygen therapy, including HFNC and mechanical ventilation. However, previous pneumococcal vaccination did not reduce mortality, mechanical ventilation duration, or disease severity in this cohort.

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

PC38

CT Imaging as a Predictor of Treatment Outcomes in *Mycobacterium Avium* Complex Lung Disease: A Retrospective Study

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Background and Objectives: Non-tuberculous mycobacteria (NTM), particularly Mycobacterium avium complex (MAC), are increasingly recognized as significant causes of pulmonary infections. Despite rising incidence, treatment outcomes remain suboptimal, and comprehensive studies linking CT imaging changes to clinical progress are limited. This study aims to assess imaging changes in MAC-LD before and after treatment by developing a CT scoring system. The objective is to explore which of these imaging features can best predict treatment outcomes and disease progression.

Materials and Methods: This study retrospectively analyzed 149 patients who met the American Thoracic Society/Infectious Diseases Society of America diagnostic criteria for MAC-LD and received treatment between January 2006 and December 2023 at the main hospital and three branches of National Taiwan University Hospital. All patients underwent chest CT scans before and after treatment. We evaluated the imaging features of MAC-LD lung infection, including the severity and extension of bronchiectasis, bronchiolitis, cavitation, and extension of nodules and consolidation, using a semi-quantitative analysis method.

Results: The treatment failure (TF) group (63/149; 42.2%) had significantly higher mean scores of cavitation diameter, cavitation wall thickness, and cavitation extension compared to the treatment success (TS) group, with statistical significance (p = <.001, 0.008 and 0.003, respectively). Changes between the two scans were significantly higher in all patterns except for nodule extension in TF group than TS group (severity and extension of bronchiectasis, bronchiolitis, cavitation, and consolidation extension, p <.001 for all). Notably, bronchiectasis severity showed a trend of increase in both the TF and TS groups, whereas other patterns exhibited an increasing trend in the TF group and a decreasing trend in the TS group.
Multivariable logistic regression analysis identified significant imaging features as predictors for MAC-LD treatment, including pretreatment cavitation diameter (p = 0.013) and changes in bronchiectasis extension and consolidation extension between post-treatment and initial CT scans (p = 0.007 and 0.008, respectively).

Conclusion: CT scoring of imaging features can be a reliable tool for assessing the severity and extent of NTM-LD and for aiding in the development of personalized treatment plans. Our study found that pretreatment cavitation diameter is an important predictor of disease prognosis. Changes in imaging features during treatment, such as bronchiectasis and consolidation distribution, can serve as important indicators of treatment effectiveness and disease activity.

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

PC39

分析疫苗對 COVD-19 確診住院病人之影響

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Investigating the Influence of Vaccination to Hospitalized COVID-19 Patient

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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. In this study, we analyzed the association between COVID-19 vaccine and confirmed patients with hospitalization.

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 April 2023. The primary outcome was overall survival in 30 days.

Results: Among 547 cases confirmed COVID-19, the mortality rates in 30 days were 15.4% and 22.0% between patients with and without vaccination. Age, Charlson Comorbidity Index (CCI), quick Sequential Organ Failure Assessment score (qSOFA), leukocytosis, anemia and prescription of dexamethasone were recognized as strong prognostic indicators for survival in multivariable analysis. The vaccine doses and the interval between the date of the last vaccination and the date of disease diagnosis were also significant factors to consider. In subgroup analysis, vaccination demonstrated significantly lower hazard ratio among populations with low CCI.

Conclusions: The efficacy of vaccination diminished over time, and it may also decline among individuals 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)

PC40

使用宏基因體次世代基因定序技術研究與鮑曼不動桿菌相關的肺炎微環境

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Investigating the pulmonary microenvironment of *Acinetobacter Baumannii* associated pneumonia by metagenomic next generation sequencing

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Purpose: Antibiotic-resistant bacterial infections pose significant challenges for treatment. Understanding the effects of bacterial infections on the human is crucial. Antibiotic-resistant bacterial infections pose significant challenges for treatment. Understanding the effects of bacterial infections on the human body is crucial. We aim to explore the microenvironment created by Acinetobacter baumannii in the lungs of patients with hospital-acquired bacterial pneumonia using host sequences obtained from metagenomic next generation sequencing (mNGS).

Materials and Methods: We collected bronchoalveolar lavage samples from four patients with hospital-acquired pneumonia and acute respiratory failure for metagenomic next-generation sequencing (mNGS). The mNGS results were as follows: no bacterial infection, Acinetobacter baumannii infection without resistant genes, Acinetobacter baumannii infection with resistant genes (before treatment), and Acinetobacter baumannii infection with resistant genes (after treatment). Host sequences from these four sample groups were then used for bioinformatic analysis.

Results: In the Acinetobacter baumannii with resistant gene-associated pulmonary microenvironment, there were five immune system-related pathways: Thyroid hormone signaling pathway, Parathyroid hormone synthesis, Glucagon signaling pathway, Insulin signaling pathway, and Cortisol synthesis and secretion. Four pathways related to signal transduction were identified: Endocytosis, ErbB signaling pathway, AMPK signaling pathway, and Regulation of actin cytoskeleton. The HIF-1 signaling pathway was classified under Signaling molecules and interaction. In the Acinetobacter baumannii without resistant gene-associated pulmonary microenvironment, no significantly differentiated pathways were observed in immune system and signal transduction pathways. However, in cellular processes, significant differences were noted in Phagosome, Ferroptosis, and Regulation of actin cytoskeleton.

Conclusions: Using the host sequences generated by mNGS, we found significant differences in the pulmonary microenvironment changes caused by Acinetobacter baumannii with resistant genes compared to Acinetobacter baumannii without resistant genes during infection. This discovery may have potential applications in the treatment of sepsis.

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

PC41

濕化高流量氧氣治療於氣切病人脫離呼吸器之臨床療效：一項隨機對照前導試驗

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Efficacy of high-flow oxygen therapy on ventilator weaning in patients with tracheostomy: A pilot randomized control trial

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Purpose: High-flow oxygen therapy (HFOT) has a number of physiological advantages over conventional oxygen therapy, including better humidification, reduced dead space, and providing a small but significant positive pressure to the lungs. In addition to its widely use for acute hypoxemic respiratory failure, HFOT is also approved for post-extubation support. However, whether HFOT is beneficial for ventilator weaning in patients with tracheostomy remains unclear. We conducted a multicenter, randomized controlled trial to evaluate the efficacy of HFOT on ventilator weaning in patients with tracheostomy.

Methods: This study was conducted in the medical intensive care units of three hospitals affiliated to Kaohsiung Medical University. Adult critically ill patients with tracheostomy receiving mechanical ventilation for more than 48 hours were eligible for enrollment when they met the criteria for ventilator disconnection, based on the hospital weaning protocol. Patients nearing end-of-life with a do-not-resuscitate order were excluded. Participants were randomly assigned in a 1:1 ratio to either the HFOT group (receiving HFOT for ventilator weaning) or the T-piece group (receiving a T-piece for ventilator weaning). The primary endpoint is the successful weaning rate on the first disconnection attempt. The secondary endpoints included the successful weaning rate on ICU discharge and time to successful weaning. Successful weaning was defined as no need for mechanical ventilation for > 48 hours. Patents who failed the first disconnection attempt continued to receive the same weaning method as randomization for the following disconnection attempts until ICU discharge.

Results: A total of 80 patients were enrolled and randomized. There were no significant differences between the two groups in demographics and baseline characteristics, except that the HFOT group had a higher prevalence of early-stage renal disease (20% vs. 5%, p=0.04) and diabetes (55% vs. 27.5%, p=0.01). Comparing the two groups. there were no statistical differences of successful weaning rates on the first disconnection attempt (HFOT vs. T-piece = 80% vs. 62.5%, p=0.08) and on ICU discharge (HFOT vs. T-piece = 90% vs. 75%, p=0.08). the ICU length of stay was also similar between the two groups (HFOT vs. T-piece: 13.9 days vs. 14.1 days, p=0.91). Additionally, hospital mortality rates did not differ significantly between the groups (HFOT vs. T-piece: 20% vs. 15%, p=0.56). In subgroup analysis stratified by disease severity, the successful weaning rate on the first disconnection attempt was significantly higher in the HFOT group than in the T-piece group (81.8% vs. 52.4%, p=0.04) in patients with an APACHE II score ≥ 22, while there was no difference between the two groups in patients with an APACHE II score < 22 (77.8% vs. 73.7%, p=0.77). For successful weaning rate on ICU discharge, similar results were also found in patients with an APACHE II ≥ 22 (95.5% vs. 71.4%, p=0.03) and in patients with an APACHE II score < 22 (83.3% vs. 78.9%, p=0.73).

Conclusions: Overall, there was no significant difference of successful weaning rate between HFOT and T-piece in patients with tracheostomy. For patients with an APACHE II score ≥ 22, HFOT showed a significantly higher successful weaning rate compared to T-piece. Our data provide important information for future trails on HFOT weaning in patients with tracheostomy.

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

PC42

結核後支氣管擴張症患者急性發作的預測因子：多中心研究

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Predictors of acute exacerbations in patients with Post-Tuberculosis Bronchiectasis: a multicenter retrospective study

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Background: Bronchiectasis is a heterogeneous disease that results from various etiologies. Taiwan was historically a region with a high prevalence of pulmonary tuberculosis (TB). However, there is limited data regarding the characteristics and prognosis of patients with post-tuberculosis (post-TB) bronchiectasis. This study aims to evaluate the clinical outcomes of patients with post-TB bronchiectasis and identify risk factors predictive of future acute exacerbations (AEs) in this patient group.

Materials and Methods: The Taiwan Bronchiectasis Research Collaboration (TBARC) is a multicenter, retrospective, observational cohort study. Patients diagnosed with bronchiectasis via computed tomography (CT) between January 2017 and June 2020 were initially screened. Those with a confirmed primary diagnosis of bronchiectasis, verified by at least two follow-up visits, were included in the cohort. All enrolled patients were followed up for 1 year. For the study, patients with comprehensive demographic data, symptoms, lung function, microbiological information, and modified Reiff scores were included for analysis. Patients with post-TB bronchiectasis were further identified, and the risk factors associated with AEs were evaluated.

Results: A total of 1444 patients were included for analysis; 222 patients (15%) had post-TB bronchiectasis. Among these patients, 54 patients (24%) experienced at least one AE episode during the study period. The average age was 67 years among patients with post-TB bronchiectasis. Patients with post-TB bronchiectasis had a significantly lower body mass index (BMI), reduced forced expiratory volume in one second (FEV1), more frequent symptoms such as hemoptysis and dyspnea, and higher Reiff scores, compared to patients with bronchiectasis due to other etiologies. Although not significant, there was an increased rate of positive sputum cultures for gram negative bacillus (GNB), especially Pseudomonas aeruginosa in post-TB bronchiectasis patients. Patients with post-TB bronchiectasis experienced a significantly higher rate of AEs compared to those with other etiologies (24.3% vs. 17.4%, p = 0.014) (Table 1). Patients who developed AEs had lower BMI, FEV1, higher rates of positive cultures rate for Pseudomonas aeruginosa, Klebsiella pneumoniae, and overall GNB. They also demonstrated higher Reiff scores. Those with AEs had higher mortality rate than those without AEs (13.0% vs. 1.8%, p < 0.001) (Table 2). Multivariate analysis identified that lower FEV1 (aOR 0.122, 95% CI 0.026-0.580; P = 0.008) and positive GNB cultures (aOR 3.121, 95% CI 1.372-7.100; P = 0.007) were independent predictors of AEs for patients with post-TB bronchiectasis (Table 3). Combining these two factors, post-TB bronchiectasis patients with FEV1 below 60% and positive GNB cultures had a 50% risk of future AEs (Figure 1).

Conclusion: Bronchiectasis is a heterogeneous disease, and patients with post-TB bronchiectasis are at a higher risk of exacerbations compared to those without a history of TB. In these patients, lower FEV1 and positive cultures for GNB are independent predictors of further AEs.

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

PC43

呼吸器作功 (mechanical power) 與水分恆定對重症患者死亡率的影響

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Synergistic Effects of High Mechanical Power and Fluid Accumulation on Mortality in Mechanically Ventilated Patients

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Rationale: Mechanical ventilation may cause lung injury, and mechanical power (MP) is used to illustrate the energy that ventilator delivers to the lung parenchyma. Besides, fluid resuscitation is crucial to maintain hemodynamic status, but a positive fluid balance is associated with poor clinical outcomes. In this study, we aimed to investigate the influence of MP and fluid accumulation on the hospital mortality in mechanically ventilated patients with critical illness.

Methods: This retrospective cohort study was conducted at Taichung Veterans General Hospital by using its critical care data warehouse. Adult patients, admitted to Intensive Care Units during 2015 to 2020 were included if they received continuous mechanical ventilation for more than four days. On each day, the ventilator parameters were recorded automatically every 8 hours for the calculation of MP, and the amount of daily fluid intake and fluid output were recorded for fluid accumulation index (FAI). Demographic characteristics, reasons for ICU admission, disease severity score, laboratory data, and length of stay in ICU and hospital were collected for analysis.

Results: Among 4,441 patients, 2,989 were survivors and 1,451 were non-survivors. The mean MP in overall population was 19.2±6.7 J/min, 19.1±6.6 J/min, 19.2±6.7 J/min and 19.1±6.8 J/min from the day of admission to the third calendar day. The mean MP was significantly lower in survivors comparing with non-survivors (18.7±6.4 vs. 20.3±7.2 on day 0; 18.3±6.1 vs. 20.6±7.3 on day 1; 18.4±6.1 vs. 20.8±7.5 on day 2; 18.3±6.3 vs. 20.8±7.5 on day 3; all p value were <0.001). Survivors had significantly lower FAI from calendar day 0 to calendar day 3 than non-survivors (0.489 vs. 0.661 on day 0; 0.333 vs. 0.495 on day 1; 0.174 vs. 0.349 on day 2; 0.042 vs. 0.254 on day 3; all p value were <0.001). After adjusting confounders, MP (HR 1.032, 95% CI 1.022-1.043, p<0.001) and FAI (HR 2.425, 95% CI 2.012-2.923, p<0.001) were significantly associated with higher hospital mortality. Considering the influence of both MP and FAI on the hospital mortality, patients with higher MP and higher FAI were associated with higher hospital mortality.

Conclusions: In this study involving 4,441 critically ill patients with continuous mechanical ventilation for more than four consecutive days, people receiving higher MP and with higher FAI were associated with higher hospital mortality. Mechanical power and fluid accumulation have additive effect in mortality of critically ill 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)

PC44

探討脂肪因子與呼吸道非結核分枝桿菌患者的疾病狀態及預後之關聯性：一多中心研究

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Association of Adipokines with Disease Status and Outcomes in Patients with Respiratory Nontuberculous Mycobacterial Isolates: A Multi-Center Study

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Purpose: Underweight is a well-known risk factor of nontuberculous mycobacterial lung disease (NTM-LD) and its progression. The underlying mechanisms remain unclear. One hypothesis suggests that dysregulation of adipokines, particularly leptin and adiponectin, may play a key role. Underweight individuals often exhibit reduced leptin levels and elevated adiponectin levels, which may suppress macrophage activation and T-cell proliferation, thus increasing susceptibility to NTM infection and facilitating disease progression. Therefore, we conducted a study to investigate the relationship between leptin and adiponectin levels and NTM disease status (colonization or disease), as well as disease progression of NTM-LD.

Materials and Methods: We prospectively recruited patients with respiratory NTM isolates at two hospitals. Serum adiponectin and leptin levels were measured using an enzyme-linked immunosorbent assay. NTM disease status was determined in accordance with current international guidelines. Patients with NTM-LD were followed for 1 year. Disease progression was defined by either of the following: 1) microbiological persistence of NTM with radiographic worsening, or 2) initiation of antibiotic treatment for NTM-LD due to clinical deterioration.

Results: A total of 66 NTM-LD patients and 22 NTM-colonization patients were included. The former group had a significantly higher adiponectin level (13,680.8 vs. 5,733.1 ng/ml, P = 0.021) and a lower leptin/adiponectin ratio (0.56 vs. 1.21, P = 0.023). The area under curve (AUC) of using adiponectin level and leptin/adiponectin ratio to predict NTM disease status was 0.67 (95% CI: 0.53-0.81) and 0.67 (95% CI: 0.55-0.80), respectively. In multivariable analysis, a leptin/adiponectin ratio greater than 1.02 was associated with NTM colonization, with an odds ratio (OR) of 4.83 (95% CI: 1.26-18.52). Among the NTM-LD patients, 30 developed disease progression during 1-year follow-up. Those with disease progression had significantly higher adiponectin levels (17,037.7 vs. 10,733.1 ng/ml, P = 0.002) and a lower leptin/adiponectin ratio (0.43 vs. 0.96, P = 0.005). The AUC of using adiponectin level and leptin/adiponectin ratio to predict disease progression was 0.75 (95% CI: 0.61-0.88) and 0.73 (95% CI: 0.59-0.87), respectively. In multivariable analysis, an adiponectin level greater than 13,419 ng/ml was associated with disease progression, with an OR of 4.21 (95% CI: 1.01-17.49).

Conclusions: Adiponectin and leptin/adiponectin ratio levels are associated with NTM disease status and subsequent disease progression. These findings may assist physicians in more accurately identifying NTM-LD patients and predicting the course of their disease.

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

PC45

較輕體重的重度 ARDS 病人會有較差的預後

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Lower body weight is associated with worse outcomes in patients with severe ARDS

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Purpose: The impact of body mass index (BMI) on the prognosis of acute respiratory distress syndrome (ARDS) remains a subject of debate. In this study, we sought to explore the association between BMI and the short-term outcomes in ARDS patients more thoroughly.

Materials and Methods: We categorized patients into four groups based on body weight: underweight, normal weight, overweight, and obese, to analyze the differences in ICU mortality outcomes among ARDS patients.

Results: A total of 1034 patients meeting the Berlin definition of ARDS were analyzed, with an in-hospital mortality rate of 57.7%. ICU mortality was significantly higher in ARDS patients with a BMI < 27 compared to those with BMI ≥ 27 (60.4% vs. 47.1%, p = 0.001). Among severe ARDS patients, higher BMI was associated with lower mortality (80% vs. 61.5% vs. 64% vs. 41.9%, p < 0.001). The odds ratio for mortality in obese patients was 0.44 compared to normal-weight patients.

Cox regression models identified age, SOFA score, and BMI as significant factors for ICU mortality. The hazard ratio (HR) for age was 1.010 (p = 0.025), for BMI 0.947 (p < 0.001), and for SOFA score 1.114 (p = 0.006). MODS was not significantly associated with mortality (HR = 1.011, p = 0.815).

Conclusions: In conclusion, this study demonstrates that lower body weight, particularly a BMI below 27, is linked to higher ICU mortality rates in ARDS patients, especially those with severe ARDS. Obese patients had a significantly reduced risk of mortality compared to normal-weight individuals. After adjusting for confounding factors, age, BMI, and SOFA score were identified as key predictors of ICU mortality, while MODS showed no significant effect. These findings suggest that lower body weight is associated with worse outcomes in patients with severe 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)

PC46

Drug Sensitivity Test of Mycobacterim Kansasii. Mycobacterium avium complex , Mycobacterim abscessus and treatment outcome related to sputum culture conversion in Chest Hospital

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Purpose: To determine drug susceptibility testing for the diagnosis of Nontuberculosis mycobacterial lung disease, to understand the epidemiology of drug resistance rates and the impact of drug resistance on treatment outcome. The relationship between sputum culture negative conversion rate and treatment outcome at the second. third, sixth and 12th month.

Materials and Method: Non-Tuberculosis Mycobacterium-Lung Disease (NTM-LD) that was diagnosed and treated at the Chest Hospital from January 1, 2015 to November 30, 2023, and the patient's culture was positive before treatment. Slow Growing Mycobacterium MIC Plates (SLOMYCO 2) and Rapid Growing Mycobacteium MIC Plates (RAPMYCO2) produced by Trek Diagnostics/Thermo Fisher, Bremen, Germany were used for drug susceptibility testing (DST). The Clinical and Laboratory Standards Institute (CLIS) 2023 recommended MIC was used as the interpretation standard of drug resistance. Patient was received the standard treatment prescription recommended by the American Thoracic Society (ATS).The treatment results and the sputum culture conversion rate on the second, third, 6months and 12months were statistically analyzed.

Results:A total of 41 MAC strains were collected, and the drug resistance was Amikacin 10/41 (24.4%), Clarithromycin 7/39 (17.9%) Rifabutin 7/41 (17.1%), and Rifampicin 22/41 (53.7%). A total of 31 strains of Mycobacterium Kansasii were collected, and the resistance was Rifabutin 3/31 (9.7%), Rifampicin 10/31 (32.2%), Clarithomycin 3/30 (10.0%), Moxifloxacin 9/31 (29.0%). . A total of 36 strains of Mycobacterium abscessus were collected, with resistance to Imipenem 35/36 (97.2%), Doxycyline 32/36 (88.9%), Amikacin 1/36 (2.7%), Ciprofloxacin 33/36 (91.7%), Linezolid 8 /36(22.2%), Tobramycin 22/36 (61.1%), Cefoxitin 32/36 (88.9%), Moxifloxacin 31/36 (86.1%), Clarithromycin 7/36 (19.4%), Clofazimine 0/8 (0%)) (MICs are all below 0.25ug/ml), Tegicycline 21/36 (58%) (< 1ug/ml), and the rest are below 2ug/ml

The treatment results of MAC: 16 cases were successful (43.2%), 9 cases were lost (28.1%), and 12 cases were failed (32.4%). The treatment results of M. kansasii. 24 cases were successful (77.4%), and 7 cases were lost (29.1%). M. abscessus treatment results: 4 patients were successful (22.2%), 9 patients were failed (50%), and 5 patients were lost (27.8%). The negative conversion rate of sputum culture in the sixth month 0f three types of non-tuberculous mycobacteria was highly predicted the treatment success rate over 90%.

Conclusions and recommendations: The success rate of M. kansassi treatment is close to 100%, and M. kansassi causes severe lung damage and requires active treatment. HER or RE clarithromycin are both good regimens. HREClarithromycin is recommended as first-line treatment. Treatment of MAC (Mycobacterium avium) is not easy to be successful. It is recommended that in addition to the standard treatment of REClarithromycin, IV or inhaled amikacin must be added. It is recommended to use Rifabutin instead of Rifampicin for MAC treatment. M. abscessus is extremely difficult to treat, and the traditional oral treatment prescription Clarithromycin+Doxycycline+Fluoroquinolone should be abandoned:. It is recommended to change to inhalation or IV amikacin + Clarithromycin +Linezolid. Tigecycline can be used for one month. If the sputum culture is still negative after the sixth month of treatment, you must consider changing the treatment method.

Keywords: non-tuberculous mycobacterial lung disease, drug susceptibility testing, SLOMYCO 2, RAPMYCO2

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

PC47

整合新穎超音波震盪檢體處理技術與自動化核酸檢驗平台於疑似結核病人檢體的效能

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Integration of Sonication Technique with an Automated Nucleic Acid Testing Platform for the Evaluation of Suspected Tuberculosis Patients

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Purpose: To evaluate the performance of sonication techniques alongside innovative automated nucleic acid amplification testing platforms in the detection of tuberculosis (TB).

Materials and Methods: We analyzed residual specimens from suspected tuberculosis patients collected from February to June 2024 at two medical centers using sonication coupled with the automated Cobas 6800 system. The kits utilized in the Cobas system included MTB, MTB-RIF/INH, and MAI. The performance of the system was compared against the Xpert MTB/RIF test and traditional mycobacterial culture (Figure 1).

Results: We analyzed specimens from 132 patients suspected of having tuberculosis, confirming TB in 17 cases. Data revealed that 47.1% of diagnosed TB cases had a prior TB history, compared to only 7.0% among those not diagnosed, indicating a significant association with past exposure ($p < 0.0001$) (Table 1). The Fisher exact test demonstrated that the Xpert MTB/RIF assay detected TB in 11 out of 17 confirmed cases, whereas the sonication-Cobas method identified 14 out of 17 cases, with a p-value of 0.0294. Regarding sensitivity, the traditional culture method detected TB in 10 cases, showing 58.8% sensitivity (95% CI: 34.8%-80.3%). Xpert MTB/RIF identified TB in 11 cases, with a sensitivity of 64.8% (95% CI: 38.6%-85.7%). The sonication technique with the Cobas system achieved the highest sensitivity at 82.4% (95% CI: 57.7%-95.3%), detecting TB in 14 cases. Specificity was consistently high across all testing methods, with culture and Xpert MTB/RIF both achieving 100% (95% CI: 97.3%-100%), and the Cobas system achieving 99.1% (95% CI: 96.1%-99.9%). The Cobas system also showed the highest overall accuracy at 97.0% (95% CI: 93.2%-98.9%). Four cases of nontuberculous mycobacteria (NTM) were identified. When considering both TB and NTM, the accuracy was 90.9% for culture (95% CI: 84.7%-95.2%) and 93.9% for the Cobas system (95% CI: 88.4%-97.4%) (Table 2).

Conclusions: The study suggests the Cobas system's enhanced sensitivity in TB detection, showing promise for improving diagnostic practices alongside traditional 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)

PC48

肺結核高劑量 Rifapentine 四個月處方對肝功能的影響評估：多中心前瞻性介入型研究

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The Impact of a Four-Month High-Dose Rifapentine Tuberculosis Treatment Regimen on Liver Function: A Multi-Center Prospective Interventional Study

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Purpose: A 4-month regimen containing rifapentine and moxifloxacin has been shown to be non-inferior to the traditional 6-month regimen for tuberculosis treatment. However, the tolerability and adverse reactions of this high-dose rifapentine in Chinese population remain uncertain. This study aims to evaluate the impact of the 4-month regimen on liver function in comparison to the standard 6-month treatment to assess its safety profile in this population.

Materials and Methods: This multi-center prospective interventional study included newly diagnosed pulmonary TB (PTB) cases (study arm) enrolled from four medical centers in Taiwan from 2021 to 2023. We also retrospectively included age-, gender-, and Charlson comorbidity-matched PTB cases as controls in a 2:1 ratio (control arm). PTB patients in the study arm received a 4-month regimen that included isoniazid, high-dose rifapentine, moxifloxacin, and pyrazinamide (for 2 months). We compared the changes in liver function during anti-TB treatment between the two groups of patients.

Results: A total of 333 PTB cases were included in this study (111 in the study arm and 222 in the control arm). The occurrence of hyperbilirubinemia was significantly higher in the 4-month group than in the 6-month group (29.7% vs. 2.3%; $p < 0.001$). Conversely, the incidence of AST/ALT elevation was lower in the 4-month group compared to the 6-month group (27.9% vs. 39.6%; $p = 0.036$). Treatment interruption due to hyperbilirubinemia occurred more frequently in the 4-month group (19.8% vs. 10.8%; $p = 0.025$). All patients with hyperbilirubinemia recovered without permanent damage or mortality. In the multivariate analysis, the 4-month regimen was an independent factor associated with hyperbilirubinemia, with an adjusted odds ratio (aOR) of 19.3 (95% CI 7.14-52.17).

Conclusions: The 4-month regimen for PTB, compared to the standard 6-month treatment, was associated with higher risk of hyperbilirubinemia. Treatment interruptions due to hyperbilirubinemia were common, but the regimen did not result in permanent liver damage.

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

PC49

利用遷移深度學習從胸部電腦斷層影像預測肺部非結核分枝桿菌患者的臨床預後

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Clinical Outcomes Prediction in Patients with Pulmonary Nontuberculous Mycobacteria from Chest CT Imaging Using Transfer Deep Learning

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Purpose: We aim to develop an AI-assisted model that utilizes chest computed tomography (CT) imaging to predict clinical outcomes in patients with pulmonary nontuberculous mycobacteria.

Materials and Methods: Patients with respiratory NTM isolates and chest CT images between January 2016 and December 2021 were retrospectively analyzed from National Taiwan University Hospital (internal cohort, including internal training, validation and test cohort) and its Hsin-Chu branch (external cohort). An AI model combining high-resolution CT (HRCT) images and clinical data was developed using a convolutional neural network for image analysis and a multilayer perceptron for clinical variables. Two training strategies were employed: model training from scratch and fine-tuning a pre-trained model (transfer learning) using 1387 COVID-19 CT scans from the Medical Imaging and Data Resource Center. The primary outcome was 2-year all-cause mortality, with secondary outcomes including 2-year respiratory-related mortality and hospitalization.

Results: A total of 752 NTM patients with HRCT images were included, with 481 in the internal cohort and 271 in the external cohort. The 2-year all-cause mortality rates were 26.2% and 15.9%, and respiratory-related mortality rates were 18.1% and 10.7%, while respiratory related hospitalization occurred in 37.2% and 42.8% in the internal and external cohorts. The learning model trained from scratch achieved AUCs of 0.83 (95% C.I.: 0.76-0.85) and 0.76 (95% C.I.: 0.68-0.80) for all-cause mortality, 0.80 (95% C.I.: 0.71-0.85) and 0.77 (95% C.I.: 0.72-0.84) for respiratory-related mortality, and 0.66 (95% C.I.: 0.49-0.77) and 0.63 (95% C.I.: 0.55-0.67) for hospitalization in the internal and external test cohort. The transfer learning model yielded comparable AUCs of 0.83 (95% C.I.: 0.76-0.94) and 0.73 (95% C.I.: 0.64-0.77) for all-cause mortality, 0.78 (95% C.I.: 0.71-0.81) and 0.76 (95% C.I.: 0.69-0.82) for respiratory-related mortality, and AUCs to 0.69 (95% C.I.: 0.51-0.75) and 0.73 (95% C.I.: 0.63-0.75) for hospitalization in the internal and external test cohort.

Conclusions: Our model trained from scratch performed well in predicting clinical outcomes in patients with pulmonary NTM. Furthermore, the transfer learning model enhanced generalizability to different clinical outcomes.

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

PC50

針對化膿性分枝桿菌肺疾，評估質譜儀的亞種鑑定效能及抗藥性研究

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Performance of MALDI-TOF in Subspecies Identification and Drug Susceptibility Profile Among Mycobacterium Abscessus Pulmonary Disease

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Background: Since the risk of drug resistance was diferent between difference subspecies of *Mycobacterium abscessus* complex, the therapy should base on subspeciese identificiation. However, sequencing method was time consuming and might delay appropriate therapy. Rapid techniques like mass spectrometry (matrix-assisted laser desorption/ionization time-of-flight, MALDI-TOF) offer faster diagnosis and precise subtype identification. This study aims to evaluate the accuracy of MALDI-TOF, the prevalence and antibiotic resistance patterns of various M. *abscessus* subtypes.

Methods: Between 2013 and 2017, a total of 104 M. *abscessus* cases were isolated from sputum samples at a medical center in Taiwan. All isolates underwent identification via 16S rRNA sequencing and MALDI-TOF. Minimum inhibitory concentration (MIC) testing was performed using the broth microdilution method. The accuracy of MALDI-TOF was evaluated against sequencing results. Clinical data were retrospectively collected.

Results: Of the 104 *Mycobacterium abscessus* isolates, sequencing identified 51 as *subsp. abscessus*, 51 as subsp. massiliense, and 2 as subsp. bolletii. MALDI-TOF showed a sensitivity of 98.0% and specificity of 88.7% for subsp. abscessus, and 88.2% and 94.3% for subsp. massiliense, respectively. Overall sensitivity, specificity, and accuracy were 91.3%, 91.7%, and 91.3%. Diagnostic accuracy improved to 97.7% with a confidence score cut-off ≥ 2.0, but decreased to 71.4% with a cut-off < 1.7. Significant differences in resistance between *subsp. abscessus* and *subsp. massiliense* were observed for trimethoprim-sulfamethoxazole (TMP/SMX) ($p = 0.037$), clarithromycin ($p < 0.001$), and linezolid ($p = 0.017$). On day 3, 0% of *subsp. abscessus* and 2% of *subsp. massiliense* strains showed resistance to clarithromycin. However, by days 7 and 14, resistance rates for *subsp. abscessus* rose to 63.3% and 69.4%, respectively, while those for *subsp. massiliense* increased to 7.8% and 11.8%.

Conclusion: This study shows that MALDI-TOF achieves 91.3% accuracy, rising to 97.7% with a confidence score cut-off ≥ 2.0. As a faster, cost-effective alternative to sequencing, MALDI-TOF is valuable for routine diagnostics. Significant resistance differences between *subsp. abscessus* and *subsp. massiliense* were noted for TMP/SMX, clarithromycin, and linezolid. Early identification with MALDI-TOF supports timely antibiotic selection. However, inducible resistance, particularly in *subsp. abscessus*, limits the reliability of early DST results for clarithromycin in guiding 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)

PC51

病例報告：以大小不一的複數結節呈現的類鼻疽肺部表徵

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Pulmonary Manifestations of Melioidosis with varying-sized nodules: A Case Report

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Background: Melioidosis is a disease of tropical climates, which is caused by Burkholderia pseudomallei existing in soil and water. Since first imported case was reported in 1985, the disease had received growing attention. We reported a case of melioidosis with positive blood culture and pulmonary manifestations, who had rapid progression and rapid regression after antibiotic therapy, either clinically or radiologically.

Case Presentation: A 50-year-old woman, who had old pulmonary tuberculosis, asthma, and hypertension, came to emergency department for abdominal pain. Hyperosmolar hyperglycemic state and newly diagnosed diabetes were confirmed after a series of tests. Her condition had improved after fluid resuscitation and insulin treatment, but septic status lasted. Chest plain film showed progression of consolidations in bilateral middle and lower lung fields. Blood culture obtained at emergency department yielded Burkholderia psdudomallei. Antigens of Aspergillus and Cryptococcus showed negative results. Ceftazidime was given and computed tomography of chest disclosed multiple nodules of varying sizes scatted in RML, RLL, and LLL, which was compatible with pulmonary melioidosis. Ceftazidime was shifted to Meropenem for allergic reaction. Following plain films showed rapid regression of consolidations within one week after initiating Meropenem. The patient was discharged after one month of intravenous antibiotic therapy, with oral antibiotic therapy kept in outpatient department.

Conclusion: The lungs are the most commonly affected organ in melioidosis, with typical radiological feature of hilar nodules with central attenuation. Unspecific patterns were seen sometimes, like varying-sized nodules and multilobar consolidations of the patient. Optimal outcome relied on timely diagnosis and 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)

PC52

比較兩種計算 Pendelluft 的方式

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Comparison of two methods for Pendelluft estimation of trigger breaths in ARDS patients

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Introduction: Pendelluft occurs in patients with ARDS during spontaneous breaths. Two methods, Coppadoro's method and Cornejo's method, have been proposed to estimate Pendelluft on a breath-to-breath basis. Recently, two distinct patterns of effort-related Pendelluft were discriminated in trigger breaths by Coppadoro's method. In this study, we applied the Cornejo method to investigate whether the quantitative estimation of Pendelluft in trigger breaths remained similar.

Methods: We used the same database of 20 mechanically ventilated ARDS patients during the transition from controlled to active breaths under volume-cycled ventilation. Twenty percent of the counted trigger breaths were selected equally at three levels of esophageal pressure swing (< 5, ≥ 5 to <10, and ≥ 10 cm H2O; total selected trigger breaths: 1135, total counted trigger breaths: 5155).

The quantitation of Pendelluft was calculated as the slopes of the linear regression curves between ΔPes and Pendelluft volume (ml/cmH2O) according to Coppadoro's method and between ΔPes and the mean Pendelluft difference (%/cmH2O) according to Cornejo's method.

Results: The Pendelluft response to breathing efforts was 0.60 ± 0.66 ml/cmH2O by the Coppadoro method and 0.81 ± 0.69%/cmH2O by the Cornejo method. There was a significant correlation between Pendelluft magnitudes estimated by these two methods (Spearman rank correlation, r = 0.68, p = 0.0010). There were also two distinct patterns of effort-related Pendelluft using the Cornejo method. Nine patients with a Pendelluft response >0.6 ml/cmH2O by the Coppadoro method were classified as the high Pendelluft group. Eight of the nine patients classified as having high Pendelluft using the Coppadoro method remained classified as high Pendelluft group using the Cornejo method.

In some patients, volume displacement occurs in the later phase of inspiration, leading to the discordance between the two methods. The Coppadoro method may underestimate Pendelluft in this kind of patient.

Conclusions: The Coppadoro method may underestimate Pendelluft in some patients. However, the Coppadoro and Cornejo methods could discriminate the high and low Pendelluft response to breathing effort in ARDS patients. There is a significant correlation between these two 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)

PC53

亞急性呼吸照護病房病人接受轉銜計畫成效分析

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The Efficacy of Transition Care Program for Patients Discharged From Respiratory Care Center

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Purpose: Patient flow management is important in medical care and related to cost effectiveness. How about the allocation and outcome for patients discharged from respiratory care center (RCC) is less discussed and mentioned. The transition care program is designed and initiated from the Ministry of Health and Welfare. In our study, we aim to analyze the outcome of transition care program applied in our respiratory care center including ventilator dependent and ventilator liberal status.

Materials and Methods: We implemented transition care program for patients admission to our respiratory care center (RCC) in Taichung Veterans General Hospital since 2022. We collected the clinical database for patients discharged from our RCC from 2022 to 2023. The patients discharged from our RCC were classified into two groups (ventilator dependent with respiratory care ward bridge care and ventilator liberal followed by chronic care facility). All the enrolled patients were traced at least 6 months after discharge. We checked the survival and allocation status at that time. The length of stay (LOS) in our RCC was also recorded.

Results: In the 2 year database, total 127 patients discharged from our RCC were enrolled into our study. The mean age was 69 years old and male was predominant (60%). The 6 months survival status after discharge for overall enrolled patients was around 67.7%. More than 40% cases were diabetic patients. The 6 months survival status for ventilator dependent with RCW bridge care group (79 cases) and ventilator liberal with chronic care facility (48 cases) were 63.2% and 75% respectively. Elder patients was related to high mortality. The yearly length of stay (LOS) in RCC during 2022 to 2023 was 15.5 days.

Conclusions: We could apply and integrate transition care program in patient flow management for patients admission to RCC. Discharge plan with facility allocation was indispensable. Nearly one third patients discharged form RCC died within 6 months. The yearly length of RCC stay could be shortened 1.4 days (16.9 -> 15.5 days) after implementation this program.

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

PC54

Comparison of Clinical Presentations and Outcomes in Influenza and COVID-19 Related Acute Respiratory Distress Syndrome: A Multicenter Cohort Study with Propensity Score Marching

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Purpose: Patients infected with either influenza virus or SARS-CoV-2 may experience pneumonia, and some may progress to acute respiratory distress syndrome (ARDS). Although both diseases manifest as viral pneumonia, the disease processes and treatment strategies for each differ considerably. In this study, we compare the clinical presentations and outcomes of patients with ARDS caused by either influenza or COVID-19.

Materials and Methods: The Taiwan Severe Influenza Research Consortium (TSIRC) consists of eight referral hospitals in Taiwan, and we collected data from all patients admitted to ICUs due to influenza pneumonia-related ARDS between October 2015 and March 2016. The Taiwan Severe and Critical COVID Consortium (TSCCC), which includes 24 hospitals in Taiwan, enrolled all ventilated patients admitted to hospitals due to COVID-19 infection between May 2021 and July 2021. Demographic data, laboratory results, ventilator settings, and outcomes were extracted from the electronic medical records of each hospital using a standardized case report form.

Results: We included 282 influenza-related ARDS patients and 524 COVID-19-related ARDS patients. Although the influenza patients were younger than COVID-19 patients (60.1±14.8 vs. 66.6±11.1 years, $p < 0.001$), they had significantly worse PaO2/FiO2 ratio (129.3±100.3 vs. 131.1±69.2 mmHg, $p = 0.020$) and higher APACHE II score (23.4±8.7 vs. 18.5±8.0, $p < 0.001$). However, COVID-19 patients had a significantly higher 28-day mortality rate (23.0% vs. 30.2%, $p = 0.032$). After we used the Propensity score to match these 2 groups with parameters of age, PaO2/FiO2 ratio, and APACHE II score, the COVID-19 patients still had significantly higher 28 days mortality rate (20.6% vs. 30.0%, $p = 0.039$). Additionally, significantly more COVID-19 patients required inotropic support compared to influenza patients (64.5% vs. 53.2%, $p = 0.001$).

Conclusions: Despite experiencing milder respiratory symptoms and severity, COVID-19 patients had significantly worse clinical outcomes compared to influenza patients. The cardiovascular instability requiring inotropic agents may be one of the contributing factors.

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

PC55

不同抗生素組合對於肺炎病原體多標核酸檢測偵測之抗藥性格蘭氏陰性菌肺炎的治療結果分析

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Analysis of treatment outcomes of different antibiotic combinations in pneumonia caused by drug-resistant Gram-negative bacteria detected by the BioFire FilmArray Pneumonia Panel

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Purpose: The treatment of multidrug-resistant Gram-negative bacteria (MDRGNB) infection is a global challenge, especially in nosocomial infection such as intensive care unit (ICU). With the advancements in antibiotic therapies and diagnostic methods, we investigate the impact of different clinical antibiotic treatments on the outcome of pneumonia caused by MDRGNB with different resistant genotyping in ICU.

Material and **Methods:** The study was a retrospective observational study conducted in the ICU of China Medical University Hospital (CMUH). We collected data on 651 patients diagnosed with severe pneumonia with acute respiratory failure between November 2019 and October 2022, all of whom underwent BioFire FilmArray Pneumonia Panel (FAPP) testing for pathogen identification. For those with drug resistance genes GNB, classified by the Ambler classification, we analyzed the outcomes of different antibiotic combinations and the chronic comorbidities in patients at higher risk of MDRGNB infection.

Results: Among the 651 patients included in the study, 148 carried beta-lactamase resistance genes. The overall mortality was 41.9% (n=146), with a mortality rate of 50% (n=38) in the Class B group. Class A resistance genes were the most prevalent in this study (n=106), and there was a high co-occurrence (77%) of the OXA-48 gene from Class D with the CTX-M gene from Class A. The antibiotic regimens were categorized as 'Meropenem without Colistin, Colistin-based, Zavicefta-based, Tigecycline-based, combination with inhalation therapy, and others' for analysis. Subgroup analysis revealed that the Colistin-based therapy group had a higher mortality rate of 64.3%, but this group also had a higher APACHE score (28.6) compared with the other groups (26.0). The Zavicefta-based group showed a better mortality rate in patients with Class A genes compared with those with Class B genes, at 33.3% vs. 66.7%, respectively.

Conclusions: GNB with Ambler Class B resistance genes were associated with higher mortality compared to other resistance genes, but inhalation antibiotic therapy significantly reduced the mortality rate, despite the small sample size. Colistin-based antibiotic regimens were linked to higher mortality in all GNB infections with resistance genes, but it had higher APACHE scores compared to other groups. Zavicefta-based treatment may have a better effect in patients with Ambler Class A GNB infections. In the group without beta-lactamase-resistant GNB treatment, the mortality rate was lower, highlighting the importance of clinical judgment in distinguishing between contamination and true 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)

PC56

比較凍晶及乾粉劑型的克痢黴素於機械通氣時噴霧治療的效果

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Comparison of the effect of lyophilized powder and dry powder colistin nebulization during mechanical ventilation

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Introduction: Mutidrug resistant organisms are increasingly identified in patients with ventilator-associated pneumonia. Adequate antibiotic regimen is important to decrease morbidities and mortalities caused by them. Except for intravenous antibiotics, inhaled antibiotics are recognized as effective treament. Nebulized colistin has broad spectrum activity againt Gram negative bacilli.

Aims and objectives: This study aimed to evaluate the effect of nebulized colistin from the new formulation of lyophilized powder (LP) or conventional dry powder (DP) formulation under mechanical ventilation.

Methods: Each vial contained 2 mIU of colistin with 156 mg colistin methanesulfonate for injection. One vial and two vials of colistin were tested. Each dose of drug was dissolved in 6ml of dissolved distilled water and placed in a jet nebulizer with oxygen flow at 8 L/min and mechanical ventilator, which was connected to the test lung (compliance 0.05 L/cmH2O, resistance 5 cm H2O/L/s) via a 7.5mm endotracheal tube. The inhaled mass were anlyzed and compared between different doses and formulations.

Results: The LP group had similar inhaled mass with DP group (25.69±7.80mg VS 21.05±1.85mg, p=0.258) at 1 vial inhalation. The LP group had larger inhaled mass than DP group at 2 vials inhalation (47.59±5.45mg VS 34.51±4.55mg, p=0.003).

Conclusions: The new formulation of LP nebulized colistin has larger inhaled mass than DP group at 2 vials inhalation.

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

PC57

在慢性肺病，煙麴黴菌特異性 IgG 抗體和肺功能變化的前瞻性研究

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Impact of Aspergillus-Specific IgG on Lung Function in Chronic Lung Disease: A Prospective Study

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Purpose: Chronic lung diseases are intricate conditions shaped by genetic and environmental factors. Aspergillus species can worsen these diseases, with elevated Aspergillus-specific IgG potentially signaling disease progression.

Materials and Methods: This prospective study, conducted in Taiwan from July 2019 to June 2023, involved patients with chronic lung diseases. Lung function was assessed every six months, and the mean difference in FEV1 was calculated between baseline and each follow-up visit. A decline in FEV1 of ≥ 50 mL per six months or ≥ 100 mL per year was classified as a rapid decline in lung function, in accordance with ATS/ERS recommendations due to its clinical significance. Statistical analyses were performed to evaluate diagnostic efficiency and identify risk factors associated with this rapid decline.

Results: A total of 106 patients and controls were enrolled. Aspergillus-specific IgG levels were significantly higher in the rapid decline group (44.7 ± 24.8 vs. 26.6 ± 17.9, P < 0.001). A titer above 30 mgA/L predicted rapid decline with 71% sensitivity, 70% specificity, and an AUC of 0.729 (95% CI = 0.626–0.832, P < 0.001). Elevated antibody titers were an independent predictor of rapid decline (odds ratio = 1.071, P = 0.002) and were associated with increased exposure to house plants and pets.

Conclusions: Higher levels of Aspergillus-specific IgG were associated with rapid lung function decline in chronic lung disease 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)

PC58

NTM 肺病患者血液溶態細胞程式死亡蛋白 -1 與開洞型結節性支氣管擴張變化：一多國研究

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Soluble programmed death-1 protein is associated with the cavitary nodular bronchiectatic pattern and severe disease in NTM lung disease: a multinational validation study.

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Purpose: In nontuberculous mycobacterial lung disease (NTM-LD), soluble programmed cell death (PD)-1 protein (sPD-1), a potential antagonist of the PD-1 pathway, has been shown to be linked to cavitary lesions in patients with nodular bronchiectatic (NB) NTM-LD in Taiwan. This multinational study aims to validate the association between sPD-1 and cavitary lesions in patients with NB-type NTM-LD across Asian countries and investigate its association with other patient characteristics.

Materials and Methods: Patients with NB-type NTM-LD from 2011 to 2024 were enrolled from three referral hospitals in Taiwan, Korea, and Japan. Patients with superimposed fibro-cavitary lesions or those who had received treatment for more than 6 months at baseline were excluded. Blood samples were collected for sPD-1 measurement. Radiographic characteristics were reviewed for all patients and the cavitary NB change was defined as NB pattern with cavity within the nodular lesions.

Results: 376 participants were enrolled, including 47 from Taiwan and 86 from Japan (prospective), and 243 from Korea (retrospective). The mean age of the patients was 63.73 ± 10.3 years, the mean BMI was 20.7 ± 2.9 kg/m^2, and the mean sPD-1 level was 57.4 ± 44.6 pg/ml (median 48.1, IQR 28.2–69.3 pg/ml). Of the total, 108 patients (29%) were male, 125 (33%) were smear-positive, 290 (77%) were infected by Mycobacterium avium complex, and 65 (17%) were infected by M. abscessus. Notably, 40 (10.6%) of them were classified as cavitary NB radiographic pattern. Patients with cavitary NB were more likely to be smear-positive (20/40, 50% vs 105/335, 31%; p=0.021) and had lower BMI (19.5 ± 3.1 vs 20.9 ± 2.8 kg/m^2; p=0.008) as well as lower sPD-1 levels (44.8 ± 32.1 vs 58.9 ± 45.7 pg/ml; p=0.027). The female population was more likely to have low sPD-1 levels (<28.2 pg/ml) compared to males (78/268, 29.1% vs 16/108, 14.8%; p=0.004). Overall, 74 patients (19.7%) initiated antibiotic treatment either at baseline or within one year. Importantly, cavitary NB and BMI were identified as risk factors associated with antibiotic initiation (adjusted OR 5.8 [95% CI, 2.8-12.1], p<0.001, and 0.8 [0.7-0.9], p=0.001, respectively) after adjusting for age, sex, smear grading, and low sPD-1 (<28.2 pg/ml). Specifically, in the female population, both cavitary NB and low sPD-1 (<28.2 pg/ml) were independent risk factors for antibiotic initiation (adjusted OR 6.0 [2.6-13.6], p<0.001, and 2.1 [1.1-4.2], p=0.047, respectively).

Conclusions: This multinational study in patients with NTM-LD validate cavitary NB pattern (10%) was associated with low sPD-1 levels. In females, both factors were linked to severe disease requiring treatment, suggesting the existence of an sPD-1-associated phenotype that may guide management.

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主辦單位

台灣胸腔暨重症加護醫學會

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21.台灣拜耳股份有限公司

22.台灣東洋藥品工業股份有限公司

23.博兆股份有限公司

24.銓鼎有限公司

25.台灣羅氏醫療診斷設備股份有限公司

26.艾柏生技股份有限公司

27.上鉅實業股份有限公司

28.亞洲準譯股份有限公司

29.達杏股份有限公司

30.力大國書有限公司

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