2023 台灣胸腔暨重症加護醫學會年會

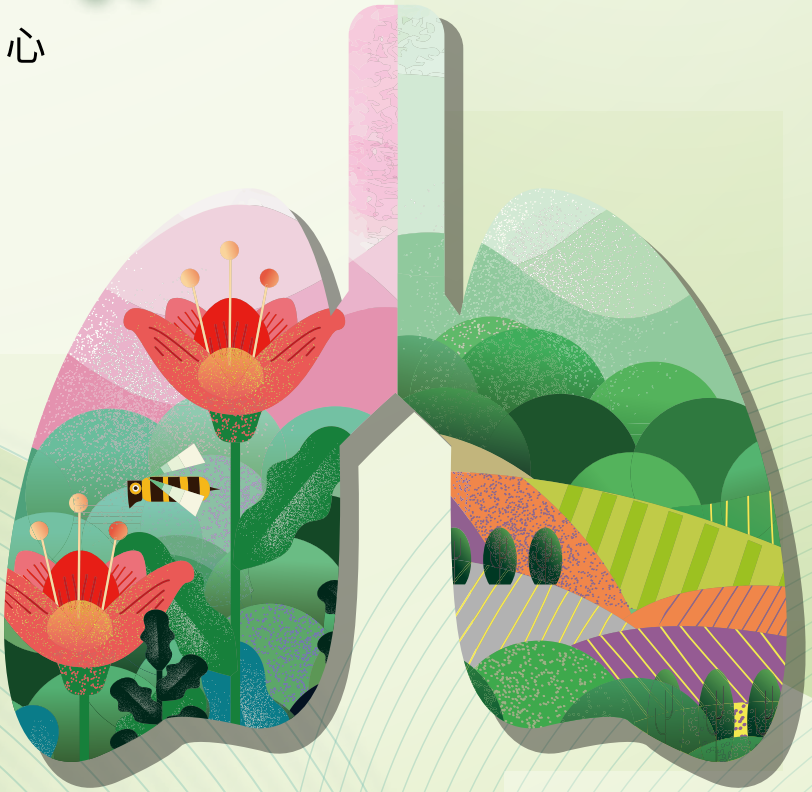
暨第19屆第1次會員大會

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

2023 Annual Congress of Taiwan Society of Pulmonary and Critical Care Medicine
And Taiwan Society of Thoracic Surgeons,Taiwan Association of Thoracic & Cardiovascular Surgery Joint Conference

Dec. 09 sat ~ 10 sun

台大醫院國際會議中心



幫助氣喘病患預防錯過人生重要時刻！

氣喘精準照護 就是這麼簡單

Abbreviation: ICU, Intensive Care Unit; RCC, Respiratory Care Center; RCW, Respiratory Care Wards

References: 1. GINA 2022; 2. Ismaila A;Current medical research and opinion;2014;30;1417-1425; 3. Thorac Med 2014. Vol. 29 No. 6; 4. Seretide evohaler 50 Taiwan PI; 5. Seretide evohaler 125/250 Taiwan PI; 6. Relvar Taiwan Full PI, TW04; 7. Trelegy 92/55/22 mcg Taiwan Full PI, TW05; 8. Trelegy 184/55/22 mcg Taiwan Full PI, TW02

TRELEGY ELLIPTA禁用於為重積性氣喘(status asthmaticus)或其他急性 COPD 或氣喘發作且必須採取強效治療 措施的第一線療法，有嚴重乳蛋白過敏問題，或已證實對fluticasone furoate、umeclidinium、vilanterol或任何賦形劑過敏，且TRELEGY ELLIPTA並不適用於緩解急性支氣管痙攣。RELVAR ELLIPTA禁用於下列狀況作為重積性氣喘 (status asthmaticus)或其他急性COPD或氣喘發作且必須採取強效治療措施的第一線療法以及有嚴重乳蛋白過敏問題，或已證實對fluticasone furoate、vilanterol或本品之任何賦形劑過敏。SERETIDE 禁止使用於對本劑任何一種成分有過敏史之病人。

Relvar 簡易仿單
[許可證字號] 衛部藥輸字第026318號; 衛部藥輸字第027034號 [中文產品名稱] 潤娃易利達92/22 mcg乾粉吸入劑、潤娃易利達184/22 mcg乾粉吸入劑 [活性成份學名] fluticasone furoate/vilanterol (100/25 mcg或200/25 mcg) [適應症或用途] ・ RELVAR ELLIPTA 92/22 是一種吸入性的皮質類固醇/長效型β2腎上腺素作用劑 (ICS/LABA) 複方製劑，適用於慢性阻塞性肺病(COPD)患者之氣道阻塞症狀的維持治療 ・ RELVAR ELLIPTA 92/22 也適用於降低有惡化病史患者之 COPD 惡化 ・ RELVAR ELLIPTA是一種ICS/LABA複方製劑，適用於治療適合使用吸入型皮質類固醇及長效β2作用劑合併治療的18歲及以上氣喘患者 [劑量與用法] RELVAR ELLIPTA應以每天吸入一次的方式投藥，且僅可經口吸入 [禁忌症] RELVAR ELLIPTA禁用於下列狀況: ・ 作為重積性氣喘 (status asthmaticus) 或其他急性COPD或氣喘發作且必須採取強效治療措施的第一線療法 ・ 有嚴重乳蛋白過敏問題，或已證實對fluticasone furoate、vilanterol或本品之任何賦形劑過敏 [警語及注意事項] 嚴重氣喘相關事件—住院、插管、死亡；病情惡化與急性發作；過度使用RELVAR ELLIPTA及與其他長效型β2作用劑併用與吸入性皮質類固醇的局部影響；肺炎；免疫抑制；從全身性皮質類固醇轉換治療的患者；腎上腺皮質功能亢進與腎上腺抑制；與強效細胞色素 P450 3A4 抑制劑的藥物交互作用；反常性支氣管痙攣；過敏反應 (包括全身性過敏)；心血管影響；骨質密度降低；青光眼與白內障；合併症；高血糖與低血鉀；對生長的影響 [不良反應] ・ 使用LABA可能會導致：嚴重氣喘相關事件— 住院、插管、死亡；心血管影響 ・ 使用全身性與局部性皮質類固醇可能會導致：白色念珠菌感染；COPD患者發生肺炎的風險升高；免疫抑制；腎上腺皮質功能亢進與腎上腺抑制；骨質密度降低 [不良事件通報程序] 若有不良事件可通報至葛蘭素史克藥廠; 通報電話: (02) 23126836, 通報網址: oax40892@gsk.com [公司名稱] 荷商葛蘭素史克藥廠(股)台灣分公司 [公司地址] 台北市忠孝西路一段66號23樓 [(聲明)] 詳細處方資訊備索 [參考仿單版本編號] TW04 (USPI 01/2019) 版本日期：2019 年 2 月

Trelegy 92/55/22 mcg簡易仿單
[許可證字號] 衛部藥輸字第027395號 [中文產品名稱] 肺樂喜易利達92/55/22 mcg乾粉吸入劑 [活性成份學名] Fluticasone furoate 100 mcg、Umeclidinium 62.5 mcg及 Vilanterol 25 mcg (1劑TRELEGY ELLIPTA 92/55/22 mcg) [適應症或用途] ・ 慢性阻塞性肺病維持治療：適用於已接受吸入性皮質類固醇與長效β2作用劑合併治療，或已定期使用兩種吸入型長效支氣管擴張劑合併治療，而仍控制不佳的慢性阻塞性肺病(COPD)病人，以治療氣道阻塞。也適用於降低有惡化病史病人之COPD惡化 ・ 氣喘維持治療：適用於併用吸入性長效型β2-腎上腺受體作用劑和吸入性皮質類固醇治療氣喘仍控制不佳的成年病人，做為氣喘維持治療 ・ 使用限制：TRELEGY ELLIPTA並不適用於緩解急性支氣管痙攣 [劑量與用法] ・ 應每天一次以經口吸入的方式投予 1 劑 TRELEGY ELLIPTA 92/55/22 mcg。吸入之後，應用水漱口，且不可吞下，這是為了幫助降低發生口咽念珠菌病的風險 ・ TRELEGY ELLIPTA 應每天於相同時間投藥 ・ 每 24 小時不可使用 TRELEGY ELLIPTA 超過 1 次 ・ 對老年病人、腎功能不全病人或中度肝功能不全病人，都不須調整劑量 ・ 慢性阻塞性肺病維持治療的建議劑量：TRELEGY ELLIPTA用於COPD維持治療的建議劑量為每日一次經口吸入fluticasone furoate 100 mcg、umeclidinium 62.5 mcg及vilanterol 25 mcg (1劑TRELEGY ELLIPTA 92/55/22 mcg)。TRELEGY ELLIPTA 92/55/22 mcg是唯一適用於治療COPD的劑量。如果在兩劑之間出現呼吸短促的現象，應使用吸入性短效型β2作用劑(救援藥物，如albuterol)來達到立即緩解的效果 ・ 氣喘維持治療的建議劑量：TRELEGY ELLIPTA用於氣喘維持治療的建議起始劑量為每日一次經口吸入fluticasone furoate 100 mcg、umeclidinium 62.5 mcg及vilanterol 25 mcg (1劑TRELEGY ELLIPTA 92/55/22 mcg)。選擇TRELEGY ELLIPTA的起始劑量時，應考慮病人的病情嚴重程度；先前的氣喘療法，包括吸入性皮質類固醇(ICS)的劑量；以及病人目前的氣喘症狀控制情形與未來更加惡化的風險。如果在兩劑之間出現氣喘症狀，應使用吸入性短效型β2作用劑(救援藥物，如albuterol)來達到立即緩解的效果。[禁忌症] TRELEGY ELLIPTA禁用於下列病人：・ 為重積性氣喘(status asthmaticus)或其他急性 COPD 或氣喘發作且必須採取強效治療 措施的第一線療法 ・ 有嚴重乳蛋白過敏問題，或已證實對fluticasone furoate、umeclidinium、vilanterol或任何賦形劑過敏 [警語及注意事項] 嚴重氣喘相關事件－住院、插管、死亡；病情惡化與急性發作；避免過度使用TRELEGY ELLIPTA及避免與其他長效型β2作用劑併用；口咽念珠菌病；肺炎；免疫抑制與感染風險；從全身性皮質類固醇轉換治療的病人；腎上腺皮質功能亢進與腎上腺抑制；與強效細胞色素P450 3A4抑制劑的藥物交互作用；反常性支氣管痙攣 (Paradoxical Bronchospasm)；過敏反應，包括全身性過敏 (Anaphylaxis)；心血管影響；骨質密度降低；眼部疾患；尿滯留惡化；合併症；低血鉀與高血糖；對生長的影響－對兒童與青少年投予經口吸入性皮質類固醇可能會導致生長速度減慢 [不良反應] ・ 慢性阻塞性肺病的臨床試驗經驗：頭痛、味覺障礙、背痛、咳嗽、口咽疼痛、腹瀉、感染與寄生蟲侵染－腸胃炎 ・ 氣喘的臨床試驗經驗：感染與寄生蟲侵染－腸胃炎、咽炎/鼻咽癌、上呼吸道感染/病毒性上呼吸道感染、支氣管炎、呼吸道感染/病毒性呼吸道感染、竇炎/急性竇炎、尿道感染、鼻炎、流行性感冒、肺炎、頭痛、背痛、發音困難、口咽疼痛、咳嗽 [不良事件通報程序] 若有不良事件可通報至葛蘭素史克藥廠; 通報電話: (02) 23126836, 通報網址: oax40892@gsk.com [公司名稱] 荷商葛蘭素史克藥廠(股)台灣分公司 [公司地址] 台北市忠孝西路一段66號23樓 [(聲明)] 詳細處方資訊備索 [參考仿單版本編號] TW05 (USPI 05/2022) 版本日期：2022 年 05 月

Trelegy 184/55/22 mcg簡易仿單
[許可證字號]衛部藥輸字第028240號 [中文產品名稱] 肺樂喜易利達184/55/22 mcg乾粉吸入劑 [活性成份學名] Fluticasone furoate 200 mcg、Umeclidinium 62.5 mcg 及Vilanterol 25 mcg (1 劑TRELEGY ELLIPTA 184/55/22 mcg) [適應症或用途] ・ TRELEGY ELLIPTA 184/55/22 mcg 適用於併用吸入性長效型 β2-腎上腺受體作用劑和吸入性皮質類固醇治療氣喘仍控制不佳 的成年病人，做為氣喘維持治療 ・ TRELEGY ELLIPTA 184/55/22 mcg 並不適用於緩解急性支氣管痙 [劑量與用法] ・ 應每天一次以經口吸入的方式投予1 劑TRELEGY ELLIPTA。TRELEGY ELLIPTA 應每天於相同時間投藥。吸入之後，應用水漱口，且不可吞下，這是為了幫助降低發生口咽念珠菌病的風險 ・ 每24 小時不可使用TRELEGY ELLIPTA 超過1 次 ・ 對老年病人、腎功能不全病人或中度肝功能不全病人，都不須調整劑量 ・ TRELEGY ELLIPTA 用於氣喘維持治療的建議起始劑量為每日一次經口吸入fluticasone furoate 100 mcg、umeclidinium 62.5 mcg 及vilanterol 25 mcg (1 劑TRELEGY ELLIPTA 92/55/22 mcg)或fluticasone furoate 200 mcg、umeclidinium 62.5 mcg 及vilanterol 25 mcg (1 劑TRELEGY ELLIPTA 184/55/22 mcg) ・ 最高建議劑量為每天吸入一次TRELEGY ELLIPTA 184/55/22 mcg ・ 對TRELEGY ELLIPTA 92/55/22 mcg 每日一次無法產生適當療效反應的病人，將劑量提高至TRELEGY ELLIPTA 184/55/22 mcg 每日一次或可提供額外的氣喘控制改善效果 ・ 對TRELEGY ELLIPTA 184/55/22 mcg 每日一次無法產生適當療效反應的病人，應重新評估，並考慮採用其他療法和額外的治療選擇 ・ 如果在兩劑之間出現氣喘症狀，應使用吸入性短效型β2 作用劑 (救援藥物，如albuterol 來達到立即緩解的效果 [禁忌症] TRELEGY ELLIPTA 184/55/22 mcg 禁用於下列病人：・ 作為重積性氣喘 (status asthaticus) 或其他氣喘急性發作且必須採取強效治療措施的第一線療法 ・ 有嚴重乳蛋白過敏問題，或已證實對fluticasone furoate、umeclidinium、vilanterol或任何賦形劑過敏 [警語及注意事項] 嚴重氣喘相關事件—住院、插管、死亡；病情惡化與急性發作；過度使用TRELEGY ELLIPTA及與其他長效型β2作用劑併用；口咽念珠菌病；肺炎；免疫抑制與感染風險；從全身性皮質類固醇轉換治療的病人；腎上腺皮質功能亢進與腎上腺抑制；與強效細胞色素P450 3A4抑制劑的藥物交互作用；反常性支氣管痙攣；過敏反應，包括全身性過敏；心血管影響；骨質密度降低；在長期使用ICS 或併用吸入性抗膽鹼激性藥物；尿滯留惡化；患有痙攣性疾病或甲狀腺毒症的病人或對擬交感神經胺異常敏感的病人；低血鉀與高血糖；生長速度減慢 [不良反應] 感染與寄生蟲侵染；咽炎／鼻咽癌；上呼吸道感染／病毒上呼吸道感染；支氣管炎；呼吸道感染／病毒性呼吸道感染；竇炎／急性竇炎；尿道感染；鼻炎；流行性感冒；肺炎；頭痛；背痛；發音困難；口咽疼痛；咳嗽 [不良事件通報程序] 若有不良事件可通報至葛蘭素史克藥廠; 通報電話: (02) 23126836, 通報網址: oax40892@gsk.com [公司名稱] 荷商葛蘭素史克藥廠(股)台灣分公司 [公司地址] 台北市忠孝西路一段66號23樓 [(聲明)] 詳細處方資訊備索 [參考仿單版本編號] TW02 (USPI 05/2022) 版本日期：2022 年 05 月

Seretide Evohaler 簡易仿單
[許可證字號] 50 mcg 衛署藥輸字第 023480 號、125 mcg 衛署藥輸字第023482號、250 mcg 衛署藥輸字第023481號 [中文產品名稱] 使肺泰50, 125, 250優氟吸入劑 [活性成份學名] salmeterol xinafoate(相當於salmeterol 25 mcg)和fluticasone propionate 50, 125 或 250 mcg [適應症或用途] 適用於可逆性呼吸道阻塞疾病(ROAD)之常規治療，包括適合使用支氣管擴張劑及皮質類固醇組合療法之患有氣喘的兒童與成人 [劑量與用法] 僅供口腔吸入使用。病人必須明白，即使沒有症狀，仍須常規使用，才能得到最佳臨床效益。成人及十二歲以上之青少年：每日兩次，每次吸二單位劑量25/125 mcg至25/250 mcg。四歲以上之兒童：每日兩次，每次吸二下(25 mcg salmeterol 及50 mcg fluticasone propionate)。慢性阻塞性肺部疾病(COPD)：對成人病人之建議劑量為每日兩次，每次吸二單位劑量25/125 mcg至25/250 mcg salmeterol/fluticasone propionate。特殊患者群：老年患者，以及肝功能或腎功能不全之患者，使用時不需要調整劑量 [禁忌症] 禁止使用於對本劑任何一種成分有過敏史之患者 [警語及注意事項] 任何吸入性類固醇均可能發生全身性作用，特別是長期高劑量的處方，這些作用的發生遠比口服類固醇來得低。可能的全身性作用包括庫欣氏症候群、類庫欣氏症表徵、腎上腺抑制、兒童及青少年生長遲緩、骨骼礦物質密度降低、白內障、青光眼和中心性漿液性脈絡膜視網膜病變。使用全身性與外用皮質類固醇製劑可能會發生視覺障礙。因為可能造成腎上腺反應的損害，病人由口服類固醇的治療轉為吸入性fluticasone propionate時，應特別小心，並定期監測腎上腺皮質功能。上市後的使用期間，對於同時使用fluticasone propionate及ritonavir的患者，臨床上曾有顯著的藥物交互作用，導致全身性類固醇作用產生，包括庫欣氏症候群和腎上腺抑制。和其他的吸入性治療藥物一樣，投藥後可能會發生反常性支氣管痙攣，並伴有喘鳴突然加劇的現象。此時應立即使用作用快速的短效型吸入性支氣管擴張劑治療 [不良反應] 極常見：頭痛。常見：口腔與喉嚨的念珠菌病、肺炎(COPD患者)、聲音嘶啞/發聲障礙、肌肉痙攣、關節痛；少見：皮膚過敏反應、呼吸困難、白內障、高血糖、焦慮、睡眠障礙、顫抖、心悸、心搏過速、心房纖維顫動、喉嚨發炎、挫傷；罕見：食道念珠菌病、嚴重過敏反應、青光眼、行為改變，包括過動與易怒(主要見於兒童)、心律不整，包括上心室心搏過速與期外收縮、血管性水腫(主要為臉部與口咽水腫)與支氣管痙攣、庫欣氏症候群、類庫欣氏症表徵、腎上腺抑制、兒童與青少年生長遲緩、骨質密度降低、反常性支氣管痙攣 [不良事件通報程序] 若有不良事件可通報至葛蘭素史克藥廠; 通報電話: (02) 23126836, 通報網址: oax40892@gsk.com [公司名稱] 荷商葛蘭素史克藥廠(股)台灣分公司 [公司地址] 台北市忠孝西路一段66號23樓 [(聲明)] 詳細處方資訊備索 [參考仿單版本編號] GDS37 / IPI20 版本日期：15 Dec 2020

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09:40 - 10:20	The Past, Present and Future Prospects of COPD in Taiwan Speaker: 鄭世隆 醫師 Moderator: 徐武輝 醫師	Latent tuberculosis infection (LTBI) treatment in long- term care facilities Speaker: 李品慧 醫師 Moderator: 黃伊文 醫師 鍾欽文 醫師	The impacts of climate change and air pollution on respiratory diseases Speaker: 莊校奇 教授 Moderator: 王金洲 醫師	台灣胸腔外科醫學會 Treatment of CTEPH with Pulmonary Endarterectomy Surgery Speaker: Dr. David Jenkins Moderator: 許瀚水 醫師 黃文傑 醫師	Respiratory Image Analysis: Present and Future Speaker: Prof. Yasutaka Nakano Moderator: 李岡遠 醫師	
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10:50 - 11:50	會員大會，頒發專科醫師證書 (101 會議室)				會員大會，頒發專科醫師證書 (101 會議室)	
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13:30 - 14:10	Taiwan national lung cancer early detection program Speaker: 吳昭軍 署長 Moderator: 王鶴健 醫師 鍾欽文 醫師	Oral Presentation Thoracic Oncology、Intervention Bronchoscopy、Diagnosis Moderator: 何肇基 醫師 涂智彥 醫師 黃明賢 醫師	Oral Presentation Airway Disease、Sleep Medicine、Interstitial Lung Disease)、Other Moderator: 林慶雄 醫師 簡榮彥 醫師 李岡遠 醫師	13:30-14:10 台灣胸腔外科醫學會 Current Status and Future Perspectives on Immunotherapy in the Perioperative Period in Early-Stage NSCLC Speaker: Dr. Johnathan Spicer Moderator: 黃敍愷 醫師 王秉彥 醫師	Gene testing-guided off-label treatment for NSCLC Speaker: 施金元 醫師 Moderator: 夏德椿 醫師	Oral Presentation Respiratory Tract Infections、Critical Care Medicine、Tuberculosis Moderator: 林恒毅 醫師 黃伊文 醫師 賴俊良 醫師
14:10 - 14:50	The Development of Biotech and Pharmaceuticals Industry in Taiwan: The Challenges and Opportunities Speaker: 楊泮池 醫師 Moderator: 余忠仁 醫師 王鶴健 醫師				Heavy ion radiotherapy for NSCLC Speaker: 藍耿立 醫師 Moderator: 陳育民 醫師	
14:50 - 15:10	**Coffee break**					
15:10 - 15:50	LABA/LAMA combination: The Golden standard in symptomatic COPD management Speaker: Prof. Arschang Valipour Moderator: 鄭世隆 醫師	IPA and CAPA: early diagnosis and prompt treatment Speaker: 劉偉倫 醫師 Moderator: 曹昌堯 醫師 徐武輝 醫師	The pharmacological treatment of obstructive sleep apnea Speaker: 王才郁 醫師 Moderator: 杭良文 醫師	台灣胸腔外科醫學會 Multilateral Trial For Enhanced Recovery After Thoracic Surgery (Merats) Speaker: Prof. Teodor Horvath Moderator: 陳晉興 醫師 鄭清源 醫師	Personalized neo-adjuvant and adjuvant therapy of operable NSCLC Speaker: 柯政昌 醫師 Moderator: 施金元 醫師	MR BPA and the multimodal strategy of riociguat and BPA in CTEPH management Speaker: Prof. Kohtaro Abe Moderator: 黃明賢 醫師 林孟志 醫師
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16:40 - 17:50	Interstitial Lung Disease 台灣百靈佳殷格翰股份有限公司 State-of-the-art treatment strategies for PPF Speaker: 郭炳宏 醫師 Moderator: 王鶴健 醫師 PPF case sharing-MDT for integrated care Speaker: 傅彬貴 醫師 Moderator: 林孟志 醫師	Airway Disease 臺灣阿斯特捷利康股份有限公司 Transforming asthma care for a broad population by targeting TSLP Speaker: 許超群 醫師 Moderator: 鍾欽文 醫師 New standard of treatment goals: Clinical Remission & background medication reduction Speaker: 張博瑞 醫師 Moderator: 彭殿王 醫師	Thoracic Oncology 美商默沙東藥廠股份有限公司台灣分公司 KEYTRUDA Annual Review: In 2023, What Does Immunotherapy Convince Us More? What's new? Speaker: 魏裕峰 醫師 Moderator: 蔡俊明 醫師	Airway Disease 荷商葛蘭素史克藥廠股份有限公司台灣分公司 New era of severe asthma treatment, EOS & beyond Speaker: Prof. Geoffrey Chupp Moderator: 林鴻銓 醫師	Thoracic Oncology 台灣百靈佳殷格翰股份有限公司 Optimize treatment outcome for challenge NSCLC patient population with EGFRm+ Speaker: 陳煜結 醫師 Moderator: 洪仁宇 醫師 The state of art to overcome EGFR TKI resistance in NSCLC treatment landscape Speaker: 廖唯昱 醫師 Moderator: 陳志毅 醫師	Thoracic Oncology 嬌生股份有限公司楊森藥廠 Navigating the Therapeutic Landscape: The Integration of Amivantamab-based combo in Common EGFR NSCLC patients Speaker: 曾政森 醫師 Moderator: 李岡遠 醫師 Moving target therapies forward into the first-line treatment for NSCLC patients with EGFR exon 20 insertion mutations Speaker: 洪仁宇 醫師 Moderator: 施金元 醫師
18:30 - 20:00	**大會晚宴 - 頒獎典禮 (1919 藝文中心)** 頒發胸腔醫學雜誌優秀學術論文獎、頒發 Young Invstigator Award 、頒發口頭報告、海報展示優秀論文獎、年輕醫師研究潛力獎					

Dec 10 (Sun.) 請點選議程各欄前往連結頁面

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08:30	Registration					
09:00 I 09:40	Implementation of evidence-based practice in the medical ICU Speaker: 許超群 醫師 Moderator: 吳杰亮 醫師 黃崇旂 醫師	The clinical application and innovation of airway stent Speaker: 柯明耀 醫師 Moderator: 涂智彥 醫師	台灣胸腔及心臟血管外科學會 09:00-09:50 From uniport VATS to uniport RATS Speaker: Prof. Diego. Gonzalez. Rivas Moderator: 曾堯麟 醫師 李章銘 醫師 黃文傑 醫師	台灣胸腔外科醫學會 09:00-09:20 The Clinical Application for Pleuroscopy in Parapneumonic Effusion: Current Evidence and Case Share. Speaker: 簡宏哲 醫師 Moderator: 吳玉琮 醫師 徐博奎 醫師 09:20-09:40 Lung Transplantation for Bronchiectasis- Experience of Linkou Chang Gung Memorial Hospital Speaker: 陳維勳 醫師 Moderator: 郭光泰 醫師 張博智 醫師	Updates on Antifibrotic Treatments for Idiopathic Pulmonary Fibrosis and Progressive Pulmonary Fibrosis Speaker: Prof. Yoshikazu Inoue Moderator: 林慶雄 醫師	09:00-09:10 Opening Moderator: 余忠仁 醫師 09:10-09:20 Doctors in the changing world: Potential impact of AI on medicine and medical education Speaker: 黃裕欽 醫師 09:20-09:50 Novel Wearable Sensors for Monitoring Pulmonary Diseases Speaker: Prof. Yong Zhu 09:50-10:10 AI and critical care monitoring Speaker: 詹明澄 醫師 10:20-10:40 AI in Sleep medicine Speaker: 吳清平 醫師 10:40-11:00 Leveraging AI for optimal hospital manpower Speaker: 王誠一 醫師 11:00-11:20 Building a digital native hospital: what we can learn from Taiwan Semiconductor Manufacturing Co. Speaker: 唐高駿 醫師 11:20-11:40 AI in Mechanical Ventilation Speaker: 陳健文 醫師 11:40-12:00 AI in lung Imaging Speaker: 張允中 醫師 Moderator: 余忠仁 醫師 黃裕欽 醫師
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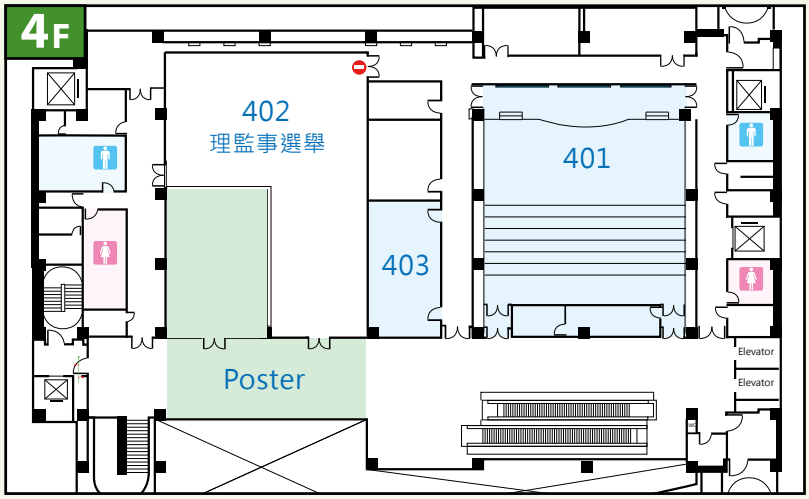
會場平面圖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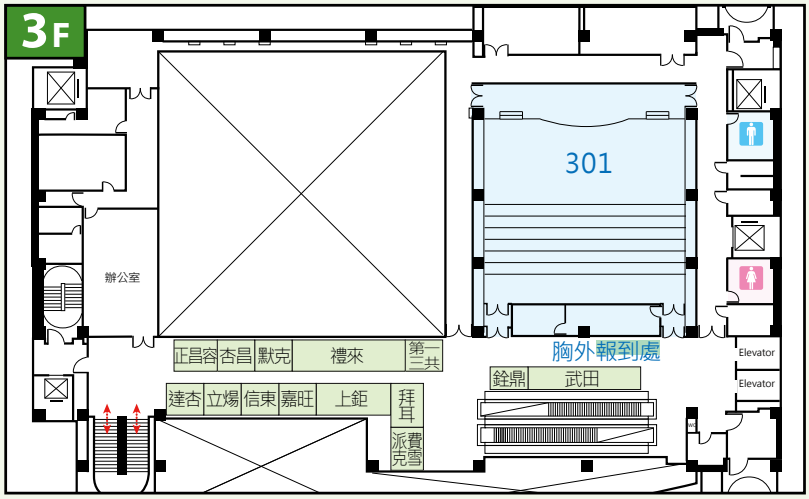
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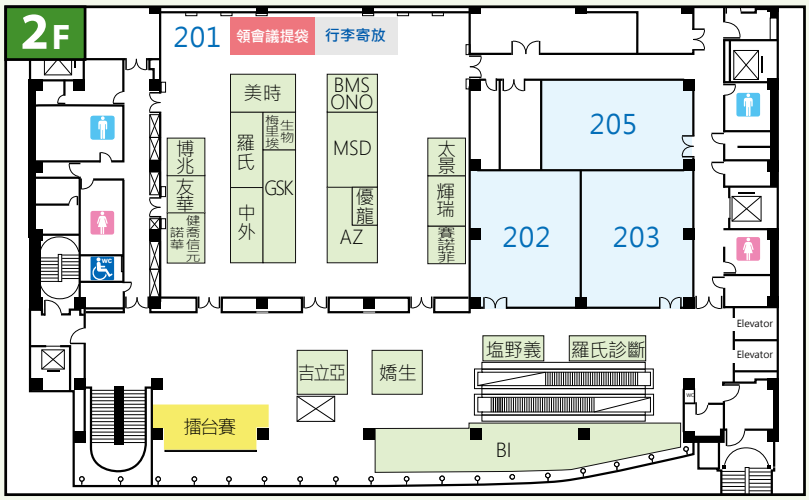
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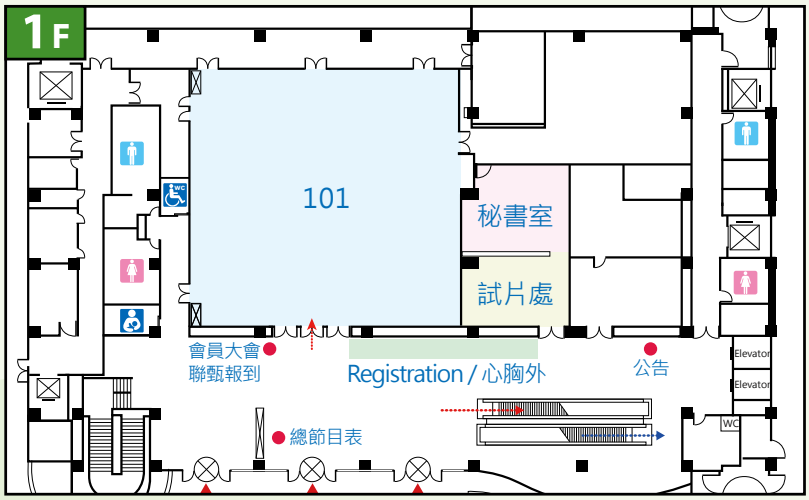
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演講摘要

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101 會議室

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09:40-10:20 The Past, Present and Future Prospects of COPD in Taiwan / **Prof. Shih-Lung Cheng** / **P.7**

12:10-13:20 Is it time to escalate to Triple Therapy for your asthma patients? / **Dr. Xin-Ming Liao** / **P. 8**

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15:10-15:50 LABA/LAMA combination: The Golden standard in symptomatic COPD management / **Prof.Arschang Valipour** / **P.11**

15:50-16:30 Striking the Right Balance: Optimizing COPD Treatment with ICS / **Prof. James D. Chalmers** / **P.11**

16:40-17:50 State-of-the-art treatment strategies for PPF / **Dr. Ping-Hung Kuo** / **P.12**
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12/10 Sun.

09:00-09:40 Implementation of evidence-based practice in the medical ICU / **Prof. Chau-Chyun Sheu** / **P.14**

09:40-10:20 Blue ocean in pulmonary and critical medicine: the application and experience sharing of hyperbaric oxygen therapy in critical illness / **Dr. Chung-Kan Peng** / **P.14**

10:40-11:20 Ventilator associated events surveillance / **Dr. Shih-Feng Liu** / **P.15**

11:20-12:00 Lung and diaphragm protection ventilation / **Prof. Ming-Cheng Chan** / **P.16**

Toward clinical remission, the management of severe asthma

Geoffrey Chupp, M.D.

Professor of Medicine (Pulmonary, Critical Care and Sleep Medicine); Director, Yale Center for Asthma and Airways Disease (YCAAD), Pulmonary, Critical Care & Sleep Medicine; Director, Pulmonary Function Laboratory, Yale-New Haven Hospital, Pulmonary, Critical Care & Sleep Medicine

Severe asthma has traditionally centered on symptom control and reducing exacerbations, but a novel paradigm has emerged with the concept of clinical remission. While the precise definition of clinical remission in severe asthma remains in flux, it typically includes criteria like improved symptom control, reduced exacerbation, enhanced lung function, and a decreased reliance on oral corticosteroids. Achieving clinical remission is influenced by factors like personalized treatment approaches, the advent of biologic therapies targeting specific inflammatory pathways, and patient-specific variables.

Clinical remission in severe asthma is associated with numerous benefits, including improved patient quality of life, reduced healthcare costs, and mitigated risks linked to the long-term use of systemic corticosteroids. It also holds potential for preventing irreversible airway remodeling and bettering the overall prognosis of severe asthma patients. As our understanding of severe asthma and its treatment options continues to advance, defining, assessing, and achieving clinical remission will become an essential goal to improve the long-term outcomes and well-being of individuals with severe asthma.

The Past, Present and Future Prospects of COPD in Taiwan

鄭世隆 醫師 / Shih-Lung Cheng, M.D., Ph.D.

Chief, Pulmonary Medicine, Far Eastern Memorial Hospital; Head Elect, Asthma Assembly, Asia Pacific Society of Respirology (APSR)

Chronic obstructive pulmonary disease (COPD) is a leading cause of morbidity and mortality worldwide. It has also imposed a substantial economic and social burden on the health care system. In Taiwan, the estimated prevalence of COPD in 2015 was 6.1% among adults 40 years or older. COPD is the seventh most common cause of death in Taiwan. The World Health Organization estimated that COPD will become the third leading cause of death worldwide by 2030.

In 2016, first version for COPD local guidelines by evidence-based medicine and GRADE recommendation was published and the COPD P4P program was initiated on April 1, 2017. In Taiwan, a nationwide COPD pay-for-performance (P4P) program was designed to improve the quality of COPD-related care by introducing financial incentives for health care providers and

employing a multidisciplinary team to deliver guideline-based, integrated care for patients with COPD, reducing adverse outcomes, especially COPD exacerbation.
However, COPD is also a major cause of morbidity and mortality worldwide, with approximately 70% to 80% of adults with COPD being undiagnosed. Patients with undiagnosed COPD are at increased risk of poor outcomes and a worsened quality of life, making early detection a crucial strategy to mitigate the impact of COPD and reduce the burden on healthcare systems.
Future prospective for COPD in Taiwan, we recommend the following clinical procedure for triaging individuals at risk of COPD. Individuals who test positive with case-finding tools for COPD should be referred to a pulmonologist for further diagnosis. And patients who receive a new COPD diagnosis should be invited to join the COPD integrated care program. While patients with an alternative diagnosis other than COPD, they should be recommended to receive smoking cessation program or risk management, such as reducing indoor and outdoor air pollution exposure, as well as regular lung function monitoring, should be recommended.

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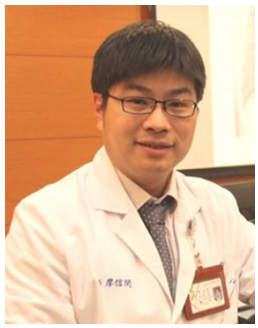


Is it time to escalate to Triple Therapy for your asthma patients?

廖信閔 醫師 / Xin-Ming Liao, M.D.

Attending physician, Division of Pulmonology, Department of Internal Medicine, National Cheng Kung University Hospital

本次演示專注於當前哮喘管理未滿足的需求、GINA 2023 建議，LAMA 的角色以及 Trelegy 200 的簡要介紹。
哮喘治療的基礎通常依賴於 ICS/LABA，大多數哮喘患者都大量使用該方法。然而，基於現實世界的研究表明，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 2023 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 是治療哮喘的新型成分，最近也是治療嚴重哮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 的適應症和健保起伏的選擇。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 是在哮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。

Taiwan national lung cancer early detection program

吳昭軍 署長 / Chao-Chun Wu Director-General

Health Promotion Administration, Ministry of Health and Welfare

Lung cancer has been the leading cause of cancer mortality among men and women worldwide and also in Taiwan. There were 10,040 people deaths of lung cancer in 2021, accounting for one fifth of total cancer deaths. It has shown the effectiveness of lung cancer screening with low-dose computed tomography (LDCT) to detect lung cancer at an early stage and significantly reduce lung cancer mortality in heavy smokers. However, more than half of Taiwan's lung cancer patients are non-smokers. To identify the effectiveness of LDCT for lung cancer screening in non-smokers and develop the lung cancer risk model, the Ministry of Health and Welfare has subsidized the Taiwan Lung Cancer Society for "Taiwan Lung Cancer Screening in Never Smoker Trial (TALENT)" since 2014. The primary results of baseline screening have shown that subjects with a lung cancer family history have higher prevalence rate of lung cancer than those without lung cancer family history.

The Health Promotion Administration, Ministry of Health and Welfare launched the National Lung Cancer Early Detection Program to provide biennial LDCT lung screening for high-risk groups. Taiwan is the first country to provide lung screening for heavy smokers and individuals with a family history of lung cancer. Lung cancer screening policies were established based on international evidence, domestic research results, and discussions between experts and relevant academic associations. From July 2022 to September 2023, around 60 thousand people had been served. There were 702 individuals diagnosed with lung cancer, and 86% of lung cancer cases were at an early stage (stage zero and one). Compared to the data from the Taiwan Cancer Registry 2020 with 51.1% cases at stage four, it has shown a dramatically stage shift of the lung cancer cases. We expect that this program could increase the survival rate of lung cancer cases and decrease the lung cancer mortality.

The Development of Biotech and Pharmaceuticals Industry in Taiwan: The Challenges and Opportunities

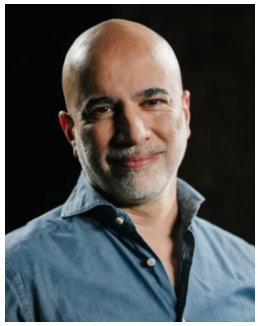
楊泮池 醫師 / Pan-Chyr Yang, M.D., Ph.D.

National Taiwan University College of Medicine and National Taiwan University Hospital

In light of recent challenges in digital health and biotech breakthroughs in the post-pandemic era, the Taiwan government has designated precision health as one of the Six Core Strategic Industries. It has received significant investment for research and development since 2021. The Executive Yuan has entrusted the Office of Science and Technology Commission, the Ministry of Health and Welfare (MOHW), the Ministry of Science and Technology (MOST), and the Ministry of Economic Affairs (MOEA) to collaborate in guiding the medical, academic, and industrial sectors towards pioneering innovative biomedical and biopharmaceutical manufacturing. Leveraging Taiwan's exceptional performance and strengths in the ICT/chip industry, cloud computing, AI, biomedical sensors/devices and precision medicine, along with utilizing excellent biomedical research and clinical trial capabilities, the goal is to establish our country as a major hub for the biomedical research and development industry in the Asia-Pacific region.

In this presentation, I will aim to outline how Taiwan is transitioning from precision medicine to precision health. I will explain how we integrate and process the extensive data from our National Health Insurance, cancer registry, and health data from medical centers and the Health Promotion Administration of MOHW. Additionally, I will discuss initiatives like the Taiwan Precision Medicine Initiative, Taiwan Biobank, Cancer Moonshot program, as well as prospective genomic and precision health projects supported by MOST and MOHW. This data is made available to both the academic and biomedical industries to facilitate the development of future smart medicine and novel pharmaceuticals. The Act for the Development of Biotech and Pharmaceuticals Industry was extended for another 10 years in December 2021, underscoring the significance of emerging biomedical technologies, including digital health, cell therapy, and others. Crucially, addressing how to effectively implement these new technologies and leverage the extensive data from our medical care system to promote precision health and drive economic development remains a significant challenge that we anticipate tackling in the near future.

LABA/LAMA combination: The Golden standard in symptomatic COPD management



Arschang Valipour, M.D., FERS, Assoc. Professor

Head, Department of Respiratory and Critical Care Medicine
Director, Karl-Landsteiner-Institute for Lung Research and Pulmonary Oncology
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Chronic obstructive pulmonary disease (COPD) is a prevalent respiratory disorder with significant impact on patients' lives. The combination of long-acting beta-agonists (LABA) and long-acting muscarinic antagonists (LAMA) has emerged as the gold standard in managing symptomatic COPD.

LABA and LAMA work synergistically to provide bronchodilation and alleviate symptoms in COPD patients. Clinical evidence supports the superiority of LABA/LAMA combination therapy over monotherapy or other treatments. It improves lung function, exercise capacity, symptom control, and quality of life. Early implementation of LAMA/LABA therapy furthermore has the capacity to delay disease progression.

LABA/LAMA therapy has a favorable safety profile and good tolerability, making it suitable for long-term management. Healthcare professionals should consider this combination therapy early in the disease course to optimize outcomes and enhance COPD management.

In conclusion, LABA/LAMA combination therapy is the golden standard in managing symptomatic COPD. Its significant improvements in lung function, symptom control, and quality of life make it a preferred treatment option. Healthcare professionals should prioritize this therapy for optimal COPD management.

Striking the Right Balance: Optimizing COPD Treatment with ICS

James D. Chalmers, MBChB, Ph.D., FRCPE, FERS

Asthma and Lung UK Chair of Respiratory Research
School of Medicine, University of Dundee

COPD is a complex heterogeneous disease consisting of many different subtypes. Treatment of COPD includes balancing the potential benefits of treatment with potential adverse effects and healthcare costs. Inhaled corticosteroids in combination with bronchodilators reduce exacerbations in patients with COPD and can also be associated with improved lung function and quality of life. Inhaled corticosteroids can also increase the risk of respiratory infections if used inappropriately. Striking the right balance in appropriate prescribing for COPD involves using biomarkers such as blood eosinophil counts, exacerbation history of markers of airway infection to determine the optimal balance between benefits and risks. This lecture will review emerging clinical and scientific evidence guiding personalised medicine in COPD.

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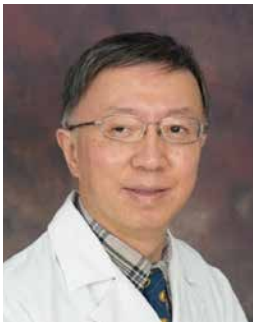
State-of-the-art treatment strategies for PPF



郭炳宏 醫師 / Ping-Hung Kuo, M.D.

國立臺灣大學醫學院附設醫院 內科部胸腔科主治醫師

This year, ERS 2023 conference is Milan Italy, an in-person format in .
Each year, thousands of respiratory medicine professionals gather to present and learn about groundbreaking advancements in the field at this great annual respiratory event. With my greatest honor and greatest humbleness, I would like to share my learning with my dear colleagues. I will try my best to address the "State-of-the-art treatment strategies for PPF" in my presentation and hope it will be useful for your clinical practice reference.
Progressive pulmonary fibrosis (PPF) characterized by declining lung function, a poor response to immunomodulatory therapies, and early mortality. The pathophysiology of disordered lung repair involves common downstream pathways that lead to pulmonary fibrosis in PPF. The antifibrotic drugs, such as nintedanib, are indicated for the treatment of IPF and PPF, and new therapies are being evaluated in clinical trials. Clinical, radiographic, and molecular biomarkers are needed to identify patients with PPF and subgroups of patients likely to respond to specific therapies. I will review the evidence supporting the use of specific therapies in patients with PPF, discusses agents being considered in clinical trials, and considers potential biomarkers based on disease pathogenesis that might be used to provide a personalized approach to care.
In addition, I would like to share my learning about key updates in current management PPF. For other progressive fibrosing ILD, nintedanib has more comprehensive clinical evidence to support its role in PF-ILD/PPF. Thus, the new guideline 2022 only recommended nintedanib to treat IPF and PPF. For pirfenidone, it seems no more new clinical evidence to support its usage in ILD. Besides antifibrotics therapy, there are some remarkable findings in non-pharmacological therapy.

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PPF case sharing-MDT for integrated care

傅彬貴 醫師 / Pin-Kuei Fu, M.D.

臺中榮民總醫院 醫學研究部臨床試驗科主任
臺中榮民總醫院 技術移轉中心主任
臺中榮民總醫院 間質性肺病整合照護中心主任
臺中榮民總醫院 胸腔內科主治醫師

This year, the ERS 2023 conference took place in Milan, Italy, in an in-person format. Every year, thousands of respiratory medicine professionals come together at this remarkable annual respiratory event to present and learn about groundbreaking advancements in the field. It is with great honor and humility that I would like to share my knowledge with my esteemed colleagues. In my presentation, I will endeavor to address the topic of 'PPF case sharing - MDT for integrated care' and hope that it will provide a valuable reference for your clinical practice.

Multidisciplinary team (MDT) meetings, involving the integrated collaboration of healthcare professionals, are increasingly used in clinical practice to inform the diagnosis and treatment of interstitial lung diseases (ILDs). Over time, the assessment of patients with ILD has transitioned from discussions among clinicians, radiologists and pathologists to the inclusion of a broader range of clinical data and specialist expertise. Studies have shown that a multidisciplinary approach can have many benefits for the clinical care of patients with ILD by improving the diagnostic confidence for different ILDs and guiding treatment decisions. The utility of MDT discussions for diagnosis, monitoring disease progression and management decisions, will need to be considered based on how it is best positioned in the diagnostic and therapeutic process, as well as the practicality and challenges of its use. There are also uncertainties and heterogeneity concerning the optimal practices of MDT meetings in ILD care. In this presentation, I will describe recent developments refining the approach to MDTs in clinical practice, including who should be involved in the MDTs, when it is most needed, their use in patient management, challenges in their implementation, and ongoing controversies in the field that need further research.

Implementation of evidence-based practice in the medical ICU

許超群 醫師 / Chau-Chyun Sheu, M.D.,Ph.D.

Director of Critical Care Medicine Center
Division of Pulmonary and Critical Care Medicine , Kaohsiung Medical University Hospital

Implementing evidence-based practice in the Intensive Care Unit (ICU) is crucial for delivering the highest quality of care to critically ill patients. It involves integrating the best available research evidence, clinical expertise, and patient preferences to make informed decisions about patient care. Key aspects of implementing evidence-based practice in the ICU includes research integration, multidisciplinary collaboration, clinical guidelines, continuous education, data collection and monitoring, shared decision-making, quality improvement initiatives, adaptation to local context, barriers and facilitators, and patient safety. In this talk, I will also share the experiences of introducing new clinical techniques, developing protocols, and implementations of recommendations from guidelines in the 30-bed medical ICU at Kaohsiung Medical University Hospital. Implementing evidence-based practice in the ICU is an ongoing journey. It requires a commitment to learning, adaptation, and collaboration among healthcare professionals, patients, and institutions. By following these principles and continuously striving for the best possible care, ICUs can improve patient outcomes and enhance the quality of care they provide.

Blue ocean in pulmonary and critical medicine: the application and experience sharing of hyperbaric oxygen therapy in critical illness

彭忠衍 醫師 / Chung-Kan Peng, M.D., Ph.D.

Medical Affairs Bureau Ministry of National Defense/ Division of Pulmonary Medicine, Department of Internal Medicine, Tri-Service General Hospital

Hyperbaric Oxygen Therapy (HBOT) significantly increases the amount of oxygen in offering a unique approach to enhancing tissue oxygenation and promoting the body's natural healing processes which has emerged as a beacon of hope for patients battling an array of life-threatening conditions.

In recent years, HBOT has gained recognition for its potential benefits in various critical illness scenarios, including decompression sickness, air embolism, severe infections (e.g., necrotizing soft tissue infections), traumatic injuries (e.g., crush injuries, compartment syndrome), and carbon monoxide poisoning.

Furthermore, the lecture will share real-world experiences and case studies to illustrate the

successful integration of HBOT into critical care protocols.
As we navigate the complex landscape of critical illness management, the potential of HBOT to improve patient outcomes and reduce morbidity and mortality is increasingly evident. This lecture aims to provide healthcare professionals with valuable knowledge and perspectives on the application of hyperbaric oxygen therapy in critical illness, fostering a greater understanding of its role in modern medicine and its diverse array of indications.

Ventilator associated events surveillance

劉世豐 醫師 / Shih-Feng Liu, M.D.

長庚體系呼吸治療總召
高雄長庚紀念醫院呼吸治療科主任RCC主任
胸腔內科副教授級主治醫師
長庚大學醫學系部定副教授
中華民國重症醫學會監事
醫策會評鑑委員

VAE surveillance is a systematic monitoring approach to detect and track complications associated with mechanical ventilation. It plays a crucial role in improving patient outcomes and preventing adverse events in critical care settings. Importance of VAE Surveillance are below:
Early detection: Prompt identification of ventilator-associated complications for timely interventions.
Infection prevention: Monitoring and managing ventilator-associated infections to reduce the risk of healthcare-associated infections.
Quality improvement: Using data-driven approaches to identify areas for improvement and implement evidence-based interventions.
Research and benchmarking: Contributing to research efforts and comparing performance across healthcare facilities.
By monitoring and addressing ventilator-associated events, we can improve outcomes and enhance the overall quality of care in critically ill patients.

Lung and diaphragm protection ventilation

詹明澄 醫師 / Ming-Cheng Chan, M.D., Ph.D.

Director of the Department of Critical Care Medicine
Taichung Veterans General Hospital

Lung and Diaphragm Protection Ventilation represents a novel approach to mechanical ventilation in critically ill patients. This paradigm shift in respiratory support strategies seeks to mitigate ventilator-induced lung injury (VILI) while preserving diaphragmatic function. Lung and Diaphragm Protection Ventilation incorporates protective lung strategies, emphasizing low tidal volume ventilation and appropriate positive end-expiratory pressure (PEEP) settings to minimize the risk of lung trauma. Simultaneously, it employs diaphragm-sparing techniques, recognizing the importance of diaphragmatic strength for weaning patients from mechanical ventilation. Controlled periods of spontaneous breathing, diaphragmatic electrical activity monitoring, and proportional assist ventilation (PAV) are integrated to maintain diaphragmatic function and facilitate a smoother transition to spontaneous breathing. The clinical benefits of Lung and Diaphragm Protection Ventilation are compelling, including reduced mortality, shorter ventilation times, and fewer ventilator-associated complications. However, successful implementation necessitates a collaborative, multidisciplinary approach and addressing challenges related to patient selection and protocol adaptation, underscoring the potential to significantly enhance critical care outcomes.

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請點選各會議室前往連結頁面

12/9 Sat.

09:00-09:40 Management of latent tuberculosis infection in high-risk populations other than contact investigation / **Prof. Chih-Hsin Lee** / P.18

09:40-10:20 Latent tuberculosis infection (LTBI) treatment in long- term care facilities / **Dr. Pin-Hui Lee** / P.19

12:10-13:20 Think Beyond GOLD 2023: Evidence to Reassess AE Risk in COPD / **Dr. Wei-Chang Huang** / P.19
(Satellite Symposium_臺灣阿斯特捷利康股份有限公司)

Timely anti-inflammatory approach real world evidence: SABA free! Asthma green / **Dr. Kang-Cheng Su** / P.20
(Satellite Symposium_臺灣阿斯特捷利康股份有限公司)

15:10-15:50 IPA and CAPA：early diagnosis and prompt treatment / **Dr. Wei-Lun Liu** / P.20

15:50-16:30 Treatment of CPA: right patients in right timing / **Dr. Hung-Ling Huang** / P.21

16:40-17:50 Transforming asthma care for a broad population by targeting TSLP/ **Dr. Chau-Chyun Sheu** / P.22
(Satellite Symposium_臺灣阿斯特捷利康股份有限公司)

New standard of treatment goals: Clinical Remission & background medication reduction / **Dr. Po-Jui Chang** / P.22
(Satellite Symposium_臺灣阿斯特捷利康股份有限公司)

12/10 Sun.

08:00-08:50 Expending the landscape of anti IgE treatment in different phenotypes / endotypes asthma / **Dr. Horng-Chyuan Lin** / P.23
(Satellite Symposium_台灣諾華股份有限公司)

09:00-09:40 The clinical application and innovation of airway stent / **Prof. Min-Gyao KE** / P.23

09:40-10:20 Treatment of Airway Fistula with bronchoscope / **Prof. Yun-Zhi Zhou** / P.24

12:10-13:20 Transforming tuberculosis diagnosis - Initial screening with NAA to access more TB patients / **Dr. Wei-Chang Huang** / P.24
(Satellite Symposium_台灣羅氏醫療診斷設備股份有限公司)

On the way to TB elimination - Recent advances on drug resistance TB / **Dr. Jann-Yuan Wang** / P.25
(Satellite Symposium_台灣羅氏醫療診斷設備股份有限公司)

Management of latent tuberculosis infection in high-risk populations other than contact investigation

李枝新 醫師 / Chih-Hsin Lee, M.D., Ph.D.

Division of Pulmonology, Department of Internal Medicine, Wan Fang Hospital, Taipei Medical University

Taiwan has achieved remarkable results in public health and tuberculosis (TB) prevention and control, with the TB incident rate decreasing by 6% yearly. In 2021, the incidence of TB was reduced to 31 new cases per 100,000 population per year, comparable to low-burden countries, and making great strides towards the World Health Organization's 2035 goal of eliminating TB. However, the National TB Program faces the challenge of population aging, as elderly people have higher rates of chronic comorbidities, making the diagnosis of active TB difficult. Before TB is confirmed, patients often have coughed for more than six months, causing exposure and infection among the surrounding population and failing to break the transmission chain of TB effectively. With the advancement of molecular biology, it is now possible to use interferon-gamma release assays (IGRAs) to distinguish whether an individual is infected with TB bacilli in the absence of clinical symptoms and then decide whether the infected individual needs anti-TB drug treatment after a physician's assessment. Latent TB infection (LTBI) drug treatment can effectively prevent the risk of progressing to active TB in the future. Still, careful monitoring of adverse reactions caused by treatment drugs is required, and the possibility of drug interactions should be considered, adjusting the dosage of drugs accordingly. This course tries to sort out the theoretical framework of LTBI diagnosis and treatment, share the current situation and experience of implementation in Taiwan, and hope that more medical personnel can join the ranks of LTBI diagnosis and treatment and jointly promote the pace of TB prevention and control in Taiwan.

Latent tuberculosis infection (LTBI) treatment in long- term care facilities

李品慧 醫師 / Pin-Hui Lee, M.D., MSc

Division of Chronic Infectious Diseases, Centers for Disease Control, Ministry of Health and Welfare, Taiwan

Tuberculosis (TB) remains the major threat of global public health and leads to more than 10.6 million incident cases and 1.6 million deaths in 2021. Taiwan has been the country with moderate disease burden of TB that the incidence rate in 2022 was 28 cases per 100,000 population. More than 60% of TB patients in Taiwan were the age group of 65 years or older, which has the highest age-specific incidence of 111.3 per 100,000 population in 2021. In long-term care facilities (LTCFs), the risk of TB transmission would be higher due to decline of immunity with reactivation of tuberculosis infection among aging residents and the crowded settings. The incidence in the long-term care facilities (LTCFs) in Taiwan was estimated to be 3 to 5 times higher than that of the elderly in communities. In addition, cases of tuberculosis in nursing homes, veterans' homes, and other long-term care facilities accounted for 7% of all tuberculosis cases in the country, with 83% being elderly people. Taiwan CDC collaborated with county health bureaus and participating LCTFs to establish and implement an integrated program of case finding, diagnosis and treatment of latent TB infection (LTBI) since 2018. Tuberculosis preventive therapy (TPT) of 9H and 3HP regimen were both provided for free to those with positive IGRA results including residents and health care workers in LTCFs. In this presentation, I would share the progress, performance and effectiveness of LTBI treatment in LTCFs from 2018 to 2023 in Taiwan.

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Think Beyond GOLD 2023: Evidence to Reassess AE Risk in COPD

黃偉彰 醫師 / Wei-Chang Huang, M.D.

臺中榮民總醫院 胸腔內科主治醫師

As GOLD 2023 update with more emphasized on COPD risk in symptomatic & CV risk patient, data from ERS 2023 also shown further evidence on CV events & disease burden combined with COPD. Subanalysis from pivotal trial in ICS/LAMA/LABA provide the new perspective on how early triple benefit to COPD patient, on top of the evidence, in-class difference between ICS/LAMA/LABA addressed the superiority of BREZTRI from clinical benefit to patient to how the novelty device may benefit from better lung deposition perspective.

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Timely anti-inflammatory approach real world evidence: SABA free! Asthma green

蘇剛正 醫師 / Kang-Cheng Su, M.D.
臺北榮民總醫院 胸腔部主治醫師

With the update of the Global Initiative for Asthma (GINA) guidelines in 2023, SABA overused issue have been addressed. In this year, SENTINEL program has been released, the result led to the reduction of SABA prescribing, increased inhaled corticosteroid uptake and fewer asthma exacerbations. Follow with GINA suggestion prefer to Track1 used, from SABINA Carbon study we also can find good asthma control had one-third the carbon footprint of not controlled asthma. Reducing SABA reliance and exacerbations will benefit patients and the environment. Looking ahead, Taiwan aspires to move towards precision medicine and align with international standards, sharing best practices to enhance the quality of asthma care for patients.

IPA and CAPA: early diagnosis and prompt treatment

劉偉倫 醫師 / Wei-Lun Liu, M.D.
Fu Jen Catholic University Hospital

Invasive pulmonary aspergillosis (IPA) is well recognized as a complication of treatment for patients with hematologic malignancies or stem cell transplantation. Meanwhile, some patients we tend to ignore are those who don't have hematologic malignancies. They are critically ill patients without neutropenia. In addition, patients with severe influenza or COVID-19 are risk factors for IPA. Patients who develop influenza-associated pulmonary aspergillosis (IAPA) and COVID-19 associated pulmonary aspergillosis (CAPA) generally do not have the classic EORTC/MSG host criteria. Separate consensus criteria were developed to combat the difficulties in diagnosing IAPA and CAPA according to the existing diagnostic definitions.

Efforts in the rationale for individualized therapy can improve the appropriate and effective use of antifungal agents. Recognizing the risk factors can guide the optimal use of antifungal prophylaxis and treatment for high-risk patients. Imaging has a limited role for diagnosing IAPA & CAPA, due to unspecific and heterogeneous presentations. Mycology study, including Aspergillus galactomannan antigen, lateral flow assay and PCR, has played a major role in the diagnosis of IAPA & CAPA in the ICU. The importance is the requirement for a multidisciplinary team to ensure an accurate diagnosis and appropriate treatment, which should be delivered promptly. Further research should focus on identifying the epidemiology, host factors, and appropriate diagnostic and treatment algorithms for these special patient populations.

Treatment of CPA: right patients in right timing

黃虹綾 醫師 / Hung-Ling Huang, M.D.

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

Chronic pulmonary aspergillosis is a disease characterized by persistent fungal infection in the lungs and tends to manifest in patients with intact immune function but underlying structural abnormalities in their pulmonary system. This condition has gained significant clinical importance in recent years due to the rising incidence of lung structural damage-related diseases. These structural abnormalities may arise from various factors, such as the sequelae of tuberculosis (TB) treatment, the progression of chronic obstructive pulmonary disease (COPD) with emphysema, and an increasing number of individuals undergoing lung surgeries for various reasons. The consequences of chronic pulmonary aspergillosis are inevitable. Patients suffering from this condition often experience a range of debilitating symptoms, including chronic cough, sputum production, chest pain, hemoptysis and breathlessness, which significantly impact their quality of life. Additionally, the presence of aspergillus infection in the lungs can exacerbate pre-existing respiratory conditions, leading to more severe and complex clinical scenarios.

Moreover, individuals with chronic pulmonary aspergillosis may also be at a heightened risk of developing other chronic lung infections, such as non-tuberculous mycobacterial infections, which further complicate diagnosis and treatment strategies. Given the intricate nature of managing such cases, this course aims to delve into comprehensive discussions surrounding the risk factors contributing to chronic pulmonary aspergillosis, the diagnostic approaches required for accurate assessment, and the intricacies of related therapeutic interventions. Understanding these aspects is crucial in providing effective care for patients grappling with this challenging medical condition.

Satellite Symposium_臺灣阿斯特捷利康股份有限公司

Transforming asthma care for a broad population by targeting TSLP

許超群 醫師 / Chau-Chyun Sheu, M.D.
高雄醫學大學附設中和紀念醫院 重症加護醫學中心主任
高雄醫學大學附設中和紀念醫院 胸腔內科主治醫師

Severe asthma is complex and heterogeneous, despite recent advances, half of patients started on biological therapy continuous to have exacerbation and have multiple drivers of inflammation. TEZSPIRE is the first and only Anti-TSLP that treats severe asthma at the top of the inflammatory cascade, it's time to treat across phenotypes and irrespective of biomarker levels. Clinical Remission is characterized by a high level of disease control, including the optimization of lung function with or without ongoing treatment. Recent new concept developed to reduce background medication which help us to step further in asthma treatment landscape.

Satellite Symposium_臺灣阿斯特捷利康股份有限公司

New standard of treatment goals: Clinical Remission & background medication reduction

張博瑞 醫師 / Po-Jui Chang, M.D.
林口長庚紀念醫院 內科第一加護病房主任
林口長庚紀念醫院 胸腔內科系呼吸道疾病科 助理教授級主治醫師

Severe asthma is complex and heterogeneous, despite recent advances, half of patients started on biological therapy continuous to have exacerbation and have multiple drivers of inflammation. TEZSPIRE is the first and only Anti-TSLP that treats severe asthma at the top of the inflammatory cascade, it's time to treat across phenotypes and irrespective of biomarker levels. Clinical Remission is characterized by a high level of disease control, including the optimization of lung function with or without ongoing treatment. Recent new concept developed to reduce background medication which help us to step further in asthma treatment landscape.

Satellite Symposium_台灣諾華股份有限公司

Expending the landscape of anti IgE treatment in different phenotypes/endotypes asthma

林鴻銓 醫師 / Horng-Chyuan Lin, M.D.

Chief of Department of Thoracic Medicine, Lin-Kou Medical Center of Chang Gung Memorial Hospital

In this presentation, we explore the landscape of anti-IgE treatments and their application and benefit across diverse phenotypes and endotypes of asthma. Ultimately enhancing asthma management and patient outcomes.

The clinical application and innovation of airway stent

柯明耀 醫師 / Min-Gyao KE, M.D.

厦门医学院附属第二医院呼吸病医院执行院长、厦门医学院客座教授

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.

Treatment of Airway Fistula with bronchoscope

周雲芝 醫師 / Yun-Zhi Zhou, Chief Physician, Master Tutor

Emergency General Hospital (Beijing)/National Emergency Medical Research Center

1. The treatment of airway fistula is complex and limited. Treatment with bronchoscopy including occlusive techniques and local drug injection is important.
2. There are some differences in the treatment of benign and malignant fistulas.
3. Benign tracheoesophageal fistula can be treated with drug injection and stent.
4. Local drug injection with sclerosing agents, stem cells, and PRP can achieve permanent healing.
5. Malignant tracheoesophageal fistula can only be treated with stent placement.
6. Stent placed in the trachea should be first considered If needed in treatment of tracheoesophageal fistula.
7. Gastric and jejunostomy can be performed if stent is not suitable for tracheoesophageal fistula.
8. Digestive fluid needs to be drained even when stent is placed.
9. Anti infection and nutritional support treatment are both very important.

Satellite Symposium_台灣羅氏醫療診斷設備股份有限公司

Transforming tuberculosis diagnosis - Initial screening with NAA to access more TB patients

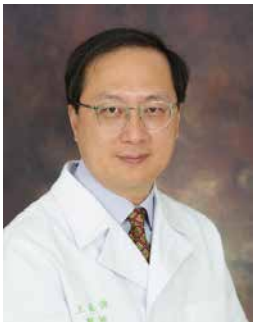
黃偉彰 醫師 / Wei-Chang Huang, M.D.

臺中榮民總醫院 胸腔內科主治醫師

In Taiwan, from medical care system to government, all joined together and keen to build a better public health environment to achieve the goal of TB elimination by 2035. When talking about the current tuberculosis diagnosis, the first-line screening relies heavily on acid-fast staining and traditional culture identification will be carried out at the same time following the guideline. Nonetheless, attribute to the novel advances on tuberculosis NAA, the high sensitive and efficient methodology may have a promising potential in accessing more TB cases with earlier diagnosis.

Satellite Symposium_台灣羅氏醫療診斷設備股份有限公司

On the way to TB elimination - Recent advances on drug resistance TB



王振源 醫師 / Jann-Yuan Wang, M.D.
國立臺灣大學醫學院附設醫院 內科部主治醫師
國立臺灣大學醫學院 內科教授

The treatment of tuberculosis requires a combination of different antibiotics; however, the drug abortion due to severe adverse events oftenly lead to drug-resistant TB, and will spread out by person-to-person transmission. Based on the past 3 years data, the incidence rate of Isoniazid-resistant TB (Hr-TB), Rifampicin-resistant TB (RR-TB), and multidrug-resistant TB (MDR-TB) account for 7.6%, 0.7% and 1% in new TB cases annually. With the emergence of better-tolerated drug regimens and optimized implementation of identification tools, more indications could be facilitated in improving the outcome of TB patient.

203 會議室

請點選各會議室前往連結頁面

12/9 Sat.

09:00-09:40 Artificial Stone-Associated Silicosis: An Emerging and Distinct Variant of Silicosis / **Prof. Chi Hsien Chen** / P.27

09:40-10:20 The impacts of climate change and air pollution on respiratory diseases / **Prof. Hsiao-Chi Chuang** / P.27

12:10-13:20 Taiwan real-world data of clinical outcomes in eNSCLC and unmet medical needs / **Dr. Shang-Gin Wu** / P.28
(Satellite Symposium_羅氏大藥廠股份有限公司)

Recent advances of immunotherapy in eNSCLC and future perspectives / **Dr. Kun-Chieh Chen** / P.28
(Satellite Symposium_羅氏大藥廠股份有限公司)

15:10-15:50 The pharmacological treatment of obstructive sleep apnea / **Prof. Tsai-Yu Wang** / P.29

15:50-16:30 Pathological endotypes in Taiwanese OSA patients / **Prof. Wan-Ju Cheng** / P.29

16:40-17:50 KEYTRUDA Annual Review: In 2023, What Does Immunotherapy Convince Us More? What's new? / **Dr. Yu-Feng Wei** / P.30
(Satellite Symposium_美商默沙東藥廠股份有限公司台灣分公司)

12/10 Sun. 台灣胸腔及心臟血管外科學會

09:00-09:50 From uniport VATS to uniport RATS / **Prof. Diego Gonzalez Rivas** / P.31

09:50-10:05 Robotic surgery in Thoracic oncology / **Dr. Jui-Ying Lee** / P.32

10:05-10:20 Robotic surgery in Thoracic Oncology / **Dr. Pin-Li Jhou** / P.32

10:20-10:35 Robotic surgery in Thoracic Oncology / **Dr. Ting-Yu Lyu** / P.33

10:35-10:50 Robotic surgery in Thoracic oncology / **Dr. James, Mei-Lin Chan** / P.33

10:50-11:05 Robotic surgery in Thoracic oncology / **Dr. Chen, Ying-Yuan** / P.34

11:05-11:20 Robotic surgery in thoracic surgical practice-Tri-Service General Hospita l/ **Dr. Hsu-Kai Huang** / P.34

11:20-11:35 Robotic surgery in Thoracic oncology / **Dr. Shuenn-Wen Kuo** / P.35

11:35-12:00 A one year follow up study of endobronchial radio frequency ablation for NSCLC / **Dr. XIE, Liheng** / P.35

12:10-13:20 Prevention of Pneumococcal Pneumonia in the COVID-19 Era / **Dr. Pin-Kuei Fu** / P.36
(Satellite Symposium_輝瑞大藥廠股份有限公司)

Artificial Stone-Associated Silicosis: An Emerging and Distinct Variant of Silicosis

陳啟信 醫師 / Chi Hsien Chen, M.D., Ph.D.

Department of Environmental and Occupational Medicine, National Taiwan University Hospital

Artificial stone slabs, a composite of quartz sands and resin, are increasingly favored for kitchen and bathroom countertops. Workers engaged in the processing of this material face heightened exposure to respirable crystalline silica, often exceeding 90%. Consequently, there has been a surge in silicosis cases with an expedited onset, typically within a decade of exposure. Diagnosing this condition requires a comprehensive exposure history, radiographic analyses, and the ruling out of alternative etiologies. Chest computed tomography (CT) is superior to X-ray imaging for early detection, aiding in the prevention of advanced silicosis. CT presentations linked with artificial stone-related silicosis vary, from generalized signs such as ground-glass opacities, linear and irregular opacities, emphysema, and mediastinal lymphadenopathy, to distinct features like centrilobular nodular opacities primarily in the upper-posterior lung, nodular aggregation, subpleural curvilinear lines, egg-shell calcification of mediastinal lymph nodes, and pronounced opacities accompanied by cicatricial emphysema. Pulmonary function abnormalities may manifest as either restrictive or obstructive ventilatory defects, and a diminished diffusion capacity. Workers exhibiting high-risk indicators, including extensive exposure history, respiratory symptoms, lung function anomalies, or abnormal chest X-ray results, should undergo chest CT screenings. Timely diagnosis facilitates patient certification for exposure avoidance and may catalyze enhancements in workplace conditions.

The impacts of climate change and air pollution on respiratory diseases

莊校奇 教授 / Hsiao-Chi Chuang, Ph.D.

School of Respiratory Therapy, Taipei Medical University

Climate change has the potential to amplify air pollution and modify the physicochemical attributes of particulate matter, including its size, dispersion, and chemical makeup. These modifications critically affect particle deposition in the lungs, leading to pronounced respiratory implications. As such, climate change can significantly influence lung particle deposition by altering the nature of airborne particulates, heightening the risk of respiratory disease onset.

The intertwined effects of climate change and air pollution pose pressing global health dilemmas, especially concerning respiratory ailments. Projected increases in the frequency and severity of extreme weather events due to climate change can further escalate air pollution. Furthermore, anticipated economic growth and population surges in many regions globally will likely augment

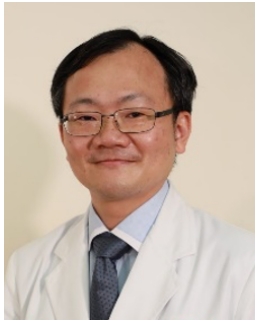
air pollution levels, intensifying respiratory disease burdens. Vulnerable groups, such as children, the elderly, and those with existing respiratory conditions, are particularly at risk.
Compounding these challenges, the adverse consequences include heightened inflammation, increased oxidative stress, and compromised lung immune functions. Therefore, it's paramount that public health initiatives address and mitigate the respiratory repercussions of both climate change and air pollution.

Satellite Symposium_羅氏大藥廠股份有限公司

Taiwan real-world data of clinical outcomes in eNSCLC and unmet medical needs

吳尚俊 醫師 / Shang-Gin Wu, M.D.

Attending physician, Chest Medicine, Department of Internal Medicine, National Taiwan University Hospital
Attending physician, Department of Internal Medicine, National Taiwan University Cancer Center



Recent advances of immunotherapy in eNSCLC and future perspective

陳焜結 醫師 / Kun-Chieh Chen, M.D.

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

Recent progresses of early lung cancer screening/detection as well as the successful development of immunotherapy have led to stage shift and improvement of clinical outcomes for early lung cancer. In this satellite symposium, Dr. Shang-Gin Wu from NTUCC will present the Taiwan real-world data analysis of clinical outcomes in eNSCLC using databases of Taiwan CRD and NHIRD. Dr. Kun-Chieh Chen will summarize the latest advances of immunotherapy in eNSCLC including neoadjuvant, perioperative, and adjuvant settings. The unmet medical needs and clinical perspectives will be further discussed, aiming to maximize the clinical benefits in eNSCLC patients.

The pharmacological treatment of obstructive sleep apnea

王才郁 醫師 / Tsai-Yu Wang, M.D.

Department of Thoracic Medicine, Chang Gung Memorial Hospital Linkou Main Branch, and School of Medicine, Chang Gung University, Taoyuan, Taiwan

Obstructive sleep apnea (OSA) is a highly prevalent disease. Continuous positive airway pressure ventilator (CPAP) is the gold standard first-line therapy. However, almost 50% patients can not tolerate CPAP treatment. Alternative treatment such as medication is a wonderful dream for those patients. To date, there is no approved pharmacotherapy for this disease, but several attempts have been made to find one. Recently, the identification of endotypes underlying this disease may orient the pharmacological therapy, which means the personalized therapy of OSA. In this speech, OSA pharmacotherapy based on the four main endotypes: anatomy (Pcrit), upper airway muscle power, arousal threshold and ventilatory overshoot (loop gain) will be addressed. Medications for weight loss that modify upper airway anatomy may play a role in the management of OSA, and promising results have been obtained with drugs that increase upper airway muscle power during sleep and/or reduce ventilatory overshoot (loop gain). Ideally, a medication that can effectively increase the arousal threshold but not worsen upper airway muscle power will make this strategy encouraging. Recent studies have demonstrated that the use of certain sedatives do not make OSA severity worse and can improve patients' sleep quality.

Pathological endotypes in Taiwanese OSA patients

鄭婉汝 醫師 / Wan-Ju Cheng, M.D., Ph.D.

Associate Investigator and Attending Physician, National Center for Geriatrics and Welfare Research, National Health Research Institutes, Taiwan

Obstructive sleep apnea (OSA) is a heterogeneous syndrome with various endotypic traits and symptoms. A link between symptoms, endotypes, and disease prognosis has been proposed but remains unsupported by empirical data. We recruited patients with moderate to severe OSA from a single sleep center. Polysomnographic data were collected between May 2020 and December 2022. Endotypic traits, namely arousal threshold, upper airway collapsibility, loop gain, and upper airway muscle compensation, were retrieved using polysomnographic signals. We used latent class analysis to group participants into endotype clusters. Associations between endotype clusters and symptom profiles were examined using logistic regression analyses. We also assessed whether continuous positive airway pressure (CPAP) treatment outcomes differ across endotypic subgroups. Three endotype clusters were identified, characterized by high collapsibility/loop gain, low arousal threshold, and low compensation, respectively. Patients in each cluster exhibited similar demographic characteristics, but those in the high collapsibility/loop gain cluster

had the highest proportion of obesity and severe oxygen desaturation observed in polysomnographic studies. The low compensation cluster was characterized by less sleepy symptoms and exhibited a lower rate of diabetes mellitus. Compared to the minimally symptomatic group, the disturbed sleep symptoms were associated with the low arousal threshold cluster, and excessively sleepy symptoms was associated with the high collapsibility/loop gain cluster. Patients with high collapsibility required a higher CPAP pressure than those with low collapsibility. Larger increase in slow-wave sleep and rapid eye movement sleep proportions after CPAP treatment were observed in patients with high arousal threshold, high collapsibility, high loop gain, or high upper airway gain than in those with low levels of endotypes. High loop gain and high collapsibility were independently associated with longer CPAP use hours per night. In conclusion, knowledge of endotypes may help clinicians to link clinical symptoms with underlying pathology, and to identify patients who may benefit most from CPAP therapy.

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

KEYTRUDA Annual Review: In 2023, What Does Immunotherapy Convince Us More? What's new?

魏裕峰 醫師 / Yu-Feng Wei, M.D.

義大癌治療醫院 內科部部長
義大癌治療醫院 肺癌團隊召集人

In recent years, the development of immune drugs in the treatment of advanced lung cancer has been very rapid and complete. Since 2016, when KEYTRUDA obtained the first indication for second-line treatment of lung cancer, KEYTRUDA has used 6 indications in Taiwan, even progressing from advanced to early lung cancer. Earlier, we were also discussing the correlation between immune drugs and PD-L1 performance, but in recent years many trials have shown that KEYTRUDA can be used in all wild-type lung cancer patients with a good partner. Now we are no longer talking about the performance of PD-L1, but only considering whether the patient can use KEYTRUDA alone or in combination. Regardless of PD-L1 presentation, all patients with advanced Wild-type lung cancer can benefit from KEYTRUDA.

In 2023, KEYTRUDA got its first indication for early-stage lung cancer in Taiwan, and immune drugs have once again confirmed the role of immune drugs in early-stage lung cancer, but also brought more discussion. In addition to a complete review of this year's KEYTRUDA data update, my talk will also discuss more about which types of patients with early-stage lung cancer are suitable for KEYTRUDA treatment. On the another hand, the development of advanced lung cancer KEYTRUDA is already very complete, and this year's long-term follow-up even for patients with PD-L1 negative reassures us that the role of immunotherapy is not only for patients with PD-L1 positive.

We can expect the development of KEYTRUDA in lung cancer treatment with more indications in 2024.

From uniport VATS to uniport RATS

Diego Gonzalez Rivas, M.D.

Medicine Studies. Faculty of Medicine, University of Santiago de Compostela
Consultant surgeon at thoracic surgery department and lung

The uniportal video-assisted thoracoscopic surgery (VATS) approach, the philosophical predecessor to the uniportal RATS approach, evolved very quickly with the help of the latest technologies during the last decade. Since the first cases of uniportal VATS in 2010, we have improved upon the technique, such that we are now able to do increasingly more complex cases. This is due to the acquired experience, specifically designed instruments, better high-definition cameras and more angulated staplers. In our efforts to improve and adapt robotic surgery to the uniportal approach, we utilized the initial available platforms (Davinci Si and X) to test the feasibility of this approach, in terms of safety and possibilities. The latest platform, the Da Vinci Xi, due to the configuration of its arms, did indeed allow for us to reduce the number of incisions to two initially and finally to one.

We hence decided to fully adapt the Da Vinci Xi to allow for the uniportal RATS approach routinely, and performed the first fully robotic anatomic resections in the world in September 2021, in Coruña, Spain. We define pure or fully robotic uniportal robotic-assisted thoracic surgery (URATS) as robotic thoracic surgery performed by a single intercostal incision, without rib spreading, using the robotic camera, robotic dissecting instruments and robotic staplers. We have now reached a point where we perform all type of procedures, including the more complex sleeve resections and aspergillomas or other kind of complex inflammatory disease. However the future of robotics goes in the direction of fully integrated single port platforms instead of the multportal platforms in order to further reduce the invasiveness of the multi-port robotic procedures and facilitate the single port approach to surgeons. Single-port surgery demonstrated its safety and effectiveness comparable to the multiport surgery with reduced postoperative pain and improved cosmetic outcomes. Initially the SP system was developed by intuitive but several limitations were encountered (cost, limited movements and only suitable for subxiphoid approach). The new Shurui single port robot developed in Shanghai, solves these limitations being a revolution in surgery due to the new technology employed and more range of angulation. It has also the advantage of the possibility of being used by multiportal approach or by single port approach, according the preference of each surgeon.

Robotic surgery in Thoracic oncology

李瑞英 醫師 / Jui-Ying Lee, M.D.

2017-now Graduate Institute of Clinical Medicine, College of Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan
Member of Taiwan Association for the Study of Lung Cancer

Minimally invasive approaches to thoracic oncologic surgery are fast becoming mainstream. Robotic thoracic surgery is also gaining in popularity. Because the robotic system has technical advantages over thoracoscopic surgery, including intuitive movements, tremor filtration, more degrees of manipulative freedom, motion scaling, and high-definition stereoscopic vision. Robotic surgery become more accessible than thoracoscopic surgery to trainees and experienced surgeons and also leads to expanded indications in thoracic oncological field.
We will share our experience of developing the robotic surgery in thoracic oncology at our hospital since 2018 till now including robotic surgery for lung resections, especially focus on mediastinal lymph node dissection, robotic mediastinal tumor resection including radical thymectomy and robotic esophagectomy (both McKeown and Ivor-Lewis).

Robotic surgery in Thoracic Oncology

周品立 醫師 / JHOU, PIN-LI, M.D.

林口長庚胸腔外科主治醫師

Robotic thoracic surgery is a type of minimally invasive surgery for malignant thoracic cases. Also called robotic-assisted thoracic surgery, it can be used to remove diseased lung tissue, esophageal cacer and possibly surrounding lymph nodes.
In robotic surgery, a surgeon will sit at a console next to the patient in the operating room and control the instruments on the robotic surgical system. First, a small 3D high-definition camera is placed through one of the cuts (incisions) to provide a view of intrathoracic cavity. Then robotic instruments are placed through the other small incisions made in between the ribs. The robotic instruments are completely controlled by the doctor's hands at the console enabling the surgeon removes tissue through one of the incisions. The magnified view and wristed instruments allow the surgeon to make precise, controlled movements to remove lung tissue without having to make larger incisions to open up the chest or spread the ribs. This year single port robotic surgery was introduced to Taiwan and even Linkou Chang Gung memorial hospital for both lobectomy of early lung cancer and mediastinal tumor resection. Evolution of multiple ports to single ports, robotic thoracic surgery had become more competed compared with video associated thoracic surgery. Therefore we would like to reveal the experience of single center robotic surgery in thoracic oncology comparing short term surgical results and midterm oncological results.

Robotic surgery in Thoracic Oncology

呂庭聿 醫師 / LYU, TING-YU, M.D.

PhD: Graduate Institute of Clinical Medicine
National Taiwan University, Taipei City, Taiwan
September 2018 -now

Purpose: The aim of this study is to evaluate the short term and long term outcome of patients who received uniportal video-assisted thoracoscopic or uniportal robot-assisted thoracoscopic lung cancer surgery in China medical university hospital
Materials and Methods: A total of 146 patients with lung cancer who underwent uniportal video-assisted thoracoscopic lung cancer surgery, and a total of 10 patients with lung cancer who underwent uniportal robot-assisted thoracoscopic lung cancer surgery in CMUH from 2016-2023 were included in this study. Short term and long term outcome were analyzed.
Results: The mean operation time was 178.1 vs 267.1 mins. The mean blood loss was 58.6 vs 87.7 mins. The mean hospital stay was 7.3 vs 8.5 days. There was no statistically significant between two groups.
Conclusion: Uniportal robot-assisted thoracoscopic surgery in lung cancer patients might be a feasible and safe treatment option.

Robotic surgery in Thoracic oncology

詹梅麟 醫師 / James, Mei-Lin Chan, M.D.

2018-2002 Ph.D candidate National Yang Ming Chiao Tung University
Taiwan Institute of Traditional Medicine, School of Medicine
2012. 07- present
Mackay Memorial Hospital, New Taipei, Taiwan
Senior Visiting Staff / Division of Thoracic Surgery

With the evolution of mechanical technology, minimally invasive thoracic surgery has a considerable leap nowadays. Robotic Assisted Thoracic Surgery (RATs) is one of the innovative techniques in thoracic oncology. Since the National Health Insurance changed the policy to cover the RATs, the case number has risen drastically. Compared with Video-Assisted Thoracic Surgery (VATs), the RATs possess 3D vision, tremor filtration, higher surgeon autonomy, and potentially more lymph node harvesting. However, there still exist disadvantages of RATs, including higher cost, longer operation time, and lack of direct tactile feedback. In the Makay Memorial Hospital (MMH) experiences, the operation time seems to decrease with the accumulation of cases, especially in esophageal surgery. The time of chest tube indwelling, blood loss, and complications are less in RATs than in VATs patients. However, the number of lymph node harvesting is similar between RATs and VATs patients. In conclusion, the RATs is a feasible and safe technique in thoracic oncology.

Robotic surgery in Thoracic oncology

陳盈元 醫師 / Chen, Ying-Yuan, M.D.

自2015/09至今 國立成功大學臨床醫學研究所博士班肄業
專長肺癌、單孔胸腔鏡手術、複雜性肺節切除、食道癌

Robotic-assisted thoracoscopic surgery (RATS) is a getting popular in thoracic surgery recently in Taiwan. Segmentectomy performing by using conventional video-assisted thoracoscopic surgery is a mature procedure in our institute, but is still under development when doing in RATS. We retrospectively reviewed our patient undergoing RATS segmentectomy in the past years and analyzed their result. I will share the experience in RATS segmentectomy.

Robotic surgery in thoracic surgical practice-Tri-Service General Hospital

黃敍愷 醫師 / Hsu-Kai Huang, M.D.

Division of Thoracic Surgery, Tri-Service General Hospital , National Defense Medical Center, Taipei, Taiwan
Department of Surgery, School of Medicine, National Defense Medical Center

Abstract:

1. Patient characteristics
   - Mediastinal neoplasm
   - Lung resection
   - Esophagectomy/Esophageal functional disease
2. Instruments and docking
   - Right side/ Sub-xiphoid
   - Decubitus
3. Education for trainee
   - Table assistant/ Console practice
4. Development of future robotic surgical program

Robotic surgery in Thoracic oncology

郭順文 醫師 / Shuenn-Wen Kuo, M.D.

Sep. 2022-present: Assistant Professor of Thoracic surgery, Department of Surgery,National Taiwan University Hospital, Taipei, Taiwan

In recent years, robotic surgery has emerged as a revolutionary advancement in the field of thoracic oncology. This presentation aims to explore the transformative impact of robotic-assisted techniques in the treatment of thoracic malignancies. Highlighting its precision, enhanced visualization, and minimally invasive nature, we will delve into the benefits that robotic surgery brings to both patients and healthcare providers. Additionally, we will address the importance of surgeon proficiency, training, and multidisciplinary collaboration in maximizing the potential of robotic surgery. As we navigate through the nuances and considerations surrounding this cutting-edge approach, we will ultimately illuminate the promising future that robotic surgery holds in revolutionizing thoracic oncology treatment strategies.

A one year follow up study of endobronchial radio frequency ablation for NSCLC

謝禮恆 醫師 / Leon XIE / XIE, Liheng, M.D.

2022.06 - Present Broncus Medical Shanghai
2020.11-2022.06 ClinChoice Shanghai
2016.09-2020.09 China-Japan Union Hospital of Jilin University Changchun
2014.06-2016.09 Jilin Province People's Hospital Changchun

Brief Summary

- Field: NSCLC, Ovarian cancer, Rheumatic immune, Ophthalmic, COPD
- Therapy: Respiratory intervention (device), TKI, PARP, Biologic (medicine)
- Member: NCCN (National Comprehensive Cancer Network), CSCO (Chinese Society of Clinical Oncology)
- Industry Certification: ICH-GCP, Practicing Physician Qualification.

Theme:
The Safety and Effectiveness of Transbronchial Radiofrequency Ablation Systems in The Treatment of Lung Cancer: First Large-Scale Clinical Trial (RF-II) with Six-Month Follow-up

Abstract：
In the following session, we will explore the working principle, safety, and effectiveness of the transbronchial radiofrequency ablation system in the treatment of lung cancer.

The existing clinical data confirms that the energy and mechanism of radiofrequency ablation

are effective and feasible for the treatment of lung cancer. The current clinical application of radiofrequency ablation for the treatment of lung cancer mainly involves CT-guided percutaneous ablation. However, percutaneous puncture ablation has a high incidence of complications. And these limitations emphasize the necessity of alternative strategies.

To overcome these limitations and specifically target lung cancer and reduce related complications, an alternative strategy called transbronchial radiofrequency ablation has been introduced. Radiofrequency ablation through bronchoscopy directly applies radiofrequency energy to lung cancer, implementing ablation of cancer cells. Compared to CT-guided percutaneous ablation, transbronchial radiofrequency ablation can effectively reduce puncture-related complications.

The presentation covers the 6-month follow-up data, exploring the technical success rate, complete ablation rate, and safety of the transbronchial radiofrequency ablation system. This helps to better understand the applications and potential benefits of novel ablation systems. The presentation also includes some case illustrations to provide practical examples.

Satellite Symposium_輝瑞大藥廠股份有限公司

Prevention of Pneumococcal Pneumonia in the COVID-19 Era

傅彬貴 醫師 / Pin-Kuei Fu, M.D.

臺中榮民總醫院 醫學研究部臨床試驗科主任
臺中榮民總醫院 技術移轉中心主任
臺中榮民總醫院 間質性肺病整合照護中心主任
臺中榮民總醫院 胸腔內科主治醫師

Streptococcus pneumoniae (S. pneumoniae) is an important bacterial pathogen which is encapsulated by polysaccharide. Among the infectious disease caused by S. pneumoniae, pneumococcal pneumonia is the most common form of infection. The risk factors of pneumococcal pneumonia include olde age, immunocompromise, chronic medical condition, which are similar with risk factors of severe COVID-19 infection. On the other hand, S. pneumoniae is one of the most commonly diagnosed bacterial pathogen which cause co- and secondary infection in severe COVID-19 patients. According to the study, COVID-19 patients with a bacterial coinfection had higher mortality rate than COVID-19 patients without a coinfection1. Furthermore, S. pneumoniae co-infection was found as poor prognosis factor in influenza virus infection as well2. Since S. pneumoniae plays an important role in viral co-infection, vaccination against S. pneumoniae remain critical. There are two types of pneumococcal vaccine available currently, the pneumococcus conjugate vaccine (PCV) and the pneumococcus polysaccharide vaccine (PPV). ACIP Taiwan recommended PCV+PPV vaccination with interval over 1 year for adults over 65-year-old. It's believed that PCV vaccination prior to PPV vaccination can stimulate better immune

response than reverse administration sequence. Currently, CDC Taiwan announced the extension of pneumococcal vaccination program, which applied to 65-year-old and over adults with PCV13 and PPV23. In COVID-19 era, S. pneumoniae serve as an important viral co-infection pathogen, which can contribute to poor prognosis. Vaccination is still considered as the best way of pneumococcal disease prevention.

1. J. Infect. 2020, 81, 266–275.
2. J Formos Med Assoc. 2022 May;121(5):950-957.

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10:20-11:00 Markers Guided Effective Therapy(MGET): New Markers for Lung Cancer Targeted and Immune Check Point Therapy. / **Prof. Mien-Chie Hung** / **P.42**

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09:40-10:20 Medical Treatment of Mesothelioma / **Prof.Chih-Jen Yang** / **P.48**

10:20-11:00 Surgical Treatment of Malignant Pleural Mesothelioma: The Legacy of a Two-Party System / **Dr. Hassan A. Khalil** / **P.49**

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Pulmonary endarterectomy for CTEPH NUTH experience

黃書健 醫師 / Shu-Chien Huang, M.D., Ph.D.

Staff, Department of Surgery, Division of Cardiovascular surgery, National Taiwan University Hospital, Taipei, Taiwan
Professor, Department of Surgery,National Taiwan University

Abstract:

Pulmonary endarterectomy (PEA) is a potentially curative surgical procedure for patients with chronic thromboembolic pulmonary hypertension. The aim of this study is to review our institutional experience with this operation.

Methods: We conducted a retrospective review of PEA performed at our institution between January 2005 and June 2023. PEA was performed with cardiopulmonary bypass and deep hypothermic circulatory arrest. The measured outcomes were in hospital complications, improvement in cardiac function and exercise capacity, and actuarial survival after PEA.

Results: Twenty-eight consecutive patients (14 women, 14 men) underwent PEA with a mean age of 50.1 +/-15.5 years. The cardiopulmonary bypass duration was 181+/-64 minutes and aorta crossclamp time was 100+/-41 minutes. The average duration of DHCA was 42+/-26 minutes. After PEA, the average duration of intubation was 4 days (range 1-13 days). The pressure gradient of tricuspid regurgitation (TRPG) before operation was 82+/-22 mmHg and decreased to 36+/-22mmHg after operation.

Conclusion: In the limited experience, PEA can be conducted safely and the pulmonary hypertension was significantly improved after PEA.

Pulmonary hypertension From point of view of pediatric pulmonology

戴任恭 醫師 / Zen-Kong Dai, M.D.

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Professor of Pediatric Cardiology and Pulmonology. Kaohsiung Medical University.
Pediatric Cardiology. Pediatric Pulmonology
Professional Training and Employment: (Current Professional Experience)

In 6th WSPH held in 2018, the definition of pulmonary hypertension was updated to include any pediatric patient with a mean pulmonary artery pressure greater than 20 mm Hg at rest by heart catheterization. Pediatric PH includes a highly heterogeneous group of children with diverse ages, disease severities, prognoses, and underlying causes. On diagnosis, it is important to complete a thorough evaluation for secondary causes of PAH and a cardiac catheterization with acute vasodilator test (AVT)

Accordingly, the major subgroups are persistent pulmonary hypertension of the newborn (PPHN), congenital heart disease (CHD), idiopathic pulmonary arterial hypertension (IPAH), and developmental lung diseases with a hidden component of other lung diseases such as cystic fibrosis, bronchopulmonary dysplasia (BPD) and childhood interstitial lung disease (chILD) with varied and rare prevalence.

The currently advanced experimental and human studies, in pulmonary vascular diseases, revealed that there are altered expressions of eNOS/NO/cGMP, endothelin-1 and prostaglandin which subsequently result in vasoconstriction, vascular remodeling and vascular pruning. It is also reported that there are shared pathological mechanisms respective to cell growth between cancer and pulmonary arterial hypertension. Also, it is noted that metabolic remodeling and electric remodeling (especially KCNK3) in pulmonary vasculature are noted during the development of PH.

Most treatment strategies for children with PAH are based on adult data and clinical experience, including pharmacologic therapy, interventional therapy and surgical intervention, survival has improved significantly over recent decades as therapeutic options have increased. More pediatric-specific pediatric pulmonary hypertension seems to be treated successfully.

Since there are pathobiologic links between mutations and disease in pulmonary hypertension, and alterations in genetic conditions are important contributors to pediatric pulmonary hypertensive disease. Based on some international consortiums for genetic studies genetic testing in PAH, the gene panel sequencing approach should start with an affected patient and includes BMPR2 at the minimum if resources available.

In summary, pediatric pulmonary hypertension, quite different from adult pulmonary hypertension, is characterized by multifactorial disease with diverse etiologies and presenting features, and could present feature for several pulmonary vascular diseases. Survival has improved significantly over recent decades as therapeutic options have increased. We would like to share the experimental and clinical experiences during past 20 years in Kaohsiung medical University. In the future, we hope that genetic testing could be a critical consideration for potential therapy targets such as gene therapy and influences on response to therapy.

Treatment of CTEPH with pulmonaryendarterectomy surgery

David Philip JENKINS, M.D.

Consultant Cardiothoracic Surgeon
Clinical Divisional Director
Royal Papworth Hospital, Cambridge

Chronic thromboembolic pulmonary hypertension (CTEPH) results from incomplete resolution of acute pulmonary embolism. It results in exertional shortness of breath and without treatment reduced survival. Diagnosis requires imaging of the pulmonary circulation and direct measurement of pulmonary artery pressure and resistance by right heart catheterisation. It is classified in group 4 of the PH classification, and patients should remain anticoagulated for life. The most recent guidelines recommend pulmonary endarterectomy surgery (PEA) as the treatment of choice (IB), with good evidence for symptomatic and prognostic benefit from large case series and registry publications. Surgery involves deep hypothermic circulatory arrest to allow clearance of chronic clots into subsegmental vessels. Results of surgery have improved in the last 10 years, with registry data confirming 3% in-hospital mortality and up to 90% 3-year survival. There are some specific PEA related complications including right heart failure, reperfusion lung injury and airway haemorrhage that can be salvaged using extracorporeal membrane oxygenation with > 50% survival. Most patients demonstrate significant improvement in quality-of-life indices post surgery. There is some residual PH in a few patients who may benefit from multimodality therapy with pulmonary vasodilator drugs and balloon angioplasty.

Markers Guided Effective Therapy(MGET): New Markers for Lung Cancer Targeted and Immune Check Point Therapy.

洪明奇 教授 / Mien-Chie Hung, Ph.D.

2019–Present President, China Medical University, Taiwan
Translational Research, Signal Transduction, Immune Checkpoint, Resistant Mechanism

Abstract:
Anti-PD-1/PD-L1 therapy is a promising approach in cancer therapy including lung cancer. Glycosylation of PD-L1 is required for its protein stability and interaction with PD-1 (Nature Comm 2016). Impressive therapeutic effect of developed glycosylation-specific PD-L1 mAb was observed through antibody-drug-conjugate approach (Cancer Cell 2018a & Cancer Res 2020). Through identifying potential targets, we developed marker-guided effective therapy (Mget) to enhance therapeutic efficacy and/or overcome drug resistance by combination therapy with immune checkpoint therapy, including metformin (Mol Cell 2018), c-MET inhibitors (Nature Medicine 2016; Gastroenterology 2019); and targeting IL-6/JAK1 pathway (J Clin Invest 2019), Galectin-9 (Nature Comm 2021, IJBS 2023a), Tyro 3 (J Clin Invest 2021) and ALK/CDK9-Y19 pathway (Nature Cancer 2022). This talk will also include our discoveries on novel therapy overcoming resistance to EGFR TKI in lung cancer (Cancer Cell 2018b) and other caner types as well as a new methodology to retrieve antigen by protein deglycosylaton that improves predictive ability of PD-L1 as a biomarker for immunotherapy. (Cancer Cell 2018b, Cancer Cell 2018c, Cancer Cell 2019, AJCR 2022a, Nature Reviews Clinical Oncology 2022, Nature, 2020, Nat. Cell Biol 2020; Mol Cell 2021, IJBS 2023a,b,c). In addition, we will share the development of new serum markers, RNases that may be used to stratify patients for right treatment by FDA-approved kinase inhibitors targeting the well-known rearrangement of ALK and ROS1 genes in lung cancer (Cancer Cell 2018c, Nature Comm. 2021).
During the talk, collaborative projects on accurate measurement of PD-L1 by de-glycosylation method in lung tumor tissues to guide immune check point therapy and RNases as serum markers to stratify lung cancer patients for treatment with right kinase inhibitors will be discussed.

Satellite Symposium_優龍股份有限公司

Vitamin D in COVID-19 and ARDS: is there a role ?

劉偉倫 醫師 / Wei-Lun Liu, M.D.

天主教輔仁大學附設醫院 重症醫學科（內科）主任
天主教輔仁大學附設醫院 醫務部主任
天主教輔仁大學附設醫院 胸腔內科主治醫師
天主教輔仁大學附設醫院 創新發展室主任

Over forty years, studies have demonstrated that active metabolites of vitamin D directly regulate DNA transcription of thousands of genes, including the production of antimicrobial cationic peptide LL37 in immune and epithelial cells to eliminate pathogens with the negatively charged outer structures, such as SARS-CoV-2, and an increase in anti-inflammatory effects via modulating the adaptive immune responses and inducing the production of antioxidative enzymes. Consequently, vitamin D is prescribed widely as an adjuvant therapy in chronic and critical diseases. Among patients with acute respiratory distress syndrome (ARDS), vitamin D deficiency remarkably increases the mechanical ventilation duration and mortality rate. In severe COVID-19 patients, the early mega-dosage administrations of vitamin D significantly turn SARS-CoV-2 negative and decrease the mortality.

Vitamin D is biologically inert in a family of compounds that contain vitamins D1, D2, D3, D4, D5, D6 and D7. Thus, it does not confer the clinical efficacy and toxicity. Its active metabolites, encompassing calcidiol (25(OH)D) and calcitriol (1 α ,25(OH)2D), determine the clinical outcomes after vitamin D supplementation. Serum 25(OH)D is the more reliable biomarker of vitamin D status. In general, serum 25(OH)D level ≥30 ng/mL is considered vitamin D sufficiency. However, in view of precision medicine, serum 25(OH)D levels > 60 ng/mL regulate more gene number, approximately 1,200 genes, compared to those of below 60 ng/mL. These regulated genes are linked to cancer, infectious, cardiovascular, respiratory and autoimmune diseases.

The clinical guideline of The European Society for Clinical Nutrition and Metabolism (ESPEN) supports an administration of vitamin D3 (cholecalciferol) 500,000 IU as a single dose for the critical illness within a week after ICU admission. As vitamin D is considered an adjuvant in treating patients, it emphasizes that the administered dosages must create a rapid increase in serum 25(OH)D to the therapeutic levels which can correct vitamin D deficiency and avoid hypocalcemia or hypercalcemia.

Current Status and Future Perspectives on Immunotherapy in the Perioperative Period in Early Stage NSCLC

Jonathan Spicer, M.D., Ph.D, FRCSC

Undergraduate: McGill University B.Sc (Honours) - 2001 – Biology
2019/02 – present: Medical Director
McGill University Health Centre Thoracic Oncology Network

"Since the introduction of immunotherapy to the care of patients with resectable non-small cell lung cancer (NSCLC), we have seen tremendous changes to the paradigm of care for these complex patients. The pace of progress in this space is extremely rapid and thoracic oncology units around the world are facing the challenge of adjusting their practice to the new evidence. We will review the current data from neoadjuvant, adjuvant and perioperative immunotherapy trials for patients with resectable NSCLC. The data will be taken into the broader context of care and available options for patients with early-stage or locoregional NSCLC. We will discuss strategies to manage patients being prepared for neoadjuvant therapy, tricks to mitigate non-progression to surgery and we will explore factors that may influence the conduct of surgery in this context. Finally, we will review concepts around pathological response and adjudication of adjuvant immunotherapy."

Multilateral Trial For Enhanced Recovery After Thoracic Surgery (Merats)

Prof. Teodor Horvath, M.D., Ph.D.

Faculty Hospital and Faculty of Medicine
Masaryk University Brno, Czech Republic, Europe
Head of the Centre of Excellence for Pulmonary Surgical Oncology CZ Brno EU
Thoracic Surgery, Surgical Oncology, Autofluorescence Bronchoscopy.

The proposal of unified methodology used for the research of results gained at different circumstances. This is emerging from the shift in the professional accents, in patients routing, and small attention payed to some particular details. The base for the trial are Guidelines for enhanced recovery after lung surgery of Enhanced Recovery After Surgery Society and European Society of Thoracic Surgeons published in European Journal of Cardio-Thoracic Surgery 55 (2019)91-115. STUDY DESCRIPTION All phases of surgical care are explored in 45 items: Preoperative phase has 8 components, Admission 3, Perioperative 26, and Postoperative 8 components. Individual solution in any particular component comes out of knowledge and experience of attending thoracic surgeon. Every item of the protocol can be replied using one of responses available: 1/ yes 0/ no 2/adjusted 3/other. The decision is recorded into common database. The anonymity is guaranteed by encoding of every subject. The database is available for everybody of the group. All participants treat each other as equals. Any result can be studied from their own angle of view. The coworkers from the group are chosen freely according their own discretion. Exact dialogue of the progress and tradition is enabled. Implementing regulations of MERATS trial comprise 1) Partners equality by Round Table conception in the process of multifaceted verification of working procedures 2) Joint Statement of professional participants onto the trial containing a) the method of data collection, b) independent data processing and interpretation, c)agreement on conditions for publication of individually chosen topic, d)agreement on conditions for publication of aggregate outcomes, e) potential withdrawal from the contract. 3) Informed consent between the patient and physician covers information on medical, ethical, legal, and organizational requirements of the trial including guarantee of security of electronically coded data, and potential abandonment of the trail. CONCLUSION The outcomes will provide authentic data for precise decision making process by conducting survey of general tendencies and genuine feedback of electronically collected records. Progressive medical and organizational solutions can be found.

KEYWORDS: Decision Making Process; Physician Initiated Trial; Thoracic Surgery. DISCLOSURE : No significant relationships. SHORT TITLE: merats23

Clinical Practice of Local Consolidation Therapy in Late Stage EGFRm+ NSCLC

陳崇裕 醫師 / Chung-Yu Chen, M.D., Ph.D.

Mar 2021 - Medical Executive Assistant Superintendent's Office
2014 – 2017 Ph.D., Graduate Institute of Pathology, College of Medicine, National Taiwan University
2023 – Associate Professor College of Medicine, National Taiwan University

Abstract:
The treatment of lung cancer had thrived in recent years. The progress of pharmaceutical technology mad overall survival of lung cancer patient much longer then used to be. Currently in late-stage lung cancer treatment, local consolidation therapy has become more and more important on managing locally advanced lung cancer. Dr. Chen will give a comprehensive talk about recent update of local consolidation therapy, including surgery and radiation therapy.

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

New era of severe asthma treatment, EOS & beyond

Prof. Geoffrey Chupp, M.D., Ph.D.

Professor of Internal Medicine, Division of Pulmonary, Critical Care & Sleep Medicine, Yale University School of Medicine

Effective monoclonal antibody therapies are now increasingly used in asthma, raising the hope of asthma remission as a realistic therapeutic goal and representing a paradigm shift in asthma management objectives, bringing us one step closer to a cure. Clinical remission, encompassing a combination of treatment goals, is being actively investigated in severe asthma.
Mepolizumab has shown significant benefits in symptom control, fewer exacerbations, reduced oral corticosteroid (OCS) use, and improved lung function across various randomized controlled trials and real-world studies, including REALITI-A, REDES, and the Taiwan REMIT study.
During this meeting, we will delve into the clinical significance of asthma remission and the subsequent course of action for patients, whether they attain remission or not.

The Clinical Application for Pleuroscopy in Parapneumonic Effusionffusion: Current Evidence and Case Share..

簡宏哲 醫師 / Hung-Che, Chien, M.D.

Attending Surgeon, Division of Thoracic Surgery, Department of Surgery, Taipei Veterans General Hospital, Taipei, Taiwan
PhD. Institute of Emergency and Critical Care Medicine, National Yang-Ming University, Taipei, Taiwan

Abstract:

Pleural infections are common complications and sequelae caused by severe lung infections or pneumonia. Current guidelines suggest antibiotic therapy plus early drainage of the pleural space. And, surgery may be recommended when patients fail medical therapy, or, in case of organized empyema with peel formation that requiring decortication. However, not all patients are fit for surgery, especially in severe septic patient with unstable hemodynamic status, or patients in early parapneumonic effusion stage with only multiple loculations. In these conditions, pleuroscopy may have advantages as a minimally invasive endoscopic technique. Here we shall review the current evidence for pleuroscopy with recent case sharing.

Lung Transplantation for Bronchiectasis-Experience of Linkou Chang Gung Memorial Hospital

陳維勳 醫師 / Wei Hsun, Chen, M.D.

Chief, Division of Thoracic Surgery, CGMH
July 2017~ till now Assistant professor of Surgery, Division of Thoracic & Cardiovascular Surgery, CGMH
Lung cancer; Lung transplantation; Esophageal cancer; General thoracic surgery; Tracheobronchial stenting

Abstract:

Lung transplantation (LTx) is a well-established treatment for end-stage pulmonary disease. However, data regarding microbiology and outcome of patients with bronchiectasis after lung transplantation in Taiwan are limited.

Medical Treatment of Mesothelioma

楊志仁 醫師 / Chih-Jen Yang, M.D., Ph.D.

Division of pulmonary and critical care medicine, Department of Internal Medicine,
Attending Physician, Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan.
Precision medicine in lung cancer, pulmonary infection, asthma, COPD

Abstract:

The medical treatment of malignant pleural mesothelioma involves various approaches aimed at slowing the progression of the disease, alleviating symptoms, and improving the patient's quality of life. It's important to note that the treatment landscape for this condition continues to evolve, and new therapies are being explored through ongoing research and clinical trials.

1. Chemotherapy:

Chemotherapy involves the use of anti-cancer drugs to target and kill rapidly dividing cancer cells. Platinum-based chemotherapy regimens (such as cisplatin and pemetrexed) are commonly used to manage malignant pleural mesothelioma. This treatment can help shrink tumors, slow disease progression, and improve symptoms.

2. Immunotherapy:

Immunotherapy aims to stimulate the body's immune system to recognize and attack cancer cells. Checkpoint inhibitors, like pembrolizumab, have shown promise in treating a subset of patients with mesothelioma. These drugs block certain proteins that inhibit the immune response, allowing the immune system to better target cancer cells.

3. Targeted Therapy:

Some mesotheliomas have specific genetic mutations or alterations that can be targeted with specific drugs. These targeted therapies aim to inhibit the growth of cancer cells while sparing healthy cells. Research is ongoing to identify more effective targeted therapies for mesothelioma.

4. Multimodal Therapy:

Multimodal therapy combines different treatment approaches to maximize. effectiveness. For example, a patient might undergo surgery followed by chemotherapy or radiation therapy. This approach is tailored to the individual patient's condition and treatment goals.

5. Clinical Trials:

Clinical trials offer access to experimental treatments that are not yet widely. available. Participating in a clinical trial can provide patients with access to cutting-edge therapies and contribute to the advancement of mesothelioma treatment options.

Surgical Treatment of Malignant Pleural Mesothelioma: The Legacy of a Two Party System

Hassan A. Khalil, M.D.

Brigham and Women's Hospital Dana Farber Cancer Institute Harvard Medical School
Postdoctoral Fellowship, Cardiothoracic Surgery, Brigham and Women's Hospital

Abstract:

Malignant pleural mesothelioma is an aggressive malignancy involving the pleural surface of the lung and highly correlates with asbestos exposure. Its incidence is about 1:100,000 in the United States. Histologically, it is categorized into major subtypes: epithelioid, sarcomatoid and a mixed phenotype termed biphasic. The treatment of pleural mesothelioma has progressed significantly, but most resectable patients are considered for multimodal therapy including chemotherapy, surgical resection, and radiotherapy, with or without immunotherapy. Surgical resection entails either extrapleural pneumonectomy (EPP) or pleurectomy/decortication (PD). The efficacy of these resection types has been compared in retrospective single-center analyses with many groups supporting one over the other. However, randomized or prospective evidence is lacking and that limits true comparisons. What is clear is that PD has expanded the eligibility of patients for surgery, in particular those who would not tolerate pneumonectomy due to lack of adequate cardiorespiratory reserve. Retrospective data also seems to suggest that PD is associated with fewer perioperative mortalities. However, the oncologic benefit of one technique over another is still questionable. In some centers, heated cisplatin is instilled in the pleural space during the operation for additional cytotoxic effect. The speaker will discuss the spectrum of surgical techniques in the treatment of resectable malignant pleural mesothelioma and compare the current debate on EPP vs PD to the modern political party system.

Recurrence Patterns in Lung Adenocarcinoma with Spread through Air Spaces

Hassan A. Khalil, M.D.

Organization/Institute: Brigham and Women's Hospital, Harvard Medical School

Abstract:

Objectives: Spread through air spaces (STAS) is defined as tumor cells in air spaces away from the edge of tumor in lung carcinoma. It is associated with higher locoregional recurrence and lower survival in lung adenocarcinoma. The features of STAS portending worse outcomes are still under investigation. We reviewed our lung cancer experience to define potential factors related to STAS which influence recurrence and survival.

Methods: Between January 2010 and December 2017, we identified 968 patients who underwent resection for T1-3N0M0 lung adenocarcinoma. Of these, histologic examination was possible on 787. We examined the presence of STAS, STAS characteristics (micropapillary, solid nest, or single cell), average density (number per slide), and farthest distance from tumor at which STAS was detected, or maximal spread distance (MSD). Overall survival (OS) and recurrence-free survival were estimated using Kaplan-Meier curves, and differences between STAS+ versus STAS– groups were assessed using the logrank test, with a p value threshold for significance equal to 0.05.

Results: STAS was present in 389/787 of the reviewed cases (49.4%). OS and recurrence-free survival were significantly lower in the STAS+ group over 10 years ($p<0.0001$). The incidences of locoregional and distant recurrence were nearly doubled over 10 years in the STAS+ group compared to the STAS– group ($p=0.002$ and <0.0001, respectively). In a multivariable Cox regression model adjusted for STAS characteristics, distance and tumor size, lobar resection did not confer survival advantage in patients with STAS (hazard ratio of sublobar resection with respect to lobar resection: 1.44 [95% CI: 0.98-2.11], $p=0.067$). In the STAS+ group, STAS density was 2.7 ± 1.4 clusters per slide and the MSD was 2.2 ± 1.7 mm from the tumor edge. There was no observed correlation between STAS density or MSD and OS or recurrence.

Conclusions: We show increased distant recurrence in STAS+ lung adenocarcinoma. Quantifiable measures of STAS do not appear to correlate with recurrence or survival metrics.

Imaging A pproach to I ncidental Pulmonary N odules(<1cm)

許瑞昇 醫師 / Jui-Sheng Hsu, M.D., Ph.D.

高雄醫學大學醫學系　　副教授 2018/02-迄今
一般放射線學、胸部與乳房放射線學
3.磁振照影對比劑研究

Abstract:

Due to the increase of incidentally detected pulmonary nodules. These international guidelines coincide in proposing periodic follow-up for small nodules, less than 8 mm of diameter in lung cancer screening. Fleischner and British Thoracic Society guidelines and American College of Radiology Lung-RADS are the most recent and popular guidelines for incidental pulmonary nodules management. They have specific recommendations according to nodule characteristics (density and size) and cancer risk of the patient. Both guidelines separate recommendations for solid and subsolid nodules. Predictive risk models have been developed to improve the nodule management. However, both guidelines focus on the management of nodules detected on non-oncogenic patients but does not provide specific recommendations for patients with previously treated and presumably cured lung cancer or those with a history of extrathoracic malignancy. In clinical practice, most radiologists and surgeons rely on experience and common sense in managing pulmonary nodules in cancer survivors, and standardized guidelines tailored to this population are still needed.

Comparing East and West: Prevalence of Subsolid Nodules, Growth History, and Clinical Decision-Making

吳輔榮 醫師 / Fu-Zong, Wu, M.D.

Department of Radiology, Kaohsiung Veterans General Hospital
Department of Medical Education and Research, Kaohsiung Veterans General Hospital
Thoracic Imaging、Cardiovascular Imaging、Low dose CT screening

This presentation discusses the recent empirical evidence and trends in lung cancer screening in Asia, comparing them to European and American countries. The focus is on differences between East and West in terms of subsolid nodule prevalence, interval growth history, and clinical decision-making. The presentation begins by highlighting the current trends in Asian lung cancer screening, considering the region's high incidence and mortality rates. The presentation also delves into disparities in clinical decision-making between East and West. The evaluation of screening results and subsequent clinical decisions are vital for providing appropriate treatment and follow-up care. By comparing the differences in clinical decision-making between the two regions, the presentation analyzes their impact on the effectiveness of lung cancer screening and treatment outcomes.

In summary, this presentation provides the latest empirical evidence and trends in lung cancer screening in Asia, with a focus on comparing East and West. By examining disparities in subsolid nodule prevalence, interval growth history, and clinical decision-making, valuable insights are offered to improve lung cancer screening strategies in the future.

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12/9 Sat.

09:40-10:20 Respiratory Image Analysis: Present and Future / **Prof. Yasutaka Nakano** / P.54

12:10-13:20 IOS and importance of SAD in COPD Patients / **Dr. Po-Jui Chang** / P.54
(Satellite Symposium_友華生技醫藥股份有限公司)

The Epidemiological Study of Chronic Lung Disease Comorbid with Sarcopenia in Taiwan / **Dr. Pin-Kuei Fu** / P.55
(Satellite Symposium_友華生技醫藥股份有限公司)

13:30-14:10 Gene testing-guided off-label treatment for NSCLC / **Prof. Jin-Yuan Shih** / P.55

14:10-14:50 Heavy ion radiotherapy for NSCLC / **Prof. Keng-Li Lan** / P.56

15:10-15:50 Personalized neo-adjuvant and adjuvant therapy of operable NSCLC / **Prof. Jen-Chang Ko** / P.56

15:50-16:30 IASLC 9th Edition TNM Stage Proposal of Lung Cancer / **Dr. Shih-Chieh Chang** / P.59

16:40-17:50 Optimize treatment outcome for challenge NSCLC patient population with EGFRm+ / **Dr. Kun-Chieh Chen** / P.59
(Satellite Symposium_台灣百靈佳殷格翰股份有限公司)

The state of art to overcome EGFR TKI resistance in NSCLC treatment landscape/ **Dr. Wei-Yu Liao** / P.60
(Satellite Symposium_台灣百靈佳殷格翰股份有限公司)

12/10 Sun.

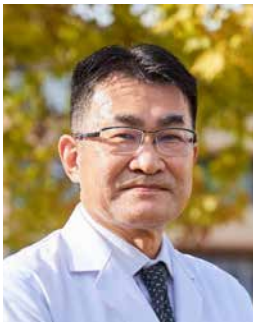
09:00-09:40 Updates on Antifibrotic Treatments for Idiopathic Pulmonary Fibrosis and Progressive Pulmonary Fibrosis / **Prof. Yoshikazu Inoue** / P.60

09:40-10:20 From Non-Infectious Alveolar Injury to Pulmonary Fibrosis : Pathologic-Radiologic Correlation and Hypotheses / **Dr. Chi-Der Chiang** / P.61

10:40-11:20 New insights into the treatment of CTD-ILD / **Prof. Tsu-Yi Hsieh** / P.63

11:20-12:00 Multidisciplinary discussion in interstitial lung disease / **Dr. Yao-Wen Kuo** / **Prof. Yu-Sen Huang** / **Prof. Song-Chou Hsieh** / **Prof. Min-Shu Hsieh** / P.64

Respiratory Image Analysis: Present and Future



Yasutaka Nakano, M.D., Ph.D.
Shiga University of Medical Science, Japan

Chest radiography and computed tomography (CT) are inseparable in the routine management of respiratory diseases. The same is true in emergency medicine. Chest radiography is also essential for screening for lung cancer and pulmonary tuberculosis. It is difficult to imagine modern medical practice without imaging tests.
In the past, imaging diagnosis was generally performed by radiologists and other specialists using their "eyes and brains". In recent years, however, quantitative image analysis using chest CT data has become widely used. For example, emphysematous, airway and vascular lesions in COPD and fibrotic lesions in interstitial pneumonia have been widely evaluated. The pathophysiology of diseases has been elucidated using such quantification data.
Recently, artificial intelligence (AI) has been widely applied in this field. This presentation will discuss the past, present, and future of image analysis.

Satellite Symposium_友華生技醫藥股份有限公司

IOS and importance of SAD in COPD Patients

張博瑞 醫師 / Po-Jui Chang, M.D.
林口長庚紀念醫院 內科第一加護病房主任
林口長庚紀念醫院 胸腔內科系呼吸道疾病科 助理教授級主治醫師

近年來肺部小呼吸道的疾病(Small Airway Dysfunction)一直受到國際間的重視，
而吸入劑藥物的顆粒大小與肺部小呼吸道的藥物沉積率息息相關且IOS針對SAD之診斷也越來越受到重視，本次演講透過林口長庚張博瑞醫師從臨床試驗到真實世界上使用超細微粒(Extra-fine particle)的ICS/LABA/LAMA與其他吸入劑的比較及Extrafine針對於控制不佳COPD病患之相關臨床文獻證據分享，並且針對運用IOS來增加SAD之診斷趨勢分享說明，來讓各位醫師了解更多Extra-fine particle的吸入型藥物對於台灣病人臨床上的益處。

Satellite Symposium_友華生技醫藥股份有限公司

The epidemiological study of chronic lung disease comorbid with sarcopenia in Taiwan

傅彬貴 醫師 / Pin-Kuei Fu, M.D.

臺中榮民總醫院 醫學研究部臨床試驗科主任
臺中榮民總醫院 技術移轉中心主任
臺中榮民總醫院 間質性肺病整合照護中心主任
臺中榮民總醫院 胸腔內科主治醫師

肌少症是一種慢性肌肉流失的疾病，許多慢性疾病都會合併肌少症的發生，並造成病人活動力下降，甚至發生跌倒、臥床以及行動失能的風險。過去關於慢性肺病合併肌少症的亞洲族群流行病學資料十分缺乏，本次演講透過傅彬貴醫師之臨床試驗探討兩種慢性肺病之肌少症盛行率，並進行登錄，以建立世代觀察資料。慢性肺病則聚焦於COPD與ILD病人用以建立台灣慢性肺病病人合併肌少症之盛行率、危險率、肌少症嚴重程度及肌少症病人之生理表現，以及衰弱與肌少症之相關性等流行病學資料。

Gene testing-guided off-label treatment for NSCLC

施金元 醫師 / Jin-Yuan Shih, M.D., Ph.D.

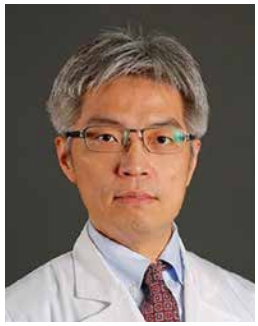
Professor and Chief, Division of Pullmonary and Critical Care Medicine, National Taiwan University Hospital

Decision-making in non-small cell lung cancer treatment is dependent on gene alterations. The multimodality of treatments, involvement of gene alterations and heterogeneous nature of tumors responsiveness are quite challenging.

For individuals with non-small cell lung cancer (NSCLC), molecular profiling to identify established actionable driver mutations (ALK, BRAF, EGFR, ERBB2(HER2), KRAS, METex14 skipping, NTRK1/2/3, RET, ROS1) is considered medically necessary. When actionable genomic alterations are identified, and patients gain access to treatment, targeted therapy can improve patient outcomes including response, quality of life, progression-free survival and potentially overall survival. Therefore, the implementation of NGS gene testing has become essential in the routine practice.

However, in some situation, especially when acquired resistance occurs, NGS is performed and find out multiple driver mutations or bypass pathways. But, there is seldom drug approved for this situation. Furthermore, some possible driver mutations still does not have approved target therapy. Off-label use of available target therapy for rare mutations or resistant mutations have been used in daily practice. In this lecture, those situations and cases will be shown and discussed.

Heavy ion radiotherapy for NSCLC



藍耿立 醫師 / Keng-Li Lan, M.D.,. Ph.D.
Department of Radiation Oncology, Taipei Veterans General Hospital

Within this particular scenario, Carbon Ion Radiotherapy (CIRT) arises as a potentially advantageous therapeutic modality. CIRT, known as Carbon Ion Radiotherapy presents many advantages as compared to conventional photon and proton radiotherapies. First, it is expected that CIRT exhibits a stronger biological impact on malignancies. This is due to the fact that its effectiveness is hardly affected by variables such as tumor hypoxia or the phase of the cell cycle. Additionally, CIRT demonstrates a notable characteristic of precise physical dose distribution as a result of the less lateral dispersion of particles. This particular attribute aids in the mitigation of the radiation dosage administered to neighboring organs at risk, thereby potentially diminishing adverse consequences. In order for CIRT to be deemed a viable choice in the treatment of NSCLC, it is important to thoroughly scrutinize many technical elements pertaining to the administration of the treatment. The aforementioned factors encompass suitable beam configurations, algorithms for dosage computation, radiobiological models, and techniques for motion management. The objective of this presentation is to thoroughly investigate the rationales behind the inclusion of CIRT (carbon ion radiotherapy) in the treatment of non-small cell lung cancer (NSCLC), analyze the existing clinical evidence, and explore prospective avenues for future research in this field.

Personalized neo-adjuvant and adjuvant therapy of operable NSCLC

柯政昌 醫師 / Jen-Chang Ko, M.D., Ph.D.
National Taiwan University Hospital Hsin-Chu Branch
Department of Medical Education
Department of Internal Medicine

Comprehensive genomic testing through next-generation sequencing (NGS) is an integral part of personalized diagnostics for advanced non–small cell, nonsquamous lung cancer.

With recent approvals of targeted therapy in the adjuvant setting and application of immunotherapy in the perioperative setting, it is increasingly important to understand the molecular characteristics of patients to determine the best strategy.

Although platinum-based chemotherapy has been and continues to be the standard adjuvant treatment, additional systemic treatment with targeted therapy and immunotherapy has moved the needle further toward disease-free survival.

Tumor genomics–based targeted therapies have transformed the treatment landscape of advanced lung cancer. Since the initial introduction of agents targeting specific EGFR mutations

and ALK fusions, there have been a slew of targeted agents approved for genome-driven lung cancer, the list of which continues to grow. As such, comprehensive genomic testing through next-generation sequencing (NGS) is an integral part of diagnostics for advanced non–small cell, nonsquamous lung cancer.Although NGS is strongly recommended by almost all guidelines, the recommendations for molecular testing of tumors in early-stage lung cancer are less clear.

Based upon an improved understanding of the biology of non–small cell lung cancer (NSCLC), we can now recognize lung cancer as a genetically heterogenous disease.

Although the treatment pathways for localized and locoregional disease have traditionally been similar irrespective of the tumor genetics, there is mounting literature to suggest that molecular profiling is important both from a therapeutic and prognostic standpoint.

With recent approvals of targeted therapy in the adjuvant setting and application of immunotherapy in the perioperative setting, it is increasingly important to understand the molecular characteristics of patients to determine the best strategy.

Current standard of care for resectable NSCLC without EGFR or ALK alterations includes neoadjuvant platinum-based chemotherapy and immunotherapy or adjuvant chemotherapy followed by immunotherapy.

The neoadjuvant strategy of 3 cycles of platinum doublet with nivolumab was evaluated in the CheckMate-816 study, which compared this regimen to 3 cycles of platinum-based chemotherapy alone followed by surgical resection. The study met both its primary endpoints of event-free survival (31.6 vs 20.8 months, respectively; HR 0.63) and pathologic complete response (24.0% vs 2.2%, respectively), favoring the study arm. Notably, the study excluded patients with known EGFR mutations or ALK fusions.

In the adjuvant setting, seminal studies, many of which preceded the Checkmate-816 study, have transformed treatment of early-stage resectable lung cancer as well. Although platinum-based chemotherapy has been and continues to be the standard adjuvant treatment, additional systemic treatment with targeted therapy and immunotherapy has moved the needle further toward disease-free survival (DFS).

The ADAURA study compared osimertinib to placebo given orally for 3 years after completion of adjuvant chemotherapy in patients with resected early-stage NSCLC with sensitizing EGFR mutations. This double-blind, phase 3 trial met its primary endpoint of DFS among patients with stage II to IIIA disease. At 24 months, 90% of patients in the osimertinib group, compared with 44% of those in the placebo group, were alive and disease free with an impressive overall hazard ratio for disease recurrence or death of 0.17 ($P < .001$). In the overall population, which included patients with stage IB disease, a significantly higher proportion of patients in the osimertinib group were alive and disease free at 24 months (89% vs 52%; HR 0.20; $P < .001$). There was also a significant benefit in terms of central nervous system metastasis-free survival at 24 months in the osimertinib arm (HR 0.18, 95% CI [0.10, 0.33]). Although overall survival data are still not mature, adjuvant osimertinib has become the standard of care; the U.S. Food and Drug Administration (FDA) approved adjuvant treatment of patients with resected stage IB to IIIA EGFR mutation–positive lung cancers and has set the stage for targeted therapy in early-stage disease.

IMpower-010, a phase 3 open-label trial, randomly assigned patients with resected stage IB to IIIA (AJCC 7th edition) NSCLC to atezolizumab for 1 year or to best supportive care after adjuvant chemotherapy. The primary endpoint of the study, DFS in patients with PD-L1–positive stage II to

IIIA disease, was significantly better in the study population compared with control (HR 0.79; P = .02).11 Based on IMpower-010 trial results, atezolizumab was approved by the FDA in 2021 as an adjuvant therapy after completion of a standard course of chemotherapy in patients with PD-L1–positive NSCLC with resected stage II to IIIA NSCLC.

KEYNOTE-091, another phase 3 study, randomly assigned patients with resected stage IB to IIIA NSCLC to adjuvant pembrolizumab or placebo for 1 year after optional chemotherapy. The median progression-free survival in the study arm was 53.6 months as compared with 42.0 months on the placebo arm (HR 0.76; P = .0014). Earlier this year, pembrolizumab was approved in adjuvant setting for resected early-stage NSCLC regardless of PD-L1 status.

Both IMpower-010 and KEYNOTE-091 allowed patients with EGFR- and ALK-driven NSCLC to participate. Patients positive for EGFR mutation accounted for 12.4% of IMpower-010 patient population and 6.2% of KEYNOTE-091 participants.

Adding atezolizumab did not improve DFS among patients with EGFR mutation in the IMpower-010 study, although the study arm outperformed the control arm in the EGFR mutant cohort on the KEYNOTE-091 study, but notably, the number of patients included was very small.

Patients with ALK fusions constituted a very small proportion in both studies, and immunotherapy in the adjuvant setting did not seem to benefit these individuals.

Although neither of these studies looked at other driver mutations, it should be noted that never-smokers, who are likely to have oncogene-addicted cancers, did not benefit from adjuvant immunotherapy in either study (HR 1.13, 95% CI [0.77, 1.67] in IMpower-010 for stages II to IIIA and HR 0.72, 95% CI [0.47, 1.13] for the intent-to-treat population in KEYNOTE-091).

These findings highlight the need for EGFR and ALK testing at the minimum for early-stage disease, and we propose that it be performed as part of comprehensive tumor NGS panel.

Conclusions:

The era of molecular profiling and targeted therapy in early-stage cancer has dawned and is expected to make a huge impact on treatment paradigms for all stages of lung cancer.

A multitude of ongoing clinical trials evaluating targeted therapy perioperatively will help shape guidelines regarding how molecular information should be integrated into diagnostics of early-stage NSCLC. As we wait for these studies to be completed, we strongly favor comprehensive genomic testing whenever possible.

Name of study	Setting	Title	Eligibility criteria pertaining to NGS testing	FDA approval summary
ADAURA[9]	Adjuvant (after chemotherapy if applicable)	Osimertinib in Resected *EGFR*-Mutated Non–Small-Cell Lung Cancer	Centrally confirmed EGFR mutation (Ex19del or L858R, either alone or in combination with other *EGFR* mutations) on examination of tissue.	On December 18, 2020, the FDA approved osimertinib for adjuvant therapy after tumor resection in patients with NSCLC whose tumors have EGFR exon 19 deletions or exon 21 L858R mutations, as detected by an FDA-approved test.
CheckMate-816[7]	Neoadjuvant prior to surgical resection	Neoadjuvant Nivolumab plus Chemotherapy in resectable Lung Cancer	EGFR testing was mandatory in Asia for patients with nonsquamous histology and was performed at the investigator's discretion in all other regions. Testing was done locally, and an FDA-approved test was recommended.	On March 4, 2022, FDA approved nivolumab with platinum-doublet chemotherapy for adult patients with resectable NSCLC in the neoadjuvant setting.
IMpower-010[15]	Adjuvant after surgery and chemotherapy	Adjuvant atezolizumab after adjuvant chemotherapy in resected stage IB–IIIA non-small-cell lung cancer (IMpower-010): a randomized, multicenter, open-label, phase III trial	Tumor genomic testing not required for eligibility.	On October 15, 2021, FDA approved atezolizumab for adjuvant treatment following resection and platinum-based chemotherapy in patients with stage II to IIIA NSCLC whose tumors have PD-L1 expression on ≥ 1% of tumor cells, as determined by an FDA-approved test.
KEYNOTE-091[13]	Adjuvant after surgery and chemotherapy	Pembrolizumab versus placebo as adjuvant therapy for completely resected stage IB–IIIA non–small-cell lung cancer (PEARLS/KEYNOTE-091): an interim analysis of a randomized, triple-blind, phase III trial	Tumor genomic testing not required for eligibility.	On January 26, 2023, FDA approved pembrolizumab for adjuvant treatment following resection and platinum-based chemotherapy for stage IB (T2a ≥ 4 cm), II, or IIIA NSCLC.

IASLC 9th Edition TNM Stage Proposal of Lung Cancer

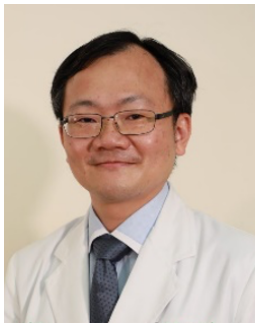
張時杰 醫師 / Shih-Chieh Chang, M.D.

Chief, Department of Chest Medicine, Internal Medicine, National Yang Ming Chiao Tung University Hospital
Associate Professor, Medical School, National Yang Ming Chiao Tung University

The tumor, node and metastasis (TNM) classification of lung cancer developed since 1966 and has undergone seven revisions. The North American database managed by Union for International Cancer Control (UICC) was used to inform the 2nd to 6th editions. The International Association for the Study of Lung Cancer (IASLC) contributed to the 7th and the 8th editions using an international database collection. The new 9th edition of lung cancer staging will be scheduled to be published in 2024 and enrolled 124,581 lung cancer patients diagnosed between 2011 to 2019. A total of 1513 Taiwanese patients were submitted to electronic data capture (EDC) and accounted for 6.4% of EDC cohort. The proposed 9th edition will not recommend any changes to the current T-category. New N-category in 9th edition will split N2 to N2a(single N2 station involvement) and N2b(multiple N2 station involvement） since significant difference in survival. Similarly, new M-category will divide M1c into M1c1(multiple extrathoracic metastases in a single organ system) and M1c2(multiple extrathoracic metastases in multiple organ systems) for different survival. A new TNM stage was also modified in a small way according to the above change in N and M-categories.

Satellite Symposium_台灣百靈佳殷格翰股份有限公司

Optimize treatment outcome for challenge NSCLC patient population with EGFRm+



陳焜結 醫師 / Kun-Chieh Chen, M.D.

中山醫學大學附設醫院 胸腔腫瘤內科主任

EGFR mutation is one of most common mutation for NSCLC patient in Taiwan. There mains some patients with diverse characteristic won't be able to be enrolled to RCT due to physical condition. In Dr. Chen's talk, he will give comprehensive discussion about these challenge patient population in real-world setting. How to maximize their survival through treatment strategy and patient management.

Satellite Symposium_台灣百靈佳殷格翰股份有限公司

The state of art to overcome EGFR TKI resistance in NSCLC treatment landscape

廖唯昱 醫師 / Wei-Yu Liao, M.D.

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

Targeted therapy has revolutionized the approach to treating non-small cell lung cancer (NSCLC) over the past decade, and the years 2022-2023 are expected to bring even more significant advances in this field. Novel drugs under development, such as EGFR inhibitors and combination therapies that target multiple pathways, are showing promising results in clinical trials, offering hope to those with previously untreatable forms of NSCLC. Additionally, advancements in molecular profiling and the integration of artificial intelligence with precision medicine are set to further improve personalized treatment approaches, leading to better outcomes for patients with NSCLC. Dr. Liao will give a comprehensive talk about the management of EGFR TKI resistance in NSCLC treatment.

Updates on Antifibrotic Treatments for Idiopathic Pulmonary Fibrosis and Progressive Pulmonary Fibrosis

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

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Idiopathic pulmonary fibrosis (IPF) is the most recognized fibrosing interstitial lung diseases (ILDs) of unknown cause. The life-threatening relentless clinical course of IPF results poor prognosis and quality of life. Recently, 10-30% of ILDs other than IPF also progress despite standard managements. The disease behavior is similar to IPF. Those chronic fibrosing ILDs were called as "Progressive Fibrosing Interstitial Lung Diseases (PF-ILDs)" (NEJM 2019) or "Chronic Fibrosing ILDs with a Progressive Phenotype". In 2022, the progressive phenotype was officially defined as "Progressive Pulmonary Fibrosis (PPF)" (AJRCCM 2022). Before the PANTHER-IPF trial (2012), the mainstay of treatment of IPF was immunosuppressive therapy, based on the hypothesis that inflammation leads to injury and fibrosis. Currently, the official clinical practice guideline for IPF (2015), recommended the combination of prednisone and azathioprine, and N-acetylcycteine was strongly against use, and pirfenidone or nintedanib was conditionally for use. Pirfenidone and

nintedanib have been officially approved and widely prescribed for the treatments of IPF in the world. Recently pirfenidone and nintedanib were tried to use against ILDs other than IPF. From the results of the INBUILD trial (2019) for PF-ILDs (other than IPF), and the clinical trials for unclassifiable progressive fibrosing ILDs other than IPF (2020), the latest official guideline stated that nintedanib was suggested for the treatment of PPF in patients who have failed standard management for fibrotic ILD other than IPF, but nintedanib was recommended research into the efficacy, effectiveness and safety in specific type of non-IPF ILD manifesting PPF. The guideline also stated that pirfenidone was recommended further research into the efficacy, effectiveness and safety in both non-IPF ILD manifesting PPF in general and specific type of non-IPF manifesting PPF. Recently, PPF was listed one of the aetiological treatable traits and anti-fibrotic medications were treatment option as "Treatable Traits" for ILDs (2023). Now, we have more evidences from the real world, and the secondary analysis of the clinical trials leading better understandings of the anti-fibrotic strategy. Now we got results of novel antifibrotic drug such as simtuzumab (LOXL2), GLPG1690 (LPA), pamrevlum (CTGF), and WA42293/PRM-151 (rhPTX-2) . Unfortunately, most of them were negative sttudy. However, we are waiting more results of phase 2 and phase 3 clinical trials for IPF and PPF using mechanistically novel antifibrotic drugs.

From Non-Infectious Alveolar Injury to Pulmonary Fibrosis : Pathologic-Radiologic Correlation and Hypotheses

江自得 醫師 / Chi-Der Chiang, M.D.

Medical consultant of Taichung Veterans General Hospital, China Medical University Hospital (Taiwan), Chung Shan Medical University Hospital, Changhua Christian Hospital, Tungs' Taichung Metroharbor Hospital

In the disease of predominant alveolar injury, the characteristic pathological change is diffuse alveolar damage(DAD). DAD can be classified into three categories according to the type of disease onset and the extent of disease involvement. In the early organizing (proliferative) stage of acute extensive DAD, granulation tissue plugs(Masson bodies) can be observed in airspaces. In the later organizing stage, the Masson bodies may merge into the surrounding lung parenchyma. The CT findings of acute extensive organizing DAD may display patchy or widespread ground-glass opacities (GGO)/consolidations in bilateral lung fields. In some patients, who recover from acute extensive DAD, their damaged lung may progress for several weeks or months to a fibrotic stage.
The most prevalent form of subacute alveolar injury, resulting in either focal or multifocal DAD, is organizing pneumonia (OP). The DAD changes seen in OP are primarily localized to the peribronchiolar parenchyma. Masson bodies can be observed within bronchiolar lumens, alveolar ducts ,and adjacent airspaces. Typical CT imaging features of OP include patchy GGO/consolidations, perilobular pattern, especially in the subpleural and/or peribrochial areas. Ordinarily, OP's Masson bodies dissolve after steroid therapy. However, occasionally they undergo collagenized or even calcified. In fibrotic(cicatricial)OP, CT may reveal patchy peripheral irregular

linear and reticular opacities or calcified nodules.

Acute fibrinous and organizing pneumonia (AFOP) is believed to be a variant form of acute extensive DAD or OP. It is characterized by the deposit of intra-alveolar fibrin and varying degree of organizing pneumonia within the alveolar ducts and bronchioles. Occasionally, the Masson bodies are predominantly composed of fibrin balls. The CT feature of AFOP may overlap with those of acute extensive DAD, OP, and eosinophilic pneumonia. Based on these pathological and radiological observations, the author hypothesize that acute and /or subacute alveolar injuries can manifest as acute extensive DAD, AFOP, or a composite of these conditions depending on the acuity and severity of the underlying disease.

UIP(Usual Interstitial Pneumonia) is a chronic, insidiously progressive fibrotic pathologic change of the lung. The major pathologic diagnostic findings include :

(a) interstitial fibrosis in a patchwork pattern
(b) architectural distortion
(c) presence of multifocal fibroblastic foci
(d) microscopic honeycombing

The fibroblastic foci ,a variant form of Masson bodies, are believed to represent microscopic foci of alveolar injuries (i.e., a mini-organizing DAD) .

The CT Feature of early UIP may present an indeterminate form for UIP. More advanced cases usually show a probable UIP or typical UIP .

According to the above pathologic and radiologic observation, the author offer a hypothesis that the outcomes of alveolar injuries might be influenced by three factors, i.e., the type of onset of injury, the severity of injury, and the frequency of injury

New insights into the treatment of CTD-ILD

謝祖怡 醫師 / Tsu-Yi Hsieh, M.D., BS.

Director of Division of Clinical Training, Department of Medical Education, Attending Physician, Division of Allergy, Immunology, and Rheumatology,Department of Internal Medicine;Taichung Veterans General Hospital

Interstitial lung disease (ILD) has been described in almost all connective tissue diseases (CTDs) with higher prevalence in systemic sclerosis (SSc), some groups of dermatomyositis, rheumatoid arthritis (RA) and overlap syndromes). ILD, especially with progressive pulmonary fibrosis (PPF) brings major impact of mortality rate and impaired quality of life for patients with CTDs,

The pathogenesis of CTD-ILD is not completely elucidated, and different pathways to be implicated in different CTDs. However, excessive and constant/recurrent inflammation with impaired tissue repair-related fibrosis play the central role of CTD-ILD. Patients with evidence of PPF tend to have a worse prognosis.

The clinical course of CTD-ILD is variable, ranging from stationary fibosis of lung, PPF with persistent deterioration of lung function, or rapid progression to chronic respiratory failure, and high mortality. Even before fully blown of CTD, CTD-ILD with PPF, or rapid-progressive ILD (RP-ILD) can be the first sign of systemic CTD.

The diagnosis of fibrotic CTD-ILD, especially the early identification of patients with PPF, is complex and requires a multimodality and multidisciplinary diagnostic approach. A comprehensive assessment is essential, including accurate staging of the severity of the disease and extrapulmonary manifestations to improve patient outcomes.

For treatment of CTD-ILD required ballet dancer level coordination among anti-fibrotic agents, immunosuppressants, rehabilitation, life style modification, and risk management for infection prevention and cardiovascular risk. Both initial and during follow-up , a multidisciplinary approach is worthwhile in the treatment of the different stages in CTD-ILD, for diagnosis and treatment.

Multidisciplinary discussion in interstitial lung disease

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Min-Shu Hsieh, M.D., Ph.D.
National Taiwan University Hospital · Department of Pathology

Multidisciplinary discussion (MDD) has been broadly commended for the diagnosis of interstitial lung disease worldwide. Many clinical practice guidelines and consensus statements have emphasized the role of multidisciplinary discussion in making an accurate diagnosis and further treatment strategy. The multidisciplinary team discussion usually consists of the radiologist, pathologist, pulmonologist, and rheumatologist, to discuss available clinical data and generate a consensus diagnosis for the patient. The agreements between the radiographic interpretation and histopathologic diagnosis bring higher confidence in making the diagnosis. In patients with autoimmune diseases, the evaluation of connective tissue disease-related lung involvement by the rheumatologist is essential for the correct interpretation of the autoimmune element and for the application of classification criteria.

In this demonstration of multidisciplinary discussion, a comprehensive set of key clinical data and adequate investigations of sufficient quality will be presented in a standardized format. Then a consensus approach to diagnosis formulation, involving discussion between all professional groups will be taken. Finally and hopefully, a consensus of diagnosis/ differential diagnosis, and suggested management could be reached at the end of the discussion.

403 會議室

請點選各會議室前往連結頁面

12/9 Sat.

09:05-09:13 Diagnostic testing for obstructive sleep apnea: home sleep apnea testing versus attend overnight polysomnography / **Prof. Pei-Lin Lee** / P.66

09:20-09:28 PAP therapy for OSA: indication, mode selection, titration, initiation and follow-up / **Prof. Ching-Lung Liu** / P.67

09:35-09:43 OSA and comorbidity: obesity / **Prof. Cheng-Yi Wang** / P.68

09:50-09:58 OSA and comorbidities - hypertension / **Dr. Li-Pang Chuang** / P.68

10:05-10:13 "To treat or not to treat sleep apnea?" in patients with sleep apnea and heart failure / **Dr. Chou-Han Lin** / P.69

12:10-13:20 Optimizing Second-line Treatment Strategies for Small Cell Lung Cancer: Integrating Lurbinectedin into Clinical Practice / **Dr. Yen-Ting Lin** / P.70
(Satellite Symposium_美時化學製藥股份有限公司)

15:10-15:50 MR BPA and the multimodal strategy of riociguat and BPA in CTEPH management / **Prof. Kohtaro Abe** / P.71

15:50-16:30 Approach to Multifactorial causes of Pulmonary hypertension / **Prof. JAMES YIP** / P.72

16:40-17:50 Navigating the Therapeutic Landscape: The Integration of Amivantamab-based combo in Common EGFR NSCLC patients / **Dr. Jeng-Sen Tseng** / P.73
(Satellite Symposium_嬌生股份有限公司楊森藥廠)

Moving target therapies forward into the first-line treatment for NSCLC patients with EGFR exon 20 insertion mutations / **Dr. En-Yu Hung** / P.74
(Satellite Symposium_嬌生股份有限公司楊森藥廠)

12/10 Sun.

09:10-09:20 Doctors in the changing world: Potential impact of AI on medicine and medical education / **Prof. Yuh-Chin Huang** / P.75

09:20-09:50 Novel Wearable Sensors for Monitoring Pulmonary Diseases / **Prof. Yong Zhu** / P.76

09:50-10:10 AI and critical care monitoring / **Prof. Ming-Cheng Chan** / P.76

10:20-10:40 AI in Sleep medicine / **Prof. Chin-Pyng Wu** / P.77

10:40-11:00 Leveraging AI for optimal hospital manpower / **Prof. Cheng-Yi Wang** / P.77

11:00-11:20 Building a digital native hospital: what we can learn from Taiwan Semiconductor Manufacturing Co. / **Prof. Gau-Jun Tang** / P.78

11:20-11:40 AI in Mechanical Ventilation / **Dr. Chien-Wen Chen** / P.79

11:40-12:00 AI in Lung Imaging / **Prof. Yeun-Chung Chang** / P.80

Diagnostic testing for obstructive sleep apnea: home sleep apnea testing versus attend overnight polysomnography

李佩玲 醫師 / Pei-Lin Lee, M.D., Ph.D.

National Taiwan University Hospital
Center of Sleep Disorder; Internal Medicine

Diagnostic testing for obstructive sleep apnea (OSA), including in-laboratory or home polysomnography (PSG) or home sleep apnea testing (HSAT), should be performed in conjunction with a comprehensive sleep evaluation and follow-up. Diagnostic testing should be prescribed for symptomatic patients or patients whose occupations involve driving or who have comorbidities, including cardiovascular disease and diabetes. In contrast, for asymptomatic patients, diagnostic testing is not recommended due to a lack of clear benefit.

PSG is the gold standard for measuring sleep/wake status, respiratory variables, oxygen saturation, and cardiac variables. The AHI or respiratory disturbance index (RDI) (AHI plus respiratory effort-related arousal) is used to define OSA severity. The International Classification of Sleep Disorders-3 defines OSA as either 1) an RDI ≥5/h plus OSA-related symptoms or 2) an RDI ≥15/h with or without symptoms. The AHI cutoff for OSA severity is as follows: mild, 5/h ≤ AHI <15/h; moderate, 15/h ≤ AHI <30/h; and severe, ≥30/h.

HSAT is categorized into two systems, namely, portable monitor type and SCOPER (Sleep, Cardiovascular, Oximetry, Position, Effort and Respiratory) parameter classification. The portable monitor classification is as follows: type I: attended polysomnography; type II, unattended PSG (≥7 channels); type III, limited cardiopulmonary parameters (4–7 channels) including respiratory variables, oxygen saturation, and cardiac variables; and type IV, 1–2 parameters including oximetry or electrocardiogram. The respiratory event index is used to determine OSA severity. For patients without complications who have a high pretest probability for moderate-severe OSA at sleep evaluation, HSAT is adequate for the diagnosis of OSA. If the single HSAT is negative, inconclusive, or technically inadequate, PSG should be arranged to confirm the diagnosis (see Supplementary Material for details).

PAP therapy for OSA: indication, mode selection, titration, initiation and follow-up

劉景隆 醫師 / Ching-Lung Liu, M.D., Ph.D.

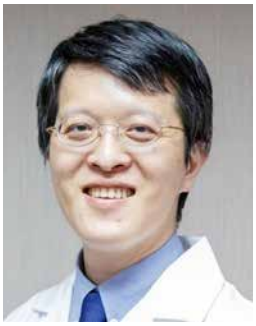
Respiratory Care Center, MacKay Memorial Hospital

Positive airway pressure (PAP) is the most reliable treatment for obstructive sleep apnea (OSA). It consists of three main components: a PAP device (air pump), an interface (i.e., nasal pillow, nasal mask, and full-face mask), and a flexible hose that connects the device to the interface. Generally, PAP machine is divided into several types according to the pressure delivery system: continuous positive airway pressure (CPAP), automatic positive airway pressure (APAP) and bilevel positive airway pressure (BPAP).

When a patient is diagnosed with OSA (with an apnea-hypopnea index (AHI) ≥ 15 /h, and symptomatic patients with AHI ≥ 5 /h), current clinical practice is to perform an in-hospital polysomnography (PSG) and manually adjust the positive airway pressure (CPAP or BPAP) throughout this recording, or to use an APAP machine at home to automatically adjust the pressure, both of which are used to determine the optimal pressure to maintain upper airway patency. Then, PAP follow-ups are an important part of the treatment program.

PAP can reduce AHI, improve daytime sleepiness and reduce traffic accidents, lower blood pressure and decrease the risk of cardiovascular events. However, only good PAP adherence (e.g., use for ≥ 4 hours per night on ≥ 70% of nights for 30 consecutive days) can provide effective treatment and indeed reduce associated healthcare utilization and costs. Therefore, strengthening patient education and treatment motivation, selecting masks or tubes and positive airway pressure modes correctly, setting treatment pressure appropriately, adopting comfortable designs, dealing with various side effects, arranging outpatient visits or remote follow-up, all need to be paid attention. These are all important measures to improve PAP adherence, and are also the biggest challenges faced by PAP in the treatment of OSA.

OSA and comorbidity: obesity



王誠一 醫師 / Cheng-Yi Wang, M.D., Ph.D.

Cardinal Tien Hospital, Internal Medicine

Obesity Hypoventilation Syndrome (OHS) refers to obese patients (BMI ≥ 30 kg/m2) exhibiting hypercapnia (partial pressure of carbon dioxide, PaCO2, over 45mmHg) during daytime wakefulness in a resting state, after excluding other causes that may induce hypercapnia such as neuromuscular disorders or metabolic issues.

OHS accompanies Obstructive Sleep Apnea (OSA), constituting a major portion (90%) of all OHS cases. CPAP is the preferred mode of treatment, and BPAP is the recommended second-line treatment.

OHS with hypoventilation during sleep accounts for 10% of all OHS cases, with the main problem of elevated levels of carbon dioxide in the blood due to reduced ventilation during sleep. BPAP is the strongly recommended first-line treatment, and average volume-assured pressure support (AVAPS) can be considered as a second-line treatment. CPAP does not have a significant therapeutic effect on such patients.

To achieve improvement in OHS, a minimum of 25-30% weight loss is recommended, and weight loss surgery is a viable option. Since OHS often coexists with cardiovascular comorbidities, there are higher risks involved in surgery, requiring thorough preoperative assessment and communication.

Sole use of oxygen therapy is not recommended for treating OHS. Oxygen therapy is suggested for patients who still experience nocturnal hypoxia under PAP treatment and is recommended to be used in conjunction with PAP treatment.

OSA and comorbidities - hypertension

莊立邦 醫師 / Li-Pang Chuang, M.D., Ph.D.

Director, Department of Pulmonary Infection and Immunology, Chang Gung Memorial Hospital, Linkou

Obstructive sleep apnoea (OSA) is a common disorder, in which loss of pharyngeal dilator muscle tone during sleep causes recurrent collapse of the upper airway and temporary cessation of breathing. Repeated apneas and hypopneas lead to cycles of intermittent hypoxia/hypercapnia, increased negative intrathoracic pressure and arousals from sleep. These consequences of OSA are associated with a cascade of cardiovascular and neurohumoral consequences, including sympathetic nervous system hyperactivity, raised heart rate variability, increases in blood pressure, myocardial wall stress, oxidative stress, systemic inflammation, platelet aggregation and impaired vascular endothelial function, which contribute, in turn, to increased cardiovascular risk and, in particular, to the development of chronic systemic arterial hypertension and arrhythmias, especially atrial fibrillation

(AF). Given that the prevalence of OSA is modified by age and gender, OSA-related cardiovascular diseases may also be affected by the same factors. This talk focuses on the potential role of OSA in systemic arterial hypertension and AF, and discusses the current evidence and unmet part between them based on our recent published literature.

"To treat or not to treat sleep apnea?" in patients with sleep apnea and heart failure.

林倬漢 醫師 / Chou-Han Lin, M.D.

Division of respirology, Far Eastern Memorial Hospital

In this presentation, I will delve into clinical cases involving patients with sleep apnea and heart failure. This bidirectional relationship between sleep apnea and heart failure underscores the importance of treatment strategies, with positive airway pressure (PAP) being studied as the most effective one when compared to alternative approaches like oxygen therapy, acetazolamide, or phrenic nerve stimulation.

The first clinical equipoise revolves around non-sleepy patients with obstructive sleep apnea (OSA) and concomitant heart failure. While continuous positive airway pressure (CPAP) has demonstrated its ability to alleviate daytime sleepiness and enhance the quality of life in individuals with OSA who experience sleepiness, there remains a notable absence of randomized controlled trials (RCTs) documenting its benefits in terms of critical cardiovascular outcomes such as morbidity and mortality. Complicating matters further, it is worth noting that patients with both OSA and heart failure exhibit lower levels of sleepiness than the general population. As a result, the precise indication for CPAP treatment in this specific patient group remains less clear.

Another pivotal clinical consideration pertains to patients with central sleep apnea (CSA) and heart failure. Following the publication of the SERVE-HF trial, adaptive servo-ventilation (ASV) therapy has faced significant limitations in many practice guidelines. However, the question of whether CPAP or a different mode of ASV still hold a therapeutic role in managing CSA in patients with heart failure warrants thorough discussion and exploration.

Satellite Symposium_美時化學製藥股份有限公司

Optimizing Second-line Treatment Strategies for Small Cell Lung Cancer: Integrating Lurbinectedin into Clinical Practice

林彥廷 醫師 / Yen-Ting Lin, M.D.

Adjunct Visiting Physician, Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, National Taiwan University Hospital
Clinical Assistant Professor, Department of Internal Medicine, National Taiwan University College of Medicine

Although small cell lung cancer (SCLC) accounts for the minority of all lung cancers, its prognosis is notoriously poor. The median overall survival of metastatic SCLC was around only 1 year in the era of immunotherapy. While first-line treatments are usually effective, managing relapsed or refractory disease in the second-line setting remains a complex challenge. Lurbinectedin, an alkylating agent, has received accelerated approval from the US Food and Drug Administration (FDA) for patients with metastatic SCLC who have progressed following standard frontline therapies. Based on data from a phase 2 basket trial (NCT02454972), Lurbinectedin (Zepzelca) administered at a dosage of 3.2 mg/m2 every 3 weeks as a second-line therapy showed an overall response rate of 35.2% and a duration of response of 5.3 months. The most frequently observed grade 3–4 adverse events were hematological abnormalities, specifically anemia (9%), leucopenia (29%), neutropenia (46%), and thrombocytopenia (7%). Only 2% of patients discontinued Lurbinectedin therapy due to treatment-related adverse events. Lurbinectedin demonstrated efficacy as a second-line therapy for SCLC in terms of overall response, with an acceptable and manageable safety profile. In June 2023, lurbinectedin received accelerated approval from the Taiwan FDA. It may be another choice for SCLC patients with resistance to first-line platinum treatment.

MR BPA and the multimodal strategy of riociguat and BPA in CTEPH management

Kohtaro Abe, M.D., Ph.D., FESC

Department of Cardiovascular Medicine, Faculty of Medical Sciences, Kyushu University, Fukuoka, Japan

Riociguat, a soluble guanylate cyclase stimulator, was approved for inoperable CTEPH patients in several European countries in 2014, and balloon pulmonary angioplasty (BPA), an interventional treatment that had been established mainly in Japanese centers, was implemented in many countries. In ESC/ERS guideline 2022, riociguat is recommended as a first-line medication for symptomatic patients with inoperable CTEPH or persistent/recurrent PH after PEA (class I). Recently, we investigated the efficacy and safety of riociguat vs BPA for inoperable CTEPH (Multicentre Randomised controlled trial based on BPA for chronic thromboembolic pulmonary hypertension (MR BPA) study; Lancet Respir Med. 10(10):949-960, 2022). Patients with inoperable CTEPH were randomized to either BPA or riociguat group in a 1:1 ratio. The primary endpoint was the change in mean pulmonary arterial pressure (PAP) from baseline to 12 months. The secondary efficacy endpoints included pulmonary vascular resistance (PVR), brain natriuretic peptide (BNP), and the functional classification. The secondary safety endpoints included treatment-related complications and clinical worsening. Eighty-seven patients were provisionally enrolled; 61 patients were deemed inoperable and randomised. By month 12, mean PAP decreased by -16.4±7.2 mmHg in the BPA group, and -6.6±7.4 mmHg in the riociguat group (adjusted group difference, -9.3 mmHg, 95% confidence interval -12.7 to -5.9, $p<0.001$). BPA group also significantly improved PVR, BNP, and functional class. BPA-related complications occurred in 11.6 %; one case required prolongation of hospitalization. The riociguat group had one case of clinical worsening of pulmonary hypertension, whereas no clinical worsening occurred in the BPA group. We concluded that among patients with inoperable CTEPH, BPA improved mean PAP and other clinically-relevant hemodynamic and functional parameters compared with riociguat, with a tolerable safety profile. However, since there are many cases in which riociguat is used before and after BPA procedure, further clinical evidence for multimodal strategy of riociguat and BPA in CTEPH management is needed.

Approach to Multifactorial causes of Pulmonary hypertension

JAMES YIP, MBBS(Singapore), MRCP (UK), FAMS (Singapore)

National University Heart Centre Singapore

Patients with pulmonary hypertension often do not fall neatly into the 4 main WHO groups with Group 5 on its own having a mixed bag of multifactorial aetiologies. Within the sub-entities of pulmonary arterial hypertension (PAH) , patients with PAH connective tissue disease (CTD), congenital heart disease and portal hypertension may have multiple pathologies that overlap other groups; for instance the patient with scleroderma PAH and interstitial lung disease. With the ageing population worldwide, approximately three quarters of patients with PAH have at least one comorbidity, with patients > 65 years and over having a greater number of comorbidities. These comorbidities include systemic hypertension, obesity, sleep apnoea, clinical depression, obstructive airway disease, thyroid disease, diabetes, and ischaemic heart disease which were shown to occur in > 10% in the idiopathic PAH REVEAL registry (Registry to EValuate Early and Long-term PAH disease management). These comorbidities can mask the symptoms of PAH, leading to delays in diagnosis and also increases the difficulty evaluating disease progression and treatment effects.

Due to the multifactorial pathophysiology of pulmonary hypertension (PH), the presence of comorbidities and the cross over of the sub-entities can lead to difficulties in distinguishing between the contributions of these multifactorial causes to the overall prognosis of the patient. Many comorbidities may contribute to the progression of PAH through increased pulmonary artery pressures and cardiac output, thus the treatment of the comorbidity may also reduce the severity of PAH.

The management of these multiple conditions with PAH requires consideration of the initial starting treatment strategy (monotherapy vs combination therapy), the role of adjuncts like CPAP (for obstructive sleep apnea) of drug interactions in different WHO groups and with chronic medications, polypharmacy, adherence and evidence-based strategies for the co morbidity.

A multidisciplinary team should be involved in the management of these patients and treatment goals and expectations of patients must be managed in the context of the multiple comorbidities.

Satellite Symposium_嬌生股份有限公司楊森藥廠

Navigating the Therapeutic Landscape: The Integration of Amivantamab-based combo in Common EGFR NSCLC patients

曾政森 醫師 / Jeng-Sen Tseng, M.D., Ph.D.

Associate Professor, Department of Post-Baccalaureate Medicine, College of Medicine, National Chung Hsing University, Taichung, Taiwan
Attending Physician, Division of Chest Medicine, Department of Internal Medicine, Taichung Veterans General Hospital, Taichung, Taiwan (2010 till now).

Amivantamab is an EGFR-MET bispecific antibody with immune cell-directing activity that targets activating and resistant EGFR mutations and MET alterations. Amivantamab in combination with Lazertinib has shown promising efficacy in the CHRYSALIS study. Recently, the phase 3 MARIPOSA study published in ESMO 2023 further confirms the results in large-scale study. With this new regimen introduced into first-line settings, we need to identify suitable patients that could benefit from such efficacious combo therapy.

Not only first-line, Amivantamab-based combo also shows increased PFS and ORR in osimertinib-relapse patients in another phase 3 trial, MARIPOSA-2, which was reported in ESMO 2023 annual meeting. Apart from chemotherapy, no targeted treatments are currently approved in the osimertinib-relapsed setting. The regimen could become the one of the new solutions after osimertinib treatment.

In this talk, we will review the results of MARIPOSA and MARIPOSA-2 study and try to position these new Amivantamab-based combo into the algorithm in the era of EGFR-targeted therapy.

Satellite Symposium_嬌生股份有限公司楊森藥廠

Moving target therapies forward into the first-line treatment for NSCLC patients with EGFR exon 20 insertion mutations

洪仁宇 醫師 / En-Yu Hung, M.D., Ph.D.
高雄醫學大學附設中和紀念醫院 胸腔內科 主任
高雄醫學大學 醫學院 內科學 副教授

Exon 20 insertion is the third most common EGFR mutations occurred in non-small-cell lung cancer (NSCLC) patients. This type of mutation is known for the poor treatment outcome when the patients with such mutation treated with 1st or 2nd generation tyrosine kinase inhibitors (TKIs). Amivantamab, the EGFR-MET bispecific antibody binds to each receptor's extracellular domain and therefore could bypass resistance at the TKI binding site.

CHRYSALIS, a phase I, open-label, dose-escalation, and dose-expansion study, which investigates the efficacy and safety profile of amivantamab for patients with EGFR exon 20 insertion. In this session, we will briefly go through the original result of CHRYSALIS in terms of response rate, PFS and OS as well as recent clinical updates of other developing treatment options as well.

In addition, amivantamab plus chemotherapy shows superior clinical efficacy compared to chemotherapy alone in terms of PFS, ORR and DoR. The OS is immature but a trend toward amivantamab plus chemotherapy regimen is observed. Platinum based chemotherapy has been the standard of care in first line setting for patients with EGFR exon 20 insertion. In this session, we will also discuss if amivantamb plus chemotherapy will be the new standard of care in the first-line setting for the EGFR Exon20ins NSCLC population.

Doctors in the changing world: Potential impact of AI on medicine and medical education

黃裕欽 醫師 / Yuh-Chin Huang, M.D., MHS, Professor of Medicine

Division of Pulmonary, Allergy and Critical Care Medicine, Duke University Medical Center

Artificial intelligence (AI) is the theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages. It is a field which combines computer science and robust datasets, to enable problem-solving. It is the simulation of human intelligence processes by machines, especially computer systems. Deep learning technique has led the rapid development of AI over the past decades. The invention of IBM Watson marked the first wave of the process. Watson thoroughly defeated two human champions in the game of Jeopardy in 2011 using natural-language processing (NLP).

Subsequently it was developed into an oncology AI for therapeutic. It had the ability to learn the vast old and new medical literature on cancer and the health records of real cancer patients discovering patterns invisible to humans. It then made recommendations for "best" treatment for individual cancer patient. However, it failed because it was impossible to teach Watson to read the articles the way a doctor would. The information that physicians extract from an article, that they use to change their care, may not be the major point of the study.

Watson's thinking is based on statistics, so all it can do is gather statistics about main outcomes, but doctors don't work that way. The limitations of AI in medicine are 1) AI systems can't understand ambiguity and don't pick up on subtle clues that a human doctor would notice; 2) No AI built so far can match a human doctor's comprehension and insight; 3) In 2018, the FDA approved a new "tissue agnostic" cancer drug that is effective against all tumors that exhibit a specific genetic mutation. The drug was fast-tracked based on dramatic results in just 55 patients, of whom four had lung cancer; 4) The output of AI is as good (or bad) as the data it is given AI still cannot do clinical reasoning! These limitations, however, are being overcome quickly with new AI programs, such as ChatGPT. As a doctor in this changing world, we need to understand that the validity of output by any AI system is critically dependent on the ground truth (data we feed in) and the ground truth, is frequently biased and shifting constantly. Like other fields, medicine has also been penetrated by AI. We have no choice but to keep up with the waves of AI revolution but we should also exercise cautions. This is also a time that we re-emphasize the learning of clinical skills and clinical reasoning to the trainees so they can harness the power of AI to provide better care to the patients. This may include changes in traditional didactic curriculum and interactive bedside learning methods.

Novel Wearable Sensors for Monitoring Pulmonary Diseases

Yong Zhu, Ph.D.

North Carolina State University, USA

Respiration constitutes a crucial function that offers valuable insights into an individual's health by encompassing various physiological indicators, including respiration rate and the chemical composition of exhaled breath. Conventional methods for monitoring respiration encounter a trade-off between precision and size, with large, laboratory-scale machines delivering precise analysis while portable devices contend with limitations in validity. To tackle this challenge, wearable respiration monitoring technologies have emerged as a promising alternative. In this talk, I will review recent advancements in wearable respiration sensors, focusing on their underlying operating principles. Then I will present our work in soft wearable sensors including strain sensors, temperature sensors, hydration sensors, and volatile organic compound (VOC) sensors, which can be used to monitor signals related to respiration and pulmonary diseases. I will discuss the challenges associated with the wearable sensing and highlight the importance of integrated sensing system that includes multimodal sensing.

AI and critical care monitoring

詹明澄 醫師 / Ming-Cheng Chan, M.D., Ph.D.

Director of the Department of Critical Care Medicine
Taichung Veterans General Hospital

Modern critical care medicine continues to face challenges from severely ill patients with complex disease, burnout of healthcare professionals and stress from making timely decision. In the rapidly evolving landscape of healthcare, the convergence of artificial intelligence (AI) and critical care monitoring stands as a beacon of innovation and hope. AI's integration into the territory of intensive care has ushered in a transformative era, promising profound improvements in patient outcomes and healthcare delivery. By harnessing the power of AI algorithms, critical care professionals can now navigate the complexities of patient monitoring with unprecedented precision and efficiency. These algorithms analyze vast streams of real-time patient data, encompassing vital signs, image studies, laboratory results, and clinical histories, enabling clinicians to make timely and informed decisions. Furthermore, AI also serves as a vigilant sentinel, tirelessly monitoring patients for subtle deviations from baseline metrics, acting as an early warning system for deteriorating conditions. Such early detection empowers healthcare teams to initiate interventions timely, potentially averting adverse events and enhancing patient survival rates. In order to apply AI in critical care medicine, there are three fundamental steps, enabling data, AI development and AI deployment. In this talk, I will also share our experience in Taichung Veterans General Hospital.

AI in Sleep medicine

吳清平 醫師 / Chin-Pyng Wu, M.D., Ph.D.
Landseed International Hospital

Sleep medicine is uniquely positioned to develop robust AI algorithms because of its vast data trove. AI can redefine OSA through analysis of the big data available, rather than solely relying on the apnea-hypopnea index. In addition, novel variables such as facial structure; snoring index; temperature trends; and sleep environment, position, and timing using a camera-based contactless technology may be incorporated to enhance the diagnostic accuracy for OSA or better describe sleep quality. AI algorithms can also be embedded into the electronic health record (EHR) to facilitate screening for sleep disorders using patient characteristics, thus accelerating the recognition and evaluation of possible sleep disorders.
AI can help achieve precision medicine by integrating multimodal data to establish endotypes and phenotypes of various sleep disorders. Delineating endotypes and phenotypes allows for personalized treatment recommendations, which may improve patient adherence and health outcomes.
Treatment personalization can also be achieved through AI by predicting compliance to various therapies and responses, as well as by discovering alternative forms of delivery to accomplish desired health outcomes.

Tan M, Bhargava Summit
Counting electric sheep: Dreaming of AI in sleep medicine
Chest Physician publish date: May 23, 2023

Leveraging AI for optimal hospital manpower

王誠一 醫師 / Cheng-Yi Wang, M.D., Ph.D.
Cardinal Tien Hospital, Internal Medicine

In today's medical environment, Artificial Intelligence (AI) is playing an increasingly significant role, especially in human resource management within hospitals. AI not only can predict future staffing needs through predictive analysis, thereby assisting managers in making more scientific and rational staffing and scheduling arrangements, but it can also optimize recruitment and training processes, swiftly and accurately identifying the most suitable candidates and creating training programs based on individual needs. Moreover, by automating tedious and repetitive workflows, AI significantly enhances the operational efficiency of medical staff, allowing them to devote more time and effort to areas that require more human attention. Simultaneously, AI helps to boost employees' job satisfaction and reduce job stress, thereby improving overall job performance and the utilization efficiency of human resources. Through these approaches, AI is progressively demonstrating its immense potential and value in hospital human resource management.

Building a digital native hospital: what we can learn from Taiwan Semiconductor Manufacturing Co.

唐高駿 醫師 / Gau-Jun Tang, M.D.,MHS

NYCU Chu-Ming Hospital

The founding of National Yang Ming Chiao Tung University is to integrate Chiao Tung's strengths in engineering and information technology with Yang Ming's strengths in biomedical research and medicine. We plan the future health care with the applications of cloud service, Artificial Intelligence, Internet of Things and medical robots.

The design of a Digital native hospital is based on the idea of TSMC fab that exploits total automation to achieve manufacturing excellence. Big data from multiple sensors facilitate machine learning to develop algorithms that enable smart diagnosis engine and precision yield.

A digital twin of our building (Building Information Modeling) served as a digitized platform for our hospital that integrates real-time locating systems and sensors for every person, equipment and utilities. The automatic transport system enables the right supply for the right patient every time automatically.

A dynamic digital replica of each patient, created with personal health record, imaging, laboratory and omics data that continuously interact with the physiological data will create a digital twin simulates the real-world patients to model each treatment plan and prognosis. Digitalization is transforming our health care practice, from Empirical to Precision Medicine, from population constructed evidenced based medicine to personalized treatments.

AI in Mechanical Ventilation

陳建文 醫師 / Chien-Wen Chen, M.D.
Tri-Service General Hospital

Artificial Intelligence (AI) is a very hot topic, especially after ChatGPT on the market, which has been popular and rapid involved in human life. In Medical area, AI has well developed in image and skin lesion diagnosis, use of database assist in disease diagnosis, treatment plan and new drugs research.

In mechanical ventilation, AI can help to collect evidence based published journal, analysis the benefit and risk of different rescue methods for acute respiratory failure including ARDS patient, and how to facilitate ventilator weaning. But in clinical practice, Robot ventilator is still a dream, AI and machine learning still within an enlightening stage. In this talk, we focus in ARDS database as an reliable big data, share the real world experience in our hospital, which can be used as base in quality control in medical ICU.

Closed-loop ventilation has well accept as the newly advanced ventilator mood, which is most close to AI in mechanical ventilation and popular used in ICU, also has been proved in improve patient-ventilator synchrony and facilitate ventilator weaning. Here we briefly introduce four closed-loop ventilator modes used in Taiwan, including Proportional assist ventilation (PAV), SmartCare, Neurally adjusted ventilatory assist (NAVA), and Adaptive support ventilation (ASV). As our limited experience, we more focus in ASV respiratory mechanism and clinical outcome, and literature review including ASV and Intellivent-ASV. During care ventilator supported COVID-19 patient, closed-loop ventilator can assist in reducing manual adjustment, remote control is also helpful.

AI in Lung Imaging

張允中 醫師 / Yeun-Chung Chang, M.D., Ph.D.

Professor of Radiology, National Taiwan University College of Medicine (NTUCM)
Chief, Cardiopulmonary imaging, Department of Medical Imaging, National Taiwan University Hospital (NTUH)

Artificial intelligence (AI) based on machine learning is robust in the field of medical imaging. There some important clinical applications of AI in lung imaging regarding to lung cancer screening and lung cancer characterization. Fully automatic detection of lung nodule is important to assist radiologists in the reviewing and reporting of tremendous amount of thin section images from low dose CT (LDCT) lung cancer screening. CT radiomics of lung adenocarcinomas has potential to stratify the risks of lung adenocarcinoma based on their predominant histopathological subtypes. CT radiomics has potential to differentiate pure ground glass nodule (GGN) due to different etiologies or invasiveness. Therefore, it is believed that AI application will play an important role in detection, characterization and prediction of chest CT imaging in lung cancer soon in our research and daily practice. In this lecture, the experiences of AI application of lung nodule detection and lung cancer characterization will be discussed.

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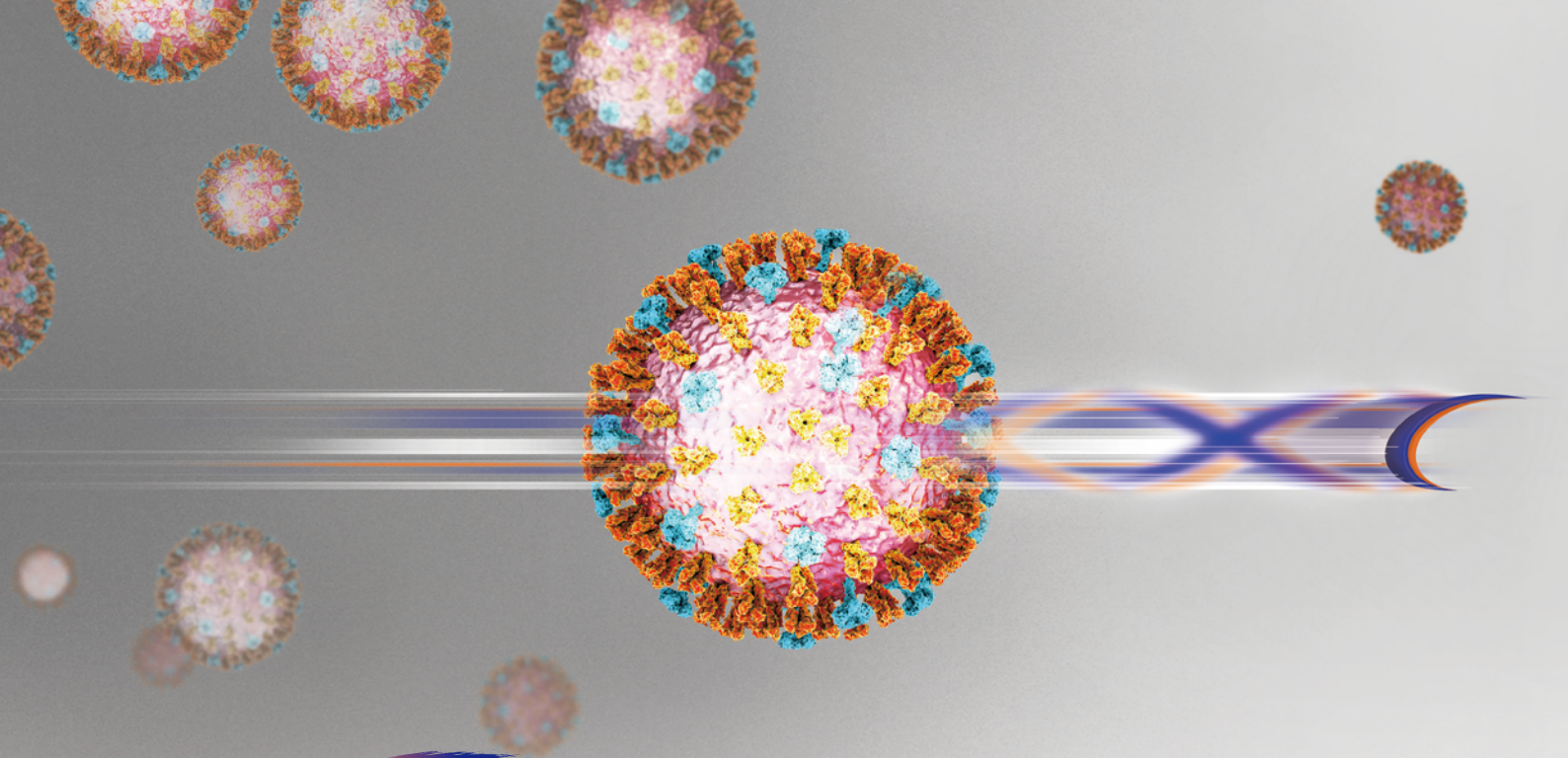
1. Transl Lung Cancer Res. 2015 Apr;4(2):156-64. 2. PLoS One. 2021 Mar 8;16(3):e0247620. 3. Lung Cancer. 2017 Jan;103:82-89. 4. Mod Pathol. 2020 Jan;33(1):38-46. 5. HX Chen, et al. Cancer Med. 2022 Apr 8. Online First 6. JTO Clin Res Rep. 2021 Dec 4;3(1):100261. 7. J Clin Oncol. 2009 Apr 1;27(10):1667-74. 8. J Thorac Oncol. 2009 Jan;4(1):5-11. 9. Ann Oncol. 2020;31:1693. 10. NCCN Guidelines Non-small Cell Lung Cancer (2023 Version 3) 11. Oncologist. 2021 Jan;26(1):7-16.



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「胸腔醫學雜誌」優秀論文獎

【胸腔醫學雜誌】優秀論文獎第一名

Yu-Shan Li, M.D. 李育珊呼吸治療師 台灣大學附設醫院

Prediction of pulmonary rehabilitation in patients with chronic lung disease using 6-minute walk distance

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ABSTRACT

Background: Pulmonary rehabilitation (PR) is an important part of the management and health maintenance of chronic lung disease (CLD) patients. This study aimed to identify the predictor of the percent predicted of the 6-minute walk distance (6MWD) in CLD patients.

Methods: Patients suffering from CLD, including both chronic obstructive pulmonary disease (COPD) (n=102) and non-COPD (n=39), who received an outpatient 8-week structured PR program between 2017 and 2019, were included, and their performance was analyzed.

Results: A total of 141 patients were included in the study. The patients were divided into 2 groups depending on whether the increase in the 6MWD reached the minimal clinically important difference (MCID) of 30 m after PR. A total of 78 and 63 patients were classified into the responders (> 30 m) and non-responders (≤ 30 m) group, respectively. All patients showed significant improvements in the 6MWD and modified Medical Research Council dyspnea scale. Multivariable logistic regression analysis showed that younger age (p= 0.005, OR = 0.89, 95% CI: 0.83 – 0.97) and < 60% predicted of the 6MWD value were independent factors predicting PR responders.

Conclusion: This study found that physical performance was improved after 8-week structured PR in patients with CLD. Younger age and 6MWD < 60% of the predicted value could predict a significant functional exercise capacity response to PR. (Thorac Med 2023; 38: 10-19)

Key words: Pulmonary rehabilitation, chronic lung disease (CLD), 6-minute walk distance (6MWD)

【胸腔醫學雜誌】優秀論文獎第二名

Chun-Fu Chung, M.D. 鍾均芙醫師 台大醫院雲林分院外科部

Pleura-contact Sign of Lung Nodules and Association with Benign Etiology in Asymptomatic Patients Without Cancer History

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ABSTRACT

Introduction: Pulmonary nodules are commonly observed in clinical practice. We aimed to analyze various features of pulmonary nodules and their association with the risk of malignancy.

Methods: We retrospectively reviewed patients with lung nodules equal to or less than 3cm in size, detected on chest computed tomography, and those who had received pulmonary nodules resection from January 2001 to December 2015. Ultimately, 302 resected pulmonary nodules from 258 patients were included in the study. Their characteristics and correlations with malignancy were analyzed.

Results: Pulmonary nodules with larger diameters were associated with higher risks of malignancy, were more irregular in shape, and had a higher percentage of solid nodules and pleural tag signs. Lung nodules measuring 1-2 cm had the highest percentage of pleura-contact signs (PCSs). Patients with larger pulmonary nodules had more symptoms and higher white blood cell counts. Among asymptomatic patients without known cancer histories, malignant pulmonary nodules tended to be large in diameter, irregular in shape, have a high percentage of pleura tag signs, have a low percentage of PCSs, and appear frequently in elderly patients. Multivariant analysis of factors associated with the malignancy risk of a pulmonary nodule in asymptomatic patients without a cancer history revealed that the patient's age and nodule diameter were significant positive predictors of cancer risk, while PCS was a negative predictor of malignancy.

Conclusion: For asymptomatic patients without a cancer history, PCSs may predict a benign nature in pulmonary nodules ≤ 3 cm in diameter. (Thorac Med 2023; 38: 102-108)

Key words: Pulmonary nodule, pleural-contact sign, malignancy risk, lung cancer

【胸腔醫學雜誌】優秀論文獎第三名

Ching-Shan Luo, M.D. 羅青山醫師 雙和醫院胸腔內科

Continuous Positive Airway Pressure Reduces Serum Levels of Alzheimer Disease-Related Proteins in Patients with Obstructive Sleep Apnea

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ABSTRACT

Introduction: Alzheimer disease (AD) is the most common form of dementia, and patients with obstructive sleep apnea (OSA) show significantly high serum levels of AD-related proteins. Because of the high AD prevalence, the heavy burden on the medical system, and the lack of promising pharmacological options, treatments focusing on reducing AD risk must be urgently explored. Hypoxia causes the accumulation of AD-related proteins, and sleep disruption may disturb the clearance process. Continuous positive airway pressure (CPAP) is supposed to improve nocturnal oxygen saturation and sleep quality, thus reducing AD risk.

Methods: The role of short-term CPAP in reducing the serum level of AD-related proteins in patients with OSA was evaluated using immuno-magnetic reduction technology. Twenty-three OSA patients were divided into 4 groups according to whether they had received CPAP or not, and their AD risk was assessed by calculating the product of 2 AD-related proteins. The serum levels of tau and amyloid β (Aβ)42 were determined before and after 3–6 months of CPAP treatment (with a corresponding time for those patients who refused CPAP).

Results: After short-term CPAP treatment, the serum levels of tau and Aβ42 were significantly reduced in the high AD risk group.

Conclusion: Our preliminary result shows that short-term CPAP treatment efficiently reduces the serum level of AD-related proteins in OSA patients with a high AD risk. We highly recommend incorporating hematological biomarker examinations into routine tests for OSA patients, as well as the use of CPAP treatment for patients with a high AD risk. (Thorac Med 2023; 38: 1-9)

Key words: Continuous positive airway pressure, Obstructive sleep apnea, Alzheimer disease, Amyloid beta protein, Tau proteins, Immuno-magnetic reduction assay.

Young Investigator Award

【Young Investigator Award】

Hsin-Yi Wang MD 王馨儀醫師 國立臺灣大學醫學院附設醫院雲林分院

Risk of thromboembolism in non-small-cell lung cancers patients with different oncogenic drivers, including ROS1, ALK,and EGFR mutations

Wang Hsinyi[1], Wu Shang-Gin[2], Lin Yen-Ting[3], Chen Chung-Yu[1], Shih Jin-Yuan[4]

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[2]National Taiwan University Cancer Centre

[3]National Taiwan University Hospital

ABSTRACT

Background: Anaplastic lymphoma kinase-positive (ALK+) and ROS proto-oncogene 1 (ROS1)-positive (ROS1+) lung cancers have been reported to be associated with an elevated risk of thromboembolic events. This study aimed to assess the long-term risk of developing thromboembolism (TE) in ROS1+ lung cancer and to compare it with other oncogenic drivers in the Asian population.

Materials and methods: We retrospectively enrolled a cohort of ROS1+ lung adenocarcinoma in a medical center in Taiwan and a comparison cohort of ALK+ and epidermal growth factor receptor-positive (EGFR+) lung cancers. Venous and arterial TEs were identified throughout the cancer course, and the incidence rate was calculated.

Results: We enrolled 44 ROS1+, 98 ALK+, and 168 EGFR+ non-small-cell lung cancer (NSCLC) patients. A total of 11 (25%), 36 (36.7%), and 38 (22.6%) patients in the ROS1, ALK, and EGFR cohorts, respectively, were diagnosed with thromboembolic events throughout the follow-up course of the disease (P=0.042). The incidence rates were 99.0, 91.9, and 82.5 events per 1000 person-years for the ROS1, ALK, and EGFR cohorts, respectively. The majority of thrombosis events in the ROS1 (91.6%) and ALK (85.4%) cohorts were venous. On the contrary, 43.2% of thromboembolic events were arterial in the EGFR cohort. A higher proportion of thromboembolic events were noted during cancer diagnosis in the ROS1 cohort (36.3%) than in the ALK (16.7%) and EGFR (10.5%) cohorts. The stage was the only clinical variable associated with thromboembolic risk. There was a significant difference in survival between patients with and without TE in the EGFR cohort, but not in the ALK and ROS1 cohorts.

Conclusions: Although ROS1+ and ALK+ NSCLCs had a higher cumulative incidence of TE than EGFR+ NSCLC, the person-year incidence rates were similar among the three groups. EGFR-mutated NSCLC had more arterial events. Nevertheless, ALK+ lung cancer had higher venous events than EGFR-mutated lung cancer.

【Young Investigator Award】

Ting-Yu Liao MD 廖庭淯醫師 國立臺灣大學醫學院附設醫院綜合診療部

Association of pulmonary nontuberculous mycobacteria with the outcomes of patients with lung cancer: A retrospective matched cohort study with a special emphasis on the impact of chemotherapy

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ABSTRACT

Introduction: Nontuberculous mycobacteria (NTM) may be present in the respiratory tract of patients with lung cancer. We investigated the association of pulmonary NTM with the clinical features and outcomes of patients with lung cancer.

Methods: Between 2015 and 2019, the data of patients diagnosed with lung cancer at a medical center in northern Taiwan were analyzed. Patients whose respiratory specimens were culture-positive for NTM were identified (NTM group). For each patient in the NTM group, a matched control was selected (control group). The survival of the two groups was compared using the Kaplan–Meier method and Cox proportional hazards regression analysis.

Results: Among 8718 patients with lung cancer, 5418 (62.1%) underwent a sputum mycobacterial culture. At least one NTM species was isolated from 138 (2.5%) patients. The median age was 72 years (range: 64–80). In the NTM group, 19.8% fulfilled both the microbiological and radiographic criteria for the diagnosis of NTM lung disease. Compared with the control group, the NTM group exhibited a lower body mass index (22.4 vs. 23.6, p = 0.025) and a higher prevalence of structural lung disease (38.9% vs. 22.2%, p = 0.004). The two-year survival was not significantly different between the two groups (hazard ratio [HR]: 1.110; 95% confidence interval [CI]: 0.702–1.754, p = 0.656). In patients receiving chemotherapy, pulmonary NTM was associated with worse survival (HR: 2.497, 95% CI: 1.262–4.943, p = 0.009).

Conclusions: Except in patients receiving chemotherapy, pulmonary NTM may not be clinically relevant in patients with lung cancer.

【Young Investigator Award】

Chia-Jung Liu MD 劉家榮醫師 國立臺灣大學醫學院附設醫院新竹分院內科部

A deep learning model using chest X-ray for identifying TB and NTM-LD patients: a cross-sectional study

Chia-Jung Liu[1], Cheng Che Tsai[2], Lu-Cheng Kuo[3], Po-Chih Kuo[4], Meng-Rui Lee[3], Jann-Yuan Wang[3], Jen-Chung Ko[1], Jin-Yuan Shih[3], Hao-Chien Wang[3,5], Chong-Jen Yu[1,3]

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ABSTRACT

Background: Timely differentiating between pulmonary tuberculosis (TB) and nontuberculous mycobacterial lung disease (NTM-LD), which are radiographically similar, is important because infectiousness and treatment differ. This study aimed to evaluate whether artificial intelligence could distinguish between TB or NTM-LD patients by chest X-rays (CXRs) from suspects of mycobacterial lung disease.

Methods: A total of 1500 CXRs, including 500 each from patients with pulmonary TB, NTM-LD, and patients with clinical suspicion but negative mycobacterial culture (Imitator) from two hospitals, were retrospectively collected and evaluated in this study. We developed a deep neural network (DNN) and evaluated model performance using the area under the receiver operating characteristic curves (AUC) in both internal and external test sets. Furthermore, we conducted a reader study and tested our model under three scenarios of different mycobacteria prevalence.

Results: Among the internal and external test sets, the AUCs of our DNN model were 0.83 ± 0.005 and 0.76 ± 0.006 for pulmonary TB, 0.86 ± 0.006 and 0.64 ± 0.017 for NTM-LD, and 0.77 ± 0.007 and 0.74 ± 0.005 for Imitator. The DNN model showed higher performance on the internal test set in classification accuracy (66.5 ± 2.5%) than senior (50.8 ± 3.0%, $p < 0.001$) and junior pulmonologists (47.5 ± 2.8%, $p < 0.001$). Among different prevalence scenarios, the DNN model has stable performance in terms of AUC to detect TB and mycobacterial lung disease.

Conclusion: DNN model had satisfactory performance and a higher accuracy than pulmonologists on classifying patients with presumptive mycobacterial lung diseases. DNN model could be a complementary first-line screening tool.

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

Tenascin-C 的上調在具有 EGFR 突變之肺腺癌促進低度發炎反應腫瘤微環境的形成

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Upregulation of Tenascin-C contribute to the unflammed tumor microenvironment in EGFR mutated lung adenocarcinoma

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Purpose: Epidermal growth factor receptor (*EGFR*) mutated lung adenocarcinoma is a common druggable type of lung cancer, but responds poorly to immune checkpoint inhibitors because of low PD-L1 expression and uninflamed tumor microenvironment. In addition, as an ECM protein, tenascinc-C (TNC) has been studied for its immunosuppressive function in other neoplasms. We aimed to investigate the expression and function of TNC in EGFR-mutated lung adenocarcinoma.

Materials and Methods: We analyzed the expression of TNC in RNA and protein level using qRT-PCR, western blot, and ELISA among lung cancer cell lines with or without *EGFR* mutation. The regulation of TNC in EGFR-mutated lung adenocarcinoma was also assessed. The function of TNC on tumor cells was examined in in vitro studies, including invasion, migration, proliferation assays. The function of TNC on immune cells was tested using transwell migration system. Humanized xenograft mouse model was adopted to confirm the function of TNC on immune cells in *EGFR* mutated lung cancer.

Results: We found TNC mRNA was upregulated in EGFR mutant lung adenocarcinoma compared to wild type tumors, as confirmed in TCGA database, cell line studies, and immunohistochamical staining in lung cancer specimens. We demonstrated that upregulation of TNC was mediated by EGFR signaling pathway by the positive and negative manipulation of EGFR pathways in cell line studies. TNC decreased in a dose-dependent manner in PC9 and HCC827 cells after treated with osimertinib, and increased in H1299 cell after treated with EGF. By overexpressing or knock down of TNC, we found TNC promote tumor invasion, migration, and proliferation. Otherwise, TNC inhibit immune cell migration, as demonstrated by transwell assay. In humanized xenograft model, we demonstrated that TNC could significantly inhibit T cell infiltration in EGFR-mutated tumors, serving as an important mechanism shaping an uninflamed microenvironment

Conclusions: We identified an important mechanism of EGFR-mutated lung cancer leading to an uninflamed tumor microenvironment which may cause resistance to immunotherapies.

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

OA02

LncRNA SLCO4A1-AS1 通過調控 TOX4-NTSR1 信號通路來抑制肺癌的進展

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LncRNA SLCO4A1-AS1 suppresses lung cancer progression by sequestering the TOX4-NTSR1 signaling axis

Yi-Ling Chen[1,2], Yi-Nan Liu[2], Yen-Ting Lin[1,2,3], Meng-Feng Tsai[4], Shang-Gin Wu[2,3], Tzu-Hua Chang[2], Chia-Lang Hsu[5], Huey-Dong Wu[6], Jin-Yuan Shih[1,2]
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Purpose: Metastasis is a multistep process involving the migration and invasion of cancer cells and is a hallmark of cancer malignancy. Here, we elucidate the role of the SLCO4A1-AS1 (solute carrier organic anion transporter family member 4A1-antisense 1) in metastasis and its underlying regulatory mechanisms.
Materials and Methods: Integrative analysis from the Gene Expression Omnibus (GEO) database were used to identify metastasis-associated lncRNAs. *In vitro* and *in vivo* migration and invasion assays were used to assess the biological effects of SLCO4A1-AS1. MASS Spectrometry and RNA sequencing (RNA-seq) was used to identify the downstream targets of SLCO4A1-AS1. The RT-qPCR, western blotting, RNA pulldown, RNA immunoprecipitation (RIP), fluorescence in situ hybridization (FISH), and chromatin immunoprecipitation (ChIP) assays were used to discover the underlying regulatory machinery of SLCO4A1-AS1.
Results: SLCO4A1-AS1 reduces cancer cell migration and invasion by disrupting cytoskeleton filaments, and is associated with longer overall survival in lung adenocarcinoma patients. SLCO4A1-AS1 directly interacts with the DNA-binding protein TOX4 (TOX High Mobility Group Box Family Member 4) to limit TOX4-induced migration and invasion. We first demonstrated that NTSR1 (neurotensin receptor 1) is a novel downstream target of SLCO4A1-AS1 and TOX4. Mechanistically, SLCO4A1-AS1 functions as a decoy of TOX4 by interrupting its interaction with the NTSR1 promoter and preventing NTSR1 transcription. Functionally, NTSR1 promotes cancer cell migration and invasion through cytoskeletal remodeling, and knockdown of NTSR1 significantly inhibits TOX4-induced migration and invasion.
Conclusions: These findings demonstrated that SLCO4A1-AS1 antagonizes TOX4/NTSR1 signaling, underscoring its pivotal role in lung cancer cell migration and invasion. These findings hold promise for the development of novel therapeutic strategies targeting the SLCO4A1-AS1/TOX4/NTSR1 axis as a potential avenue for effective therapeutic intervention in lung cancer.

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

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

OA03

抗藥之後的再抗藥：研究雙重 EGFR 及 MET 抑制劑使用於 MET 擴增導致的 EGFR 酪胺酸酶抑制劑抗藥性肺癌之抗藥性

林彥廷[1,2], 劉亦男[2], 許雅捷[2], 許祐嘉[2], 吳尚俊[1,2], 施金元[2]

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Resistance after resistance: Resistant mechanisms for dual EGFR and MET inhibitors resistance after treating MET amplification-mediated EGFR TKI-resistant lung cancer

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Introduction: MET amplification is one of the resistant mechanisms for EGFR tyrosine kinase inhibitor (TKI) resistance in lung cancer. Combined EGFR and MET inhibition may control those EGFR TKI-resistant tumors. However, resistance after dual EGFR and MET inhibition still occurs, and the resistant mechanisms remain unknown.

Methods: We established serial lung cancer cell lines from malignant pleural effusions from a patient with EGFR L858R mutant lung cancer after acquiring MET-amplified osimertinib resistance (PE-5345), and after clinical resistance to capmatinib and osimertinib combination therapy (PE-5867). A dual capmatinib and osimertinib-tolerant cell line from PE-5345 was also established by treating PE-5345 with increasing concentrations of capmatinib and osimertinib for months (PE-5345 os/cp R). Potential resistant mechanisms were evaluated by signal pathway analysis and targeted next-generation sequencing (NGS), TSO500.

Results: Loss of MET amplification occurred in both resistant PE-5867 and PE-5345 os/cp R cells. Persistent ERK activation was noted in PE-5867 but not in PE-5345 os/cp R. Persistent EGFR and the downstream AKT activation was found in PE 5345 os/cp R but not in PE-5867. NGS for PE-5867 revealed EGFR L858R with acquired novel GTF2I-BRAF fusions. Osimertinib and trametinib combination inhibited ERK activation and reversed drug resistance in PE-5867. NGS for PE-5345 os/cp R revealed EGFR L858R with amplifications of EGFR, ERBB2 and the FGF family. Afatinib but not the pan-FGFR inhibitor erdafitinib inhibited PE-5345 os/cp R cells.

Conclusions: The mechanisms of acquired resistance after dual EGFR and MET inhibition for MET-amplified EGFR TKI resistant lung cancer may be heterogeneous. We described loss of MET amplification together with acquired novel BRAF fusions and EGFR/ERBB2 amplifications as the resistant mechanisms. Targeting the emerged resistant mechanisms may overcome dual EGFR and MET inhibitor 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)

OA04

使用肋膜積液腫瘤游離 DNA 與沉澱腫瘤細胞作為非小細胞肺癌基因檢測檢體之比較分析

王馨儀[1], 廖唯昱[2],何肇基[2], 楊景堯[2], 許嘉林[2], 施金元[2*]

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Molecular profiling using pleural effusion circulating tumor DNA (ctDNA) and matched cell pellets in NSCLC

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Purpose: Molecular testing in NSCLC often faces challenges due to insufficient tumor samples. Cell-free DNA (cfDNA) next-generation sequencing (NGS), specifically plasma-based ctDNA NGS, has shown promise in overcoming tissue-based testing limitations. Nevertheless, pleural effusion (PE) may provide a richer source of ctDNA in patients with malignant pleural effusion, offering an alternative for mutation detection in NSCLC.

Materials and Methods: This prospective study was conducted from February to October 2023 at National Taiwan University Hospital. Newly diagnosed Stage IV NSCLC patients with malignant PE were enrolled. PE was collected from each patient and ctDNA NGS library construction and target enrichment were performed using the IMBdx AlphaLiquid® 100 platform. AlphaLiquid®100 is a comprehensive genomic profiling test detecting variants across 118 cancer-related genes. Meanwhile, PE cell pellet RNA was also extracted for RT-PCR for NSCLC clinically relevant actionable mutations (*EGFR, ALK, ROS1, MET, ERBB2, RET, BRAF, KRAS, NTRK*) and then confirmed by Sanger sequencing. An analysis was performed to evaluate the concordance of PE cell pellet RT-PCR and AlphaLiquid®100 of PE-ctDNA.

Results: A total of 35 patients with malignant PE were enrolled. The median age of the patients was 66.5 years. The female-to-male ratio was 22:13. The majority of these patients (77%) were non-smokers. Notably, 32 out of the 35 patients (91%) exhibited actionable driver mutations. These mutations comprised EGFR exon 19 deletions (31%), EGFR L858R mutations (31%), HER2 exon20 insertions (8%), ROS1 rearrangements (6%), EGFR exon20 insertions (3%), ALK rearrangements (3%), RET rearrangements (3%), KRAS G12C mutations (3%), and CD74-NRG1 fusions (3%). PE ctDNA NGS analysis identified 31 patients with clinically relevant actionable mutations, while it did not detect the CD74-NRG1 fusion in one patient due to its absence from the AlphaLiquid®100 gene panel. The sensitivity was 96.88%. Meanwhile, PE cell pellet RT-PCR revealed actionable mutations in 27 patients, achieving a sensitivity of 84.38%. With the complementary use of PE ctDNA NGS testing, the number of patients with detected actionable mutations increased from 27 to 31, marking an 11.36% rise in the detection rate.

Conclusion: PE ctDNA genotyping has clinical applicability for patients with NSCLC and can serve as an additional source for molecular testing. Utilizing a comprehensive genetic testing approach, incorporating PE NGS ctDNA analysis, enhances diagnostic yield and facilitates the identification of actionable mutations in clinical practice.

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

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

OA05

晚期 ROS1 陽性非小細胞肺癌相關臨床治療成果的現實世界經驗: 台灣多中心登錄性研究

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Real-world experience on clinical outcomes of ROS1-positive advanced non-small cell lung cancer patients in a Taiwanese multi-center registry study

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Purpose: ROS1 rearrangement is a rare driver oncogene and accounts for 1 to 2% of non-small cell lung cancer. Due to its rarity, the effectiveness including cytotoxic chemotherapy and target therapy in real world settings is still lacking. Therefore, we conducted a multi-center registry study in Taiwan to investigate the treatment outcomes of ROS1-positive NSCLC.

Materials and Methods: ROS1-positive NSCLC patients were confirmed by either a positive immunohistochemistry staining of D4D6, fluorescence in situ hybridization (FISH) or next generation sequencing methods. A retrospective and prospective observational study design was conducted in fourteen hospitals in Taiwan and an electrical data capture of registry system was used to collect clinical variables.

Results: From January 1, 2012 to May 31, 2023, a total of 70 ROS1-positive advanced NSCLC patients were enrolled for the first interim analysis. The median age was 60.5 (range 28 to 90) year-old and 45(64.3 %) were female patients. The most common histological type was adenocarcinoma and distribution of cancer staging on enrollment was stage IIIB+IIIC (n=7, 10%) and IV (n=63, 90%). The most common first-line systemic treatment was ROS1-targeted tyrosine kinase inhibitors including crizotinib (n=37, 52.9%), Entrectinib (n=6, 8.6%) and Ceritinib (n=1, 1.4%), followed by platium-based doublet chemotherapy (n=26, 37.1%). A higher but not statistically significant objective response rates could be observed in ROS1-target therapy comparison to chemotherapy (57 % vs. 35%, p=0.073). Similarly, patients treated with frontline ROS1-target therapy had longer progression free survival than chemotherapy (19.8 vs. 10.2 months, p=0.048). In overall survival, there was no significant difference between the ROS1-target therapy and chemotherapy groups (median survival not reached vs.74.8 months, p=0.55).

Conclusions: Advanced ROS1-positive NSCLC patients had extremely long survival time. Compared to platinum-based chemotherapy, initial treatment of ROS1-targeted therapy had better progression free survival but no difference in overall survival in the real-world experience.

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

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

OA06

利用血漿中的表觀遺傳修飾核小體區分良性和惡性肺結節

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Differentiation of Malignant and Benign Lung Nodules using Epigenetically Modified Nucleosomes in Plasma

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Purpose: Recent lung cancer screening trials indicate that low-dose computed tomography (LDCT) has been successful in reducing mortality in high-risk patients. Nonetheless, the high frequency of false-positives leads to expense and possible harm, emphasizing the necessity for complementary biomarkers. To address this, we aimed to enhance the accuracy of lung cancer screening by utilizing a lung cancer-specific immunoassay panel for epigenetically modified nucleosomes in plasma to help differentiate between benign and malignant nodules.

Materials and Methods: During the years 2021 and 2022, a total of 806 individuals who had a positive result from LDCT screening and underwent surgery or biopsy were included in the study. Plasma samples from these participants were analyzed for nucleosomes containing histone modifications including H3K27Me3 or the H3.1 histone isoform by quantitative immunoassay (Nu.Q®, Belgian Volition SRL). Among these individuals, 648 were diagnosed with either lung cancer or a pre-cancerous lesion, while 158 were diagnosed with a benign lesion based on pathological reports. Logistic regression was used to analyze the assay data, and a simple algorithm was developed to predict whether a nodule was benign or malignant. The algorithm was trained using samples from a training set (n=564) and validated with the remaining samples (n=242).

Results: The plasma epigenetic nucleosome assay for detecting lung cancer demonstrated a diagnostic sensitivity of 60.9% and a specificity of 80.7% using a simple regression algorithm in the training set. The AUC, differentiating between cancerous and benign nodules, was 79.5%. When applied to the validation set, the assay achieved an AUC of 81.3% for distinguishing between cancer and benign nodules, with a sensitivity of 57.5% and a specificity of 81.6%. The validation also indicated that the algorithm accurately detected patients in stage I and those with precancerous status in 56.6% and 57.1% of the instances, respectively.

Conclusions: This large validation study indicates that the epigenetic nucleosome assay has predictive, diagnostic, and prognostic value and could reduce the false-positive rate of LDCT.

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

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

OA07

將未接受治療的第四期非小細胞肺癌患者惡性胸膜積液，利用 cfDNA 分析方式來尋找致癌突變基因的臨床應用價值：一個多中心前瞻性研究

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Clinical Utility of Malignant Pleural Effusion cfDNA Profiling for Oncogenic Driver Mutations in Treatment-Naive Stage IV NSCLC Patients: A Multi-center Prospective Study

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Background: Comprehensive NGS testing of non small cell lung cancer (NSCLC) specimens is crucial for identifying oncogenic driver mutations and corresponding targeted therapies. Plasma cell-free DNA (cfDNA) genotyping is easy to obtain, however false negativity is an issue not ignored. Here we want to explore malignant pleural effusion (PE), a rich source of cfDNA, can be a non-inferior alternative to tumor tissue for genotyping.

Methods: We conducted a prospective trial involving one medical center and three teaching hospitals in Taiwan. The study recruited 40 patients with newly diagnosed stage IV lung adenocarcinoma who presented with pleural effusion between January 2022 and August 2023. A total of 40 mL of pleural effusion was collected from patients in Cell-Free DNA BCT (Streck) tubes. The AlphaLiquid®100 is a Comprehensive Genomic Profiling test that detects variants across 118 cancer-related genes. Tissue tests matching hotspot variants, including EGFR (Cobas V2), ALK (IHC D5F3), and ROS1 (IHC D4D6 or SP384), were compared with the AlphaLiquid®100 of PE-cfDNA.

Results: All thirty-nine PE cfDNA samples were successfully sequenced. Among them, thirty-two (82.1%) had PE cell block tumor content of less than 10%. Standard tissue or cell block testing for EGFR (Cobas), ALK (IHC), and ROS1 (IHC) identified twenty mutations (57.1%), while PE cfDNA identified twenty-eight mutations (71.8%). All eighteen Cobas EGFR mutations were confirmed by PE cfDNA (sensitivity, 100%), and all thirteen PE cfDNA samples that tested negative for EGFR were also negative in Cobas EGFR (negative predictive value, 100%). An additional eight EGFR mutations were observed in PE cfDNA but not in Cobas EGFR due to coverage or insufficient tumor content issues. Overall, patients identified with EGFR sensitizing mutations had a treatment response rate after 3 months EGFR-TKIs was 88.5%. PE cfDNA also identified eight other driver mutations (two METex14skip, one ERBB2 amplification, one BRAF V600E, three KRAS G12X, and one NRAS Q61L) that are not typically covered in standard clinical practice. The overall rate of oncogenic mutations identified by PE cfDNA was 92.3%.

Conclusion: Genotyping from PE supernatant cfDNA is feasible in clinical practice in addition to plasma and tumor testing to improve diagnostic yield and extend patients' potential to benefit from targeted therapies.

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

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

OA08

使用不同大小冷凍探頭於錐狀電腦斷層掃描衍生增強透視影像檢查合併支氣管內視鏡超音波對周邊肺部病灶之診斷：一項傾向性評分匹配研究

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Using Cryoprobes of Different Sizes Combined with Cone-Beam Computed Tomography-Derived Augmented Fluoroscopy and Endobronchial Ultrasound to Diagnose Peripheral Pulmonary Lesions: A Propensity-Matched Study

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Purpose: Endobronchial ultrasound (EBUS) and cone-beam computed tomography-derived augmented fluoroscopy (CBCT-AF) are utilized for the diagnosis of peripheral pulmonary lesions (PPLs). Combining them with transbronchial cryobiopsy (TBC) can provide sufficient tissue for genetic analysis. However, cryoprobes of different sizes have varying degrees of flexibility, which can affect their ability to access the target bronchus and potentially impact the accuracy. The aim of this study was to compare the diagnostic efficacy of cryoprobes of varying sizes in CBCT-AF and EBUS for the diagnosis of PPLs.

Materials and Methods: Patients who underwent endobronchial ultrasound-guided transbronchial biopsy (EBUS-TBB) and TBC combined with CBCT-AF for PPLs diagnosis between January 2021 and May 2022 were included. Propensity score matching and competing-risks regression were utilized for data analysis.

Results: A total of 284 patients underwent TBC, with 172 using a 1.7-mm cryoprobe (1.7 group) and 112 using a 1.1-mm cryoprobe (1.1 group). Finally, we included 99 paired patients following propensity score matching. The diagnostic accuracy of TBC was higher in the 1.1 group (80.8% vs 69.7%, P = 0.050), with a similar rate of complications. Subgroup analysis also revealed that the 1.1 group had better accuracy when PPLs were located in the upper lobe (85.2% vs 66.1%, P = 0.020) and when PPLs were smaller than 20 mm (78.8% vs 48.8%, P = 0.008). TBC obtained larger specimens than TBB in both groups. The sample size obtained by TBC did not differ between the 1.7 and 1.1 groups (40.8 mm2 vs 22.0 mm2, P = 0.283).

Conclusions: The combination of TBC with CBCT-AF and EBUS is effective and safe in diagnosing PPLs, and a thin cryoprobe is preferred when the PPLs located in difficult areas.

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

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

PA01

侵襲性肺部麴菌症對接受不同治療的肺癌患者存活時間的影響：一項具有傾向評分匹配的回溯性群體研究

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Navigating the impact of invasive pulmonary aspergillosis on survival of lung cancer with different treatments: a retrospective cohort study with propensity score matching

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Purpose: Alveolar macrophages (AMs) are believed to play a significant role in driving the pulmonary cytokine storm during severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. However, the regulatory factors affecting the entrance protein of SARS-CoV-2, Angiotensin-converting enzyme-2 (ACE-2), in AMs remain unknown.

Materials and Methods: We enrolled patients with advanced-stage lung cancer between 2013 and 2021 at a college hospital in Taiwan and used the 2021 European Organization for Research and Treatment of Cancer/Mycoses Study Group Education and Research Consortium consensus for IPA diagnosis. Multivariable logistic regression was used to identify the IPA risk factors. We compared overall survival (OS) and postgalactomannan (GM) test survival between the IPA and control groups using multivariable Cox proportional hazards regression and the Kaplan–Meier method with propensity score matching (PSM).

Results: Among 2543 patients with advanced-stage lung cancer, 290 underwent a GM test, of which 34 (11.7%) were diagnosed with IPA. Patients undergoing chemotherapy (HR = 4.02, p = 0.027) and immunotherapy [hazard ratio (HR) = 3.41, p = 0.076] tended to have IPA. Compared to the control group, the IPA group had shorter median OS (14.4 versus 9.9 months, p = 0.030) and post-GM test survival (4.5 versus 1.9 months, p = 0.003). IPA was associated with shorter OS (log-rank p = 0.014 and 0.018 before and after PSM, respectively) and shorter 1-year and 2-year survival post-GM test (HR = 1.65 and 1.66, respectively). Patients receiving chemotherapy or immunotherapy had a shorter post-GM test survival if they had IPA.

Conclusions: IPA tended to be diagnosed more frequently in patients receiving chemotherapy or immune checkpoint inhibitors. Patients diagnosed with IPA are associated with shorter survival. Larger cohort studies are needed to verify the observations.

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

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

PA02

肺癌合併腦轉移病人接受減壓性顱內病灶手術切除的臨床預後：單一中心回顧性研究

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The clinical outcomes of patient diagnosed with lung cancer by surgical resection of brain metastasis: a single center retrospective study

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Background: The prognosis for lung cancer with brain metastases is notably poor. The concept of surgical decompression of brain lesions for symptomatic brain metastases has been well established currently. However, the factors influencing the outcomes of these patients remains unknown, especially in patients with druggable mutation or post-operative brain radiotherapy. This article aims to investigate the impact of different clinical features on post-operative outcomes in lung cancer patients with brain metastases.

Methods: We retrospectively analyzed all patients with synchronous presentation of brain metastasis who received decompression surgery, and pathologically revealed lung primary tumor from July 2012 to May 2023 at Taichung Veterans General Hospital. We also obtained data on driver mutations for each patient and analyzed the numbers of brain metastases, whether sequential radiotherapy was administered, and the type of radiotherapy (focal or whole brain radiation) received. The primary outcome of present study is Overall Survival (OS).

Results: A total of 64 patients were recruited and analyzed. Our cohort comprised 35 (54.7%) males and 29 (45.3%) females. There are 36 (56.2%) patients having an Eastern Cooperative Oncology Group Performance Status (ECOG PS) of 1 or lower, and 53 (82.8%) patients was diagnosed with adenocarcinoma. Thirty-eight (59.4%) patients harbored druggable mutations, and the clinical stage was stage IVB among 38 (59.4%) patients. Forty-nine (76.6%) patients had metastatic brain lesions ≦3, and 35 (54.7%) patients received post-operative radiotherapy. The median OS in present cohort was 19.6 months (95% confidence interval (CI) 13.7 to 25.5). Patients with druggable mutation experienced longer OS than patients without druggable mutation (46.0 versus 14.5 months, log-rank test p=0.004). Among patients with druggable mutations, there no difference of patient's characteristics between patients with or without post-operative radiotherapy. Patients receiving post-operative radiotherapy did not have significantly better clinical efficacy than patients without radiotherapy (11.4 versus not reached months, log-rank test p=0.265).

Conclusion: This study demonstrated that patients who had druggable mutations and received corresponding targeted drug therapy experienced prolonged overall survival. Additionally, the post-operative administration of brain radiation did not result in a significant improvement in survival. We still need clinical trials to confirm our findings.

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

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

PA03

早期非小細胞肺癌非 R0 切除術後之病患特性及預後

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Characteristics and outcome of early-stage NSCLC patients with non-R0 resection after operation

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Purpose: Non-small cell lung cancer (NSCLC) patients who undergo incomplete surgical resections (R1-R2) tend to experience a notably worse prognosis compared to those who achieve a complete resection. We aim to identify the risk factors for disease progression and death of these patients.

Materials and Methods: From August 2011 and December 2020, early-stage NSCLC patients who underwent surgical treatment but had non-R0 resections were included. We analyzed their characteristics, disease progression and survival status, and outcome predictors.

Results: Out of 2,162 surgically resected NSCLC patients, 65 had non-R0 resection (3.0%). The median age was 64 years (range: 35-87). Of them, 63.1% were male, while 41.5% were never-smokers. Adenocarcinoma was the most common histological type (60.0%) and the pathological staging included 24.6% in stage 0-I, 23.1% in stage II, and 52.3% in stage IIIAB, respectively. In the case of operation types, 76.9% underwent lobectomy, while 20.0% with wedge resection and 3.1% with pneumonectomy, respectively. The median follow-up time was 36.2 months (95% CI 14.3-58.0). In multivariate analyses, tumor stage (stage II-IIIB vs. 0-I) (aOR 4.95 [95% CI 1.12-22.22], P = 0.035) and driver mutation status (yes vs. no or unknown) (aOR 24.08 [95% CI 2.77-209.01], P=0.004) both independently predicted a higher risk of disease progression. Notably, patients with driver mutation were associated with a significantly shorter progression-free survival (11.4 vs. 20.9 months, aHR 3.28 [95% CI 1.55-6.94], P=0.002) but there was no significant difference in overall survival between patients with or without/unknown driver mutation (log-rank P = 0.689). After disease progression, driver-targeted therapy was associated with a favorable post-progression survival (40.5 vs. 11.5 months, aHR 0.38 [95% CI 0.16-0.91], P=0.030) and overall survival (58.8 vs. 23.6 months, log-rank P = 0.020).

Conclusions: Although the presence of driver mutation was associated with a higher risk of disease progression and a shorter PFS, patients with disease progression can benefit from driver-targeted therapy, which led to a similar OS with that of driver negative or unknown 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)

PA04

肺復原改善肺癌患者的運動能力、健康相關的生活品質和心肺功能

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Pulmonary Rehabilitation Improves Exercise Capacity, Health-Related Quality of Life, and Cardiopulmonary Function in Patients with Lung Cancer

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Purpose: Lung cancer is a devastating disease that poses a significant global health burden. It is a challenging disease that adversely affects exercise capacity and health-related quality of life (HRQL). Pulmonary rehabilitation (PR) has shown benefits in improving exercise capacity and HRQL. However, its effect on cardiopulmonary function requires further investigation. The aim of this study was to explore the effects of PR on exercise capacity, HRQL, and cardiopulmonary function in patients with lung cancer.
Materials and Methods: Patients with lung cancer were recruited for PR (a 12-week program including education and exercise training). All patients underwent a comprehensive assessment, including spirometry, cardiopulmonary exercise testing, respiratory muscle strength testing, and HRQL assessment using the Chronic Obstructive Pulmonary Disease Assessment Test (CAT).
Results: Fifty-six patients underwent PR. Following PR, a significant improvement was observed in exercise capacity (peak oxygen uptake: from 1,069.6 ± 245.2 to 1,141.1 ± 278.7 mL/min, p = 0.005; work rate: from 78.8 ± 28.3 to 84.5 ± 25.9 W, p = 0.011). Exertional symptoms were reduced (leg soreness: from 4.1 ± 1.6 to 3.6 ± 1.4, p = 0.029; dyspnea at peak exercise: from 4.6 ± 2.1 to 3.7 ± 1.7, p = 0.001; CAT score: from 11.4 ± 5.6 to 9.5 ± 4.4, p = 0.004). Cardiopulmonary function also showed improvement (maximal inspiratory pressure: from 69.5 ± 24.3 to 75.1 ± 24.2 cmH2O, p = 0.019; tidal volume: from 1,129.8 ± 277.2 to 1,211.3 ± 357.4 mL, p = 0.026; ventilatory equivalent: from 36.5 ± 5.1 to 35.1 ± 4.6, p = 0.048; stroke volume index: from 52.1 ± 17.1 to 57.4 ± 15.4 mL/beat, p = 0.034; cardiac index: from 6.6 ± 2.6 to 7.4 ± 2.3 L/min/m2, p = 0.025)
Conclusions: PR improved cardiopulmonary function, exertional symptoms, exercise capacity, and HRQL in patients with lung cancer.

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

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

PA05

於加護病房新診斷肺癌病人的臨床表徵與預後

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Characteristics and outcome of patients with lung cancer initially diagnosed in intensive care unit

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Purpose: Previous studies suggested that the outcome of lung cancer patients admitted to ICU is extremely poor. This study aims to explore the characteristic and outcome of lung cancer patients, who had admitted to ICU at diagnosis.

Materials and Methods: Lung cancer patients, who were initially diagnosed in the ICU of Taichung Veterans General Hospital, were included. We analyzed their baseline characteristics, survival status, and outcome predictors.

Results: A total of 57 patients were included with median age of 57 years. Of them, 31.6% were females, while 47.4% were never-smokers. Median APACHE-II score was 23 (range 6-40) and 82.5% of them were endotracheal intubated. The most common reasons of ICU admission were central nervous system metastases (36.8%), lung infection (26.3%), and tumor with main airway compression (15.8%). The hospital-discharge mortality rate was 29.8%. With regards to cancer characteristics, adenocarcinoma was the most common histology (68.4%), 84.2% had stage IV disease, 40.4% had brain metastasis, and 40.4% harbored driver mutation, including 21 EGFR mutation, 1 ALK fusion, and 1 MET exon 14 skipping mutation. Multivariate analyses suggested tumor as the main reason for ICU admission (aOR 4.90 [95% CI 1.22-19.6], P = 0.025) and driver-targeted treatment (aOR 2.80 [95% CI 1.01-7.69], P = 0.046) were independently associated with mechanical ventilator-free survival at hospital discharge. In the case of overall survival, driver-targeted treatment (aHR 0.17 [95% CI 0.05-0.51], P = 0.002), tumor as the main reason for ICU admission (aHR 0.63 [95% CI 0.40-0.99], P 0.046), and APACHE II score ≤ 25 (aHR 0.62 [95% CI 0.40-0.96], P = 0.031) independently predicted a favorable outcome.

Conclusions: Patients with lung cancer initially diagnosed in ICU experienced a disappointed outcome. Aggressive biopsy to make the diagnosis and identify actionable drivers is suggested because driver-targeted treatment was associated with a favorable outcome.

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

PA06

使用支氣管鏡熱蒸汽消融術治療有症狀之嚴重上肺葉異質性肺氣腫的肺阻塞患者–成大醫院的個案報告

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Segmental volume reduction through bronchoscopic thermal vapor ablation in symptomatic COPD patients with severe upper lung heterogeneous emphysema at NCKUH - A cases report

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Purpose: Bronchoscopic lung volume reduction techniques improve lung function and dyspnea symptoms in COPD patients with upper lung-dominant heterogeneous emphysema. Bronchoscopic thermal vapor ablation (BTVA) is one of the treatments with an acceptable safety profile for these patients. However, this technique is rarely performed in Taiwan, and there is a lack of experience.
Materials and Methods: We performed BTVA for four symptomatic COPD patients with upper lung-predominant heterogeneous emphysema, despite having received adequate bronchodilator treatment between 2022 and 2023.
Results: These patients were aged between 45 and 69 years, had baseline FEV1 values ranging from 28% to 75%, and exhibited substantial hyperinflation. The baseline COPD Assessment Test (CAT) scores ranged from 10 to 22. Three patients received BTVA once on a unilateral lung, and one patient underwent staged BTVA on both lungs. Post-BTVA pneumonitis was observed in one patient, and there was improvement after steroid and antibiotic treatment. Three of four patient experienced a reduction in emphysema as observed on chest CT scans, improvements in FEV1, reduced residual volume, lower COPD Assessment Test (CAT) scores, and stable exercise capacity. One patient was lost to follow-up for unknown reasons.
Conclusions: BTVA is effective and safe for symptomatic COPD patients with upper lung-dominant heterogeneous emphysema and poor lung function.

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

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

PA07

利用多基因風險評分提升台灣非小細胞肺癌篩檢精準度

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Using polygenic risk score to improve risk prediction of non-small cell lung cancer in Taiwan

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Purpose: Using low-dose computed tomography (LDCT) for lung cancer screening reduces lung cancer mortality. Presently, Taiwan's screening criteria primarily center around smoking habits and a family history of lung cancer. The influence of genetic variation in non-small cell lung cancer (NSCLC) development is noteworthy. This study aims to evaluate the predictive performance of polygenic risk scores (PRS) in NSCLC prediction, exploring their potential to enhance screening selection.

Materials and Methods: We conducted a retrospective cohort study including participants aged between 6 and 88 years who did not receive any lung cancer diagnosis before 2001, and later received LDCT for lung cancer screening during the period from 01 Nov 2008 to 31 Aug 2021. These participants were followed up until 31 Jan 2022. The genetic data for these participants were gathered from the Taiwan Precision Medicine Initiative (TPMI) project. We chose GWAS-derived PRS calculation model by using 19 susceptibility loci associated with NSCLC risk which were previously reported by Dai et al. for further analyses. NSCLC diagnosis was obtained from the electronic health records (ICD-10-CM code C34 and D02).

Results: A total of 2287 participants were analyzed (1197 male and 1090 female). More female participants developed NSCLC during the follow up period (4.4% vs. 2.5%, p=0.015). The only risk factor for NSCLC diagnosis among male participants was age. Among female participants, age (Hazard ratio [HR] 1.075; 95% CI, 1.04–1.11), a family history of lung cancer (HR 3.21, 95% CI, 1.78–5.77), and PRS forth quartile (HR 2.97, 95% CI 1.25–7.07) were independent risk factors for NSCLC diagnosis. Using receiver-operating characteristics to evaluate of these predictors demonstrated that the area under the curve (AUC) for the conventional model (age, family history, and smoking) reached 0.741. Upon incorporation of PRS, the AUC increased to 0.777.

Conclusions: PRS is an independent predictor for female NSCLC diagnosis among those who received LDCT, and addition of PRS improved the prediction model. We provided evidence that use of PRS for NSCLC prediction has clinical utility among female individuals undergoing LDCT for lung cancer screening.

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

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

PA08

小細胞肺癌併腦部轉移之治療概況與存活分析

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Treatment and Survival of Patients with Small Cell Lung Cancer and Brain Metastasis

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Purpose: To elucidate treatment patterns and their outcomes in patients with small cell lung cancer (SCLC) and brain metastasis (BM).

Methods: In this retrospective study, patients with SCLC and BM were stratified by treatment modality into three groups: those treated with systemic therapy only, those treated with stereotactic radiosurgery (SRS) and systemic therapy, and those treated with whole-brain radiotherapy (WBRT) and systemic therapy. The primary outcomes were overall survival (OS) and time to central nervous system progression (TTCP).

Results: The analysis included 149 patients. After BM diagnosis, 48 patients (32.2%) received systemic therapy alone, 33 received SRS with systemic therapy, and 68 received WBRT with systemic therapy. The median OS and TTCP were 7.2 months and 8.7 months, respectively. Patients receiving WBRT with systemic therapy exhibited better intracranial control, but not better OS, than did the other patients. Key prognostic factors affecting OS were age, BM lesion count, chemotherapy, and immunotherapy. Notably, the Eastern Cooperative Oncology Group performance status and BM lesion count significantly influenced intracranial control in patients treated with SRS and systemic therapy.

Conclusion: Although WBRT combined with systemic therapy offer better intracranial control in patients with SCLC and BM, this approach is not superior to the other approaches in terms of OS benefits. Emerging systemic therapies, such as immunotherapy, may be used as alternative or adjunctive treatments for specific patient populations. Further studies are warranted to refine treatment selection.

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

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

PA09

表皮生長因子受體突變陽性晚期肺腺癌一線酪氨酸激酶抑制劑治療的預後列線圖

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Prognostic nomogram for first-line tyrosine kinase inhibitors treatment in patients with EGFR mutation-positive advanced lung adenocarcinoma

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Purpose: We aimed to create a simple prognostic model for EGFR mutation-positive advanced lung adenocarcinoma patients by analyzing their clinical features using a nomogram.

Materials and Methods: We enrolled patients with EGFR mutation-positive advanced lung adenocarcinoma from 1 January 2015 to 31 December 2019 and analyzed the efficacy of first-line EGFR-TKI treatment retrospectively. The patients received first-line TKI (gefitinib, erlotinib, or afatinib) until the occurrence of disease progression, death, or intolerable adverse events. The primary outcome was overall survival (OS) and time-on-treatment (ToT). Clinical and demographic characteristics were reviewed, including age, gender, smoking status, EGFR mutation subtype, tumor size, nodal status, BMI, Eastern Cooperative Oncology Group (ECOG) performance status, metastatic site and number, and comorbidities. The nomogram was built based on independent predictors identified by multivariate Cox regression analyses. The discrimination and calibration of the nomogram were evaluated by calibration plots.

Results: A total of 310 lung cancer patients were enrolled and received TKI treatment. Of these, 130 patients (41.9%) were on afatinib, 137 (44.2%) were on erlotinib, and 43 (13.3%) were on gefitinib. Patients who received afatinib treatment were younger (p =0.004) and were more likely to be males (p =0.005). Patients on erlotinib experienced a lower BMI (p 0.006) and a higher incidence of brain metastasis at baseline (p <0.001). Multivariate analyses were performed to identify potential prognostic factors to create a nomogram for risk stratification, and confirmed the pretreatment independent factors, including BMI, nodal staging, EGFR-TKIs (gefitinib, erlotinib, or afatinib), and liver metastasis.

Conclusions: This risk assessment offers additional information to clinicians and patients when selecting the best therapeutic options for EGFR mutation-positive 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)

PA10

Cobas® EGFR mutation Test v2 和 Sanger sequencing 在非小細胞肺癌病人偵測表皮生長因子接收器 Exon 20 Insertions 結果的關聯性

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The correlation of the detection results between Cobas® EGFR mutation Test v2 and Sanger sequencing in non-small cell lung cancer with EGFR Exon20 Insertions

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Purpose: The aim of this study was to confirm the results of Epidermal Growth Factor Receptor (EGFR) exon 20 insertions from the Cobas® EGFR mutation Test v2 in non-small cell lung cancer patients by Sanger sequencing.

Materials and Methods: From January 2022 to February 2023, 386 samples were sent for EGFR Mutations Test by the Cobas® EGFR mutation Test v2 in Taichung Veterans General Hospital. Two hundred and thirty- seven specimens were detected with EGFR hotspot mutations. Among them, 29 specimens harbored exon 20 insertions, accounted for 12.24% of the positive EGFR mutations test. Then, we re-checked the specimens for Sanger sequencing to confirm the accuracy of Cobas® EGFR mutation Test v2 in exon 20 insertions detections.

Results: A total of 29 specimens detected EGFR exon 20 insertions by Cobas® EGFR mutation Test v2, consisting of 17 exon 20 insertions alone and 12 complex mutations (6 combined L858R, 5 combined exon 19 deletions, 1 combined G719X) were enrolled for analysis. Among the 29 patients ranging from 32-86 years old, 68.9% of those were older than 65 years old, 31% were female, and non-smokers accounted for 51.7%. Besides, 89.7% of the analyzed patients had an original ECOG PS of 0-1, and 58.6% patients initially detected with brain metastasis. By Sanger sequencing on exon 20, there were only 7 specimens with positive results, accounting for 24.1% of all Cobas® EGFR mutation Test v2 positive result. In specimens with single exon 20 insertion by Cobas® EGFR mutation Test v2, the detection rate of exon 20 insertion was 42.1% by Sanger sequencing. Furthermore, there was no specimen harboring exon 20 insertion by Sanger sequencing in complex mutations group.

Conclusions: This study demonstrated that the results of EGFR exon 20 insertions detected by Cobas® EGFR mutation Test v2 should be confirmed by direct sequencing or next generation sequencing, especially in patients harboring complex 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)

PA11

偽裝成肺結核的轉移性肉瘤

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Metastatic Sarcoma Mimicking Pulmonary Tuberculous

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Abstract:

A 72-year-old male with the history of hypertension presented with a month-long history of chronic cough, low back pain, and soreness over the anterior right chest wall. Initial diagnosis of lumbosacral radiculopathy was made, and painkillers were prescribed, but in vain. Chest imaging revealed massive right-sided pleural effusion, and thoracocentesis was performed. The effusion was found to be exudative, with a notably high lymphocyte ratio of 80%. Subsequent chest CT revealed multiple lung nodules and enlarged bilateral hilar and mediastinal lymph nodes. Lung biopsy obtained by Video-Assisted Thoracic Surgery(VATS) revealed chronic granulomatous inflammation with fibrosis. Hence, pulmonary tuberculosis(TB) was highly suspected despite acid-fast stains and TB Polymerase Chain Reaction test revealed negative. Anti-TB treatment was initiated given based on pathological report and the prevalence of TB in Taiwan (30 cases per 100,000 population)1. However, the patient's symptoms worsened, and a hard lesion was found in the right thigh. Sono-guided biopsy of the thigh lesion was performed. Diffuse spindle cell proliferation with pleomorphic nuclei and atypical mitoses was noted, hence, sarcoma was impressed. After multidisciplinary discussion, we arranged pleural biopsy, and multiple aggressive, ill-defined tumors infiltrating adjacent tissues were observed under thoracoscopic view. Histopathological analysis revealed diffuse epithelioid cells arranged in cords, nests, and trabeculae. Fluorescent staining showed strong MUC4 expression, while CK was not expressed, consistent with the thigh specimen. According to above findings, the final diagnosis was sclerosing epithelioid sarcoma with pulmonary metastasis, and was started chemotherapy with Adriamycin and Ifosfamide. In conclusion, while tuberculosis is common in our region, this case highlights the importance of considering other differential diagnoses for pulmonary TB to avoid misdiagnosis and ensure appropriate 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)

PA12

肺囊腫或氣泡病變診斷為肺癌，兩病例報告及文獻探討

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Lung cancer manifested as single cyst or bulla-report of two cases and review of literature.

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Purpose: Lung cancer, generally presenting on imaging as mass or nodule, is rarely manifested as cystic or bullous lesion (ranged from 1-4% of all lung cancer in the literature). Herein two patients with single lung cyst and bulla being proven pathologically with lung adenocarcinoma after resection were reported.

Materials and Methods:

Case 1: A 56 years-old man was accidentally found a lung cyst by CT scan for health examination. Neither family history of lung cancer nor smoking history was noted before. He is asymptomatic without prominent body weight loss or loss of appetite.

Case 2: A 60 years-old man with progressively dyspnea for one month, chest X-ray and CT scan revealed Rt pneumothorax with apical bulla formation. No prominent body weight loss or loss of appetite was noted.

Results: They underwent lung cyst and bulla resection through video-assisted thoracoscopic surgery (VATS) respectively, and adenocarcinomas of lung were diagnosed. No tumor marker elevation (CEA and SCC) or distant metastasis was noted. They received follow up at our clinic for 6 and 18 months smoothly.

Conclusions: Lung cancer manifested as cystic or bullous lesion is usually at earlier stage, but can be delayed in detection due to misdiagnosis. We should note the possibility of cancer in patients with lung cystic or bullous lesion.

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

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

PA13

第二代表皮生長因子抑制劑與 Osimertinib 在晚期表皮生長因子突變的非小細胞肺癌病人治療的比較:一項真實世界之觀察性研究

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Second generation epidermal growth factor receptor tyrosine kinase inhibitors versus Osimertinib in advanced EGFR mutated non-small cell lung cancer patients: A real-world observational study.

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Background: While osimertinib, a third-generation, irreversible, oral epidermal growth factor receptor (EGFR)-tyrosine kinase inhibitor (TKI), is currently considered the first-line preferred treatment for EGFR mutation non-small cell lung cancer (NSCLC), there has been limited research comparing its clinical efficacy with second-generation EGFR-TKIs (2nd G EGFR-TKIs).

Materials and Methods: This study recruited patients diagnosed with stage IIIb-IV EGFR-mutant NSCLC who received first-line treatment with either 2nd G EGFR-TKIs or osimertinib. The enrolled patients were divided into two groups based on whether they received afatinib and dacomitinib or osimertinib.

Results: In our study, a total of 168 patients were enrolled in the final analysis (with 113 receiving 2nd G EGFR-TKIs, afatinib and dacomitinib, 55 receiving Osimertinib). The partial response rates (PR) for EGFR-TKI treatment with 2nd G EGFR-TKIs and osimertinib were 77.9% and 54.5%, respectively (p = 0.004).The progression free survival (PFS) was no significant difference in 2nd G EGFR-TKIs and Osimertinib (del 19 :17.6 months and L858R: 20.0 months vs 28.3 months, p = 0.081). In patients with the EGFR exon 19 deletion mutation, initial Osimertinib treatment resulted in longer median PFS (28.3 months vs. 17.6 months, p = 0.118) and time to treatment failure (TTF) (30.2 months vs. 22.7 months, p = 0.722) compared to those who received 2nd G EGFR-TKIs treatment, without statistical significance. The median central nervous system (CNS) PFS was 14.3 months in the osimertinib group and 17.6 months in the 2nd G EGFR-TKIs, without statistical significance. We conducted multivariate regression analysis, which revealed that the stage of NSCLC acted as an only independent negative predictor of PFS. In terms of second-line treatment, there is a significant difference between the two groups. (p = 0.008)

Conclusions: This study demonstrates that while Osimertinib shows promise in the treatment of advanced EGFR-mutated NSCLC, its efficacy does not significantly differ from 2nd G EGFR-TKIs. Additionally, the stage of NSCLC was only identified as a negative predictor of PFS, emphasizing that the first-line choice of osimertinib or 2nd G EGFR-TKIs will not impact PFS.

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

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

PA14

電腦斷層導引針吸穿刺切片偽陰性診斷分析

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CT guided FNAB in lung malignancy false negative result analysis

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Purpose: CT guided lung FNAB has a high diagnostic yield for malignancy, the yield of benign lesions is widely variable false-negative rates .The major limitations of FNAB is that malignancies cannot be excluded with benign diagnosis, even with negative cytology. A core biopsy revealing non-specific benign tissue or insufficient tissue for diagnosis is unreliable in excluding malignancy, and all such biopsies need to be viewed with suspicion, regardless of lesion size or number of needle passes used.

Materials and Methods: case presentation

This 49 years old man without past history. This time, he was found abnormal CXR at health examination. He denied decreased of appetite, cough or sputum production, chest pain, loss body weight, abdomen discomfort or fever. Then he came to our OPD for help. CXR showed Lt lung opacity, we checked AFS x3 showed negative. HRCT was arranged and revealed Suspected LLL lung cancer or mediastinal tumor, with lung-to-lung metastases. Please correlate contrast-enhanced CT for further evaluation. Physical examination showed negative. Under the impression of Suspected LLL lung cancer or mediastinal tumor, the patient admitted for further evaluation and management. Ethnic origin: Vietnam. Arrange CT-guided biopsy and CXR for LUL lesion. But 3 weeks later his painful swelling Lt neck lymphadenopathy made him admission again for further investigation

Result: 1 LUL CT guided biopsy: chronic inflammation and fibrosis

2 Echo-guide biopsy could not rule out carcinoma of the lymph node. So we consulted General surgeon. to do operation. General surgery Dr. took biopsy from left neck and submitted for censorship by operation. The report howed Lymph node, left neck, excisional biopsy -- Metastatic adenocarcinoma, compatible with pulmonary origin.

Conclusion: Despite the common use of CT guided lung FNAB, appreciable numbers of false-negative results still existed. The radiologic and procedure-related factors were related such as large lesion size, subsolid lesion were factors for malignancy in pulmonary lesions with nonspecific benign cytology results on FNAB. Patients with incompatible result of biopsy should have resampling of tissue with biopsy even surgical resection or close follow-up. In nondefinite diagnosis: the larger the lesion, the higher the risk of malignancy. Some literatures mentioned that the larger the lesion size, the higher the incidence of false negatives results of CT-guided lung nodule biopsy. Relatively large needle of 16 G or 18 G was used to improve accuracy of the diagnosis.

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

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

PA15

一線免疫檢查點抑制劑合併化學治療於廣泛期小細胞肺癌：療效、毒性及預後因子

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First-Line Immune Checkpoint Inhibitors plus chemotherapy in Extensive Stage Small Cell Lung Cancer: Efficacy, Toxicity, and Prognostic Factors

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Purpose: Immune checkpoint inhibitors (ICIs) have emerged as promising therapeutic agents in the treatment of small cell lung cancer (SCLC). This study aimed to evaluate the efficacy, adverse events and factors influencing the response and survival to first line (1L) ICIs in patients with extensive stage SCLC (ES-SCLC).

Materials and Methods: This retrospective study reviewed 523 patients diagnosed with SCLC in our institute from 2011 to 2022. Of these, 231 patients with ES-SCLC received 1L treatment containing platinum and etoposide (EP), among whom 33 patients received 1L ICI + EP. Efficacy was assessed in terms of objective response rate (ORR), disease control rate (DCR), progression-free survival (PFS), and overall survival (OS). Additionally, clinical characteristics, laboratory data at the initiation of treatment and adverse events (AEs) were analyzed to identify factors associated with treatment outcomes.

Results: Among ES-SCLC patients who received 1L ICI+EP, the median age was 63 years old, with a majority of male ever-smokers with stage IVB disease. Twenty-three patients received Atezolizumab, and 7 patients received Durvalumab. The ORR among the patients was 54.5%, and the DCR was 93.9%. The median PFS was 4.9 months, and the median OS was 13.9 months. Treatment related AEs present in 87.9% of all patients, with 51.5% having grade≧3 AEs. Male sex, concurrent thoracic radiotherapy and hematological AEs grade≧3 affected 1L PFS, while liver metastasis and history of thoracic radiotherapy affected OS. Patients who receive 1L ICI+EP had significantly longer OS than those with 1L EP.

Conclusions: We presented the real-world treatment patterns, responses, and factors associated with survival among ES-SCLC patients who received 1L ICI+EP treatment. 1L ICI demonstrated survival benefit in combination with EP compared with EP alone. Thoracic radiotherapy had positive impact on PFS and OS in addition to systemic treatment. Severe hematological adverse events were critical in determining treatment outcomes. Further research and larger studies are warranted to validate these findings and optimize 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)

PA16

應用圓徑探頭氣管內視鏡超音波（EBUS）於呼吸衰竭病人在加護病房之效用和安全性：一家醫學中心的經驗

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The utility and safety of radial probe endobronchial ultrasonography (EBUS) in patient with respiratory failure in the intensive care unit (ICU): A medical center experience

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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 analyzed patients who underwent radial probe EBUS in the ICU of a tertiary university hospital from January 2021 to December 2022, retrospectively.

Results: Radial probe EBUS was performed on 57 patients in our study. All of patients were critically ill with an average APACHE II score of 21.6 and mechanically ventilated , and one of them received non-invasive ventilation. The primary indications for radial probe EBUS in these patients included unexplained pneumonia with an unidentified pathogen (75.4%, n=43/57) and the presence of nodules or masses on imaging, including chest X-rays and chest computed tomography scans (19.2%, n=11/57). The definitive diagnosis rate using radial probe EBUS was 71.9% (n=41/57), with 95.1% (n=39/41) of these diagnoses indicating an infection. Most infections were attributed to bacterial pathogens (53.8%, n=21/39), while others were caused by viruses (n=5), fungi (n=6), and multiple pathogens (n=18). Based on the culture results obtained from bronchoalveolar lavage, we altered anti-infective agents for 71.7% (28/39) of the infected patients. The most frequent complication observed was minimal bleeding without other intervention(22.8%, n=13/57) during bronchoscopy. Notably, there were no instances of hypoxia or pneumothorax development following the procedure.

Conclusions: In conclusion, this study has highlighted the safety and practicality of employing bronchoscopy with radial probe EBUS for diagnosing peripheral lung parenchymal diseases in critically ill ICU patients. This safe diagnostic tool enables the attainment of precise and specific diagnoses, which lead to 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)

PA17

人工智慧胸部 X 光片判讀可提高疑似肺癌個案之肺結節早期偵測率

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AI-assisted reports increase the early detection of lung nodules on chest radiography for individuals suspected of lung cancer

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Purpose: To reduce the mortality rate of lung cancer, the early detection of lung nodules can become a crucial issue. Among individuals undergoing health examinations, artificial intelligence (AI)-driven software has increased the identification of lung nodules on chest radiographs (CXRs), with a sensitivity of 56.4%. However, the potential of AI to enhance the early detection of lung nodules remains uncertain in subjects with risk factors of lung cancer.

Materials and Methods: This retrospective study compiled cases with lung nodules, detected by chest computed tomography (CT) scans, and underwent surgical resections of suspicious lung cancer. CXR within one month before or after CT scans was analyzed by Lunit Insight CXR (version 3.1.3.5). The primary outcomes included the detection rate of lung lesion by AI-CXR, assessed by the sensitivity-and positive predictive value (PPV). The size of the nodule and the patterns of the nodule on CT were also analyzed.

Results: A total of 206 patients with lung nodules were included, with 52 individuals with pure ground-glass nodule (GGN), 94 with part-solid nodules, and 60 with solid nodules. Among them, 176 patients (85.4%) were confirmed malignancy pathologically. The sensitivity for all cases was 34.5% (71/206) and the positive predictive value (PPV) was 83.5% (71/85). According to the image patterns on CT scans, the sensitivity is higher in solid nodules (60%, 36/60) than in part solid nodules (36.2%, 34/94) or GGN (1.9%, 1/52) and PPV were 92.3% (36/39), 77.3% (34/44), 50% (1/2), respectively. For nodules with a solid part size less than 5mm, the sensitivity was only 4.7%. Nevertheless, the sensitivity reached 55.8% when the solid part ≥5mm. As the solid part size was 8mm or larger, the sensitivity consistently remained above 65%.

Conclusions: The AI-assisted CXRs enhance the detection of lung nodules, especially for nodules with a solid part size ≥5mm.

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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)

PA18

表皮生長因子受體突變之非小細胞肺癌發生小細胞肺癌轉化之治療與存活分析-回溯性研究

孫瑞璘[1], 廖映庭[1], 葉奕成[2], 黃煦晴[1], 沈佳儀[1], 曾彥寒[1], 羅永鴻[1], 陳育民[1], 江起陸[1]

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A Retrospective Study on Treatment and Survival of Small Cell Lung Cancer Transformed from *EGFR*-Mutant NSCLC

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Purpose: Small cell carcinoma transformation represents a rare resistant mechanism after the use of epidermal growth receptor-tyrosine kinase inhibitor (EGFR-TKI) in patients with *EGFR*-mutant NSCLC. This study was aimed to investigate the treatment patterns and survival outcomes of patients with small cell lung cancer transformation from *EGFR*-mutant NSCLC (tSCLC).

Materials and Methods: This retrospective study analyzed cases at our institute from 2014 to 2022. We incorporated patients with confirmed tSCLC upon rebiopsy. The objectives included analyzing survival data and describing the epidemiological, clinical, and treatment patterns of tSCLC.

Results: Of the 1770 patients with advanced stage *EGFR*-mutant NSCLC, 35(2%) had SCLC transformation confirmed upon rebiopsy. The initial EGFR mutation was primarily exon 19 deletion (51.4%), followed by L858R (42.9%). Two (10%) of the 20 patients with EGFR mutation analysis of tSCLC specimen had resistance T790M. The median time from TKI treatment to SCLC transformation was 22.6 months. Thirty-three patients underwent systemic treatments, with etoposide plus platinum (EP, 50%) being the most common regimen, followed by treatments containing TKIs (18.8%). The overall response rate and disease control rate for the first systemic treatment were 12.5% and 50%, respectively. Post-transformation, the median progression-free survival (PFS) following first-line treatment was 4 months (95% CI: 2.10-5.9), and the median overall survival (OS) from tSCLC diagnosis was 9.47 months (95% CI: 4.67-14.25).

Conclusions: Our findings indicate a low response rate to systemic treatment in patients with tSCLC, underscoring an urgent need for new therapeutic agents 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)

PA19

帶有 EGFR 突變的末期肺癌病人接受標靶藥物合併原發腫瘤局部治療的效果

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Primary Tumor Consolidative Therapy Improves the Outcomes of Patients with Advanced *EGFR*-Mutant Lung Adenocarcinoma Treated with First-Line Osimertinib

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Background: Patients with advanced epidermal growth factor receptor (EGFR)-mutant lung adenocarcinoma (LAD) inevitably experience drug resistance following treatment with EGFR-tyrosine kinase inhibitors (TKIs). We aimed to analyze the effect of primary tumor consolidative therapy (PTCT) on patients treated with first-line osimertinib.

Design and Methods: This retrospective cohort study was conducted in patients with advanced stage III or stage IV LAD with EGFR-sensitizing mutations (exon 19 deletion or L858R mutation) with disease control after first-line osimertinib. A curative dose of primary tumor radiotherapy or primary tumor resection was classified as PTCT. We compared the progression-free survival (PFS) and overall survival (OS) of patients with and without PTCT.

Results: This study included 107 patients with a median age of 61.0 years, and of those, 41% were male and 73.8% were never-smokers. Exon 19 deletion were observed in 68.2%, 29.9% had a programmed cell death ligand 1 (PD-L1) tumor proportion score＜1%, 33.6% had brain metastasis, 41.1% had oligometastasis. Fifty-four (50.5%) patients underwent PTCT. Patients who underwent PTCT demonstrated significantly better PFS (30.3 [95% confidence interval [CI], 19.4–32.9] vs 18.2 [95% CI, 16.1–20.2] months; P=0.006) and OS (not reached vs 36.7 [95% CI, 32.5–40.9] months; P=0.004) than patients who did not. A multivariate analysis showed that PTCT was an independent factor associated with better PFS (hazard ratio [HR], 0.25; 95% CI, 0.12–0.53; P＜0.001) and OS (HR, 0.10; 95% CI, 0.01–0.81; P=0.031). The PFS benefits of PTCT were consistent across subgroups, and the HR tended to be lower in patients aged＜65 years, males, smokers, stage IVB disease, L858R, PD-L1 expression≥1%, nonoligometastasis, and brain metastasis.

Conclusion: Of the patients with advanced EGFR-mutant LAD, those who underwent PTCT had a significantly better survival outcome than those who did not. The survival benefits were consistent across different subgroups.

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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)

PA20

對 EGFR 標靶藥物抗藥且合併 MET 過度表現的晚期肺癌病人使用 MET 標靶藥物之療效

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MET Inhibitors for *EGFR*-TKI-Resistant Lung Adenocarcinoma with Different MET Expression – Real-World Data

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Background: Mesenchymal-epithelial transition factor (*MET*) gene amplification (*MET*amp) is an important mechanism of acquired resistance to epidermal growth factor receptor (EGFR) tyrosine kinase inhibitors (TKIs) in patients with *EGFR*-mutant non-small cell lung cancer. Combination therapy with EGFR-TKIs and MET-TKIs demonstrated promising efficacy in patients with MET-overexpressing EGFR-mutant lung adenocarcinoma (LAD). The present study aimed to analyze the real-world experience of combination therapy with EGFR-TKIs and MET-KTI.

Methods: This retrospective cohort study included *EGFR*-mutant patients with advanced stage III or stage IV LAD with disease progression after EGFR-TKIs and treated with combination therapy of EGFR-TKIs and MET-TKIs. Patients were tested with immunohistochemistry (IHC) or next-generation sequencing (NGS) to detect MET overexpression or *MET*amp. Patients were regarded as high-MET if MET overexpression or *MET*amp were detected, and vice versa. We analyzed the efficacy of the combination therapy, including treatment response, progression-free survival (PFS), and overall survival (OS).

Results: This study included 36 patients with a median age of 64 years. A total of 47.2% of patients were male, and 80.6% never smoked. According to the MET IHC and NGS results, 28 patients had high MET expression, and 8 patients had low MET expression. Patients with high MET showed a significantly higher disease-control rate (85.7% vs. 37.5%, $P = 0.013$) and median PFS (7.7, 95% confidence interval [CI] 5.0–10.4 vs. 2.6, 95% CI 1.3–3.9 months; $P = 0.032$) of combination therapy than patients with low MET, especially for patients with MET IHC 3+ (PFS 8.4; 95% CI, NC–18.9 months). Patients with an age ≥65, smoking, and high MET were significantly associated with better PFS with combination therapy.

Conclusion: Of the patients with advanced *EGFR*-mutant LAD with acquired resistance to EGFR-TKIs, combination therapy with EGFR-TKIs and MET-TKIs improved survival outcomes in those with high MET expression compared with those without, especially for those with MET IHC 3+.

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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)

PA21

共病、中性球與淋巴球比值以及藥物毒性對於肺癌病人使用 EGFR 標靶藥物的生活品質影響

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The Impact of Comorbidities, Neutrophil-to-lymphocyte Ratio, and Drug Toxicities on Quality of Life in Lung Cancer Patients Receiving EGFR-TKI Therapy

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Background: Epidermal growth factor receptor-tyrosine kinase inhibitors (EGFR-TKIs) are used as the standard first-line treatment for patients with advanced *EGFR*-mutated non-small cell lung cancer (NSCLC). However, the impact of comorbidities and treatment toxicities on quality of life (QoL) was seldom investigated.
Objective: We aimed to investigate the association of comorbidities, adverse events (AEs), and QoL in treatment-naïve advanced NSCLC patients receiving EGFR-TKI treatments.
Methods: This multi-center prospective observational study was conducted to evaluate QoL and AEs at baseline, the 2nd, 4th, 12th, and 24th week. Clinical characteristics, comorbidities, and pre-treatment laboratory data were recorded. QoL was assessed by using the summary score of the EORTC QLQ-C30 and the dermatology life quality index. The impact of comorbidities, neutrophil-to-lymphocyte ratio (NLR), and AEs on QoL was analyzed by generalized estimating equations.
Results: A total of 121 patients were enrolled. Diarrhea ($p = 0.033$), anorexia ($p < 0.001$), and NLR ≥4 ($p = 0.017$) were significantly associated with a QoL impairment. Among skin toxicities, acneiform rash ($p = 0.002$), pruritus ($p = 0.002$), visual analogue scale for pruritus (≥3 and <7, $p = 0.006$; ≥7, $p = 0.001$) and pain (1-3, $p = 0.041$) were associated with a QoL impairment. No significant association was found between comorbidities and QoL changes.
Conclusion: Diarrhea, anorexia, skin pain, and pruritus may cause a deterioration in QoL in patients receiving EGFR-TKI therapy. NLR may be a potential predictive factor for QoL impairment. Aggressive management and close monitoring for these clinical factors are crucial to improve QoL.

Keywords: adverse events, comorbidity, epidermal growth factor receptor tyrosine kinase inhibitor, non-small cell lung cancer, quality of life, neutrophil-to-lymphocyte ratio

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

PA22

晚期肺癌病人使用免疫療法的臨床實例與 Lung Immune Prognostic Index 之間的關聯

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Lung Immune Prognostic Index Associated with the Treatment Outcomes of Immunotherapy in Patients with Advanced Non-Small cell Lung Cancer

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Purpose: Immunotherapy (IO) have been improving survival of patients with advanced non-small cell lung cancer (NSCLC), compared with chemotherapy. Several biomarkers were associated the outcomes of treatment with IOs, including program cell death ligand 1 (PD-L1) and lung immune prognostic index (LIPI). In this study, we demonstrated real world experiences of IOs treatment in patients with advanced NSCLC.

Materials and Methods: This is a retrospective single-centre cohort study. In this study, patients diagnosed advanced NSCLC and underwent pembrolizumab as 1st line treatments were screened for eligibility. Patients with driver gene mutations, especially with adenocarcinoma, were excluded from analysis.

Results: From 2020 to 2023, totally 36 patients were included for analysis. Among them, 15 patients received pembrolizumab alone (IO), and 21 patients received combination treatment with pembrolizumab and chemotherapy (IOcombo). The patients' characteristics showed 22 (61.1%) aged ≥65 years, 26 (72.2%) male, and 23 (63.9%) had smoked. 25 (69.4%) of them had adenocarcinoma, and 8 (22.2%) squamous cell carcinoma. There were 20 (55.6%) patients with PD-L1 ≥50%, and 13 (86.7%) of patients who received IO had PD-L1 ≥50%, while 7 (33.3%) of patients who received IO combo had PD-L1≥50%. For those with PD-L1 ≥50%, the objective response rates (ORR) were 53.8% in patients having IO, and 57.1% for patients having IOcombo. The median PFS were not-reached (NR) vs 3.2 months in patients with IO and IOcombo, respectively. The median OS were NR vs 5.5 months in patients with IO and IO combo respectively. For those with PD-L1 1–49%, the ORR were 37.5% in patients had IOcombo. The median PFS and OS for those with PD-L1 1–49% and having IO combo were 8.8 months and 49.0 months respectively. For patients received IO, those with LIPI 0–1 showed significantly better PFS than those with LIPI 2 (P = 0.001). For patients received IOcombo, the median PFS (NR vs 3.2 vs 2.9 months, P = 0.047) and median OS (NR vs 6.4 vs 4.6 months, P = 0.035) deteriorated significantly as the LIPI increasing.

Conclusions: In this study, most of patients eligible for 1st line IO or IOcombo were age ≥65 years, male, and ever smoked. For patients with PD-L1 ≥50%, both IO and IOcombo showed good ORR. In addition, higher LIPI were associated with worse prognosis in patients receiving both IO and IOcombo.

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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)

PA23

EGFR 的標靶藥物對一位肺粘液表皮樣癌的病患有治療效果

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A case of pulmonary mucoepidermoid carcinoma responding to EGFR-targeted therapy

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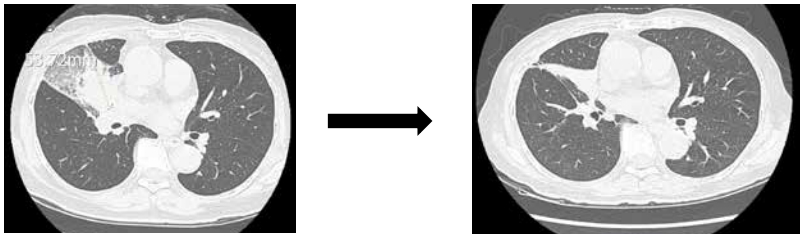
Background: Due to the extremely limited number of cases, the research related to pulmonary mucoepidermoid carcinoma (MEC) is limited. Here, we report a case of pulmonary MEC, who had good response to epidermal growth factor receptor (EGFR)-tyrosine kinase inhibitor (TKI) therapy.

Case presentation: A 70-year-old female with no underlying systemic diseases presented with symptoms including a productive cough, right-sided chest pain, and unexplained weight loss. She had no history of smoking. A chest X-ray revealed an abnormal density in the right middle lobe, while a chest computed Tomography (CT) scan showed focal consolidative changes in both the right middle and upper lobes of the lung. A definitive diagnosis of mucoepidermoid carcinoma was established through a bronchoscopy with endobronchial ultrasound-guided biopsy. Subsequent staging procedures, including a positron emission tomography (PET) /CT scan and brain magnetic resonance imaging (MRI), did not reveal any evidence of distant metastasis. A specific EGFR mutation (L858R) was identified through next-generation sequencing (NGS)-based testing. The patient was initiated on Erlotinib treatment and received two cycles of neoadjuvant chemotherapy using cisplatin and docetaxel. Subsequent follow-up imaging indicated a reduction in the size of the consolidative changes in the right middle lobes of the lung.

Discussion: Current research indicates that EGFR mutations can be found in some patients of pulmonary MEC. This makes EGFR-TKI therapy a potential treatment option for pulmonary MEC. Some case reports even suggest that some patients without EGFR mutations still benefit from EGFR-targeted therapy. The reported case demonstrated a positive response to TKI treatment, offering valuable insights for the management of pulmonary MEC.

Fig.1 The CT image showed the changes in the RML consolidation before and after Erlotinib 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)

PA24

針對非小細胞肺癌患者延長使用 Durvalumab 治療期程：兩例個案經驗

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Extended treatment duration of durvalumab for non-small cell lung cancer patients - experience of two cases

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In the PACIFIC trials, durvalumab demonstrated the significant survival benefit for the patients of stage III unresectable non–small-cell lung cancer (NSCLC). Real world statistical analysis also demonstrated the same result as longer progression-free survival (PFS) and overall survival (OS) for patients who received durvalumab. However, the treatment duration and time to stop the immunotherapy remained unclear. We presented two cases of stage III unresectable NSCLC who both received durvalumab after chemoradiotherapy. Instead of the treatment duration of one year from the PACIFIC Trials, we extended to regular infusion with up to at least five years. The patients had well control of primary tumor and hasn't had distal metastasis. The adverse effect including hypothyroidism and impaired liver enzyme, both controllable. This gave us a hint that prolonged use of durvalumab may be an option for patients with stage III unresectable 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)

PA25

無腦轉移的表皮生長因子接收器基因突變晚期非小細胞肺癌病人接受第一線 dacomitinib 治療之臨床效果：單一醫學中心回溯性研究

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The clinical efficacies of first-line dacomitinib in advanced and recurrence EGFR-mutant NSCLC patients without brain metastasis: a single center retrospective study

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Purpose: The aim of this study was to investigate the clinical outcomes and toxicities of dacomitinib as first-line treatment in advanced and recurrence Epidermal Growth Factor Receptor-mutant Non-small Cell Lung Cancer (NSCLC) patients without brain metastasis.

Materials and Methods: From August 2022 to July 2023, we enrolled advanced and recurrence NSCLC patients who harbored exon 19 deletion or exon 21 L858R point mutation with dacomitinib as first-line treatment to analyze the clinical response rate, progression-free survival, adverse events and the condition of dose adjustment.

Results: A total of 25 patients receiving dacomitinib as first-line treatment were enrolled for final analysis. The median age was 66 years, and thirteen patients (52%) were women. Seventeen patients (68.0%) were non-smokers, and most of patient's performance status were Eastern Cooperative Oncology Group performance status 0-1 (72%). Eleven patients (44.0%) had stage IVA disease, and 8 patients (32.0%) had stage IVB disease. Twelve patients (48.0%) harbored exon 19 deletion at baseline, and there were 7 patients (28.0%) with positive programmed death-ligand 1 expression. The objective response rate of dacomitinib was 66.7%, and the disease control rate was 81.0%. At the end of the follow-up peroid, the progression-free survival was not reached. Nineteen patients (76.0%) received 45mg dacomitinib as starting dose. Among them, 12 patients (62.2%) de-escalated the dose to 30mg, one patient shifted dacomitinib to gefitinib. Furthermore, 6 patients (24.0%) took 30mg dacomitinib as starting dose, 2 patients increased the dose to 45mg. Regarding adverse events, 10 patients (40.0%) experienced diarrhea, and 12 patients (48.0%) had skin toxicities. There were 11 patients (44.0%) with paronychia and 2 patients (8.0%) with hepatitis.

Conclusions: Our research demonstrated that dacomitinib as first-line treatment provided good clinical response and tolerable toxicities to advanced and recurrence EGFR-mutant NSCLC patients without brain metastasis. We need longer follow-up period to evaluate the clinical benefits of progression-free survival and overall survival.

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

PA26

吸菸對高 PD-L1 表現之非鱗狀非小細胞肺癌患者之免疫檢查點抑制劑治療效果影響：一項真實世界之觀察性研究

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Impact of smoking on the outcome of Immune Checkpoint Inhibitor Treatment in High PD-L1 Expression Non-squamous Non-small-cell Lung Cancer Patients: A Real-World Observational Study

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Background: Patients with high programmed cell death-ligand 1 (PD-L1) expression (PD-L1 ≥ 50%) in non-small-cell lung cancer (NSCLC) were traditionally treated with immune checkpoint inhibitors (ICIs). In this study, we compared the effectiveness of ICI in patients with high PD-L1 expression non-squamous NSCLC between smokers and nonsmokers.
Materials and Methods: We recruited patients with stage IIIB to stage IV NSCLC without epidermal growth factor receptor (EGFR)/anaplastic lymphoma kinase (ALK) mutations from August 2017 to December 2022. Patients with squamous cell lung cancer and low PD-L1 expression (PD-L1≤50%) were all excluded. The enrolled patients were divided into two groups based on whether they were smokers or nonsmokers.
Results: Overall, a total of 53 patients were enrolled in the final analysis, divided into smokers (36 patients) and nonsmokers (17 patients). The partial response (PR) rates to ICI treatment for smokers and nonsmokers were 75.0% and 17.6% ($p < 0.001$), with progressive disease (PD) rates of 13.9% and 76.5% ($p < 0.001$). The mean progression-free survival (PFS) was better in smokers than in nonsmokers (32.2 months, 95% CI 24.1-40.3, and 12.1 months, 95% CI 1.2-22.9, $p < 0.001$). The mean overall survival (OS) was longer in smokers than in nonsmokers (41.6 months, 95% CI 32.9-50.3, and 23.9 months, 95% CI 10.9-36.9, $p = 0.006$). We conducted multivariate regression analysis, which demonstrated that smoking is an independent predictor of PFS and OS in patients with high PD-L1 expression non-squamous cell NSCLC receiving ICI treatments ($p < 0.001$ in PFS and $p = 0.003$ in OS).
Conclusions: In conclusion, our study findings revealed that smoking plays a significant role in the treatment outcomes of patients with high PD-L1 expression non-squamous NSCLC receiving ICI therapies. Smoking independently predicts tumor response, PFS, and OS. These results could potentially lead to more precise and personalized management for this specific 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)

PA27

合併 Dacomitinib 與 Selpercatinib 治療獲得性 *CCDC6-RET* 融合之 *EGFR* 突變非小細胞肺癌

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Combined Dacomitinib and Selpercatinib treatment for *EGFR*-Mutant Non-small Cell Lung Cancer with Acquired *CCDC6-RET* Fusion

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Background: *RET* rearrangements are recognized drivers in lung cancer, representing a small subset (1–2%) of non-small cell lung cancer (NSCLC). Furthermore, *RET* serves as a rare acquired resistance mechanism in *EGFR*-mutant NSCLC. Only a few NSCLC cases with simultaneous *EGFR* mutations and *RET* fusions induced by EGFR-tyrosine kinase inhibitor (TKI) have been reported.

Case presentation: A 68-year-old man diagnosed with lung adenocarcinoma harboring *EGFR L858R* mutation initially responded well to Dacomitinib, a second-generation EGFR-tyrosine kinase inhibitor (TKI). Afterward, he developed acquired resistance accompanied by a *RET* rearrangement. Next-generation sequencing (NGS) analysis revealed that the tumor possessed both the *CCDC6-RET* fusion and the *EGFR L858R* mutation. Subsequently, he was treated with a combination of cisplatin, pemetrexed, and bevacizumab resulting in a partial response. Nevertheless, his condition deteriorated as the disease progressed, manifesting as hydrocephalus, accompanied by altered consciousness and lower limb weakness. A combined therapy of Dacomitinib and Selpercatinib was then administered, resulting in an improvement in his consciousness and neurological symptoms.

Conclusion: We first identified acquired *CCDC6-RET* fusion with a coexisting *EGFR L858R* mutation as a result of Dacomitinib treatment. NGS is an effective tool for detecting *RET* fusions as demonstrated in our case. A therapeutic combination of Dacomitinib and Selpercatinib may offer a potent strategy to counteract this resistance.

Keywords: Lung adenocarcinoma, Dacomitinib, *RET* rearrangement, NGS

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

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

PA28

以肺膿瘍為影像學表現的肺腺癌之病例報告

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Lung abscess with imaging findings masquerading as lung adenocarcinoma: Case report.

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Introduction: Lung abscess is an area of necrotizing pulmonary infection caused by bacterial infection. The most obvious symptom of lung abscess is a productive cough. Most common primary caused by aspiration of pathogenic material. The diagnose is usually done incidentally by radiographic or and ultrasound of the thorax examination. Though rare, the CT image characteristics of the lung cancer which can mimic and be confused for abscesses. Herein present a case of radiological investigations identified cavitary lesion suggestive of lung abscess who after initial response to antibiotics was subsequently and finally histology confirmed lung cancer.

Case Report: The 81-year-old male with history of Hypertensive cardiovascular disease and diabetes mellitus type 2. He was bed ridden status 1-month due to low back pain. Upon arrival, he complained of worsening shortness of breath associated with fever, productive cough, body weight loss, anorexia. Laboratory test reported: WBC19560/uL, Hb9.6g/dL CRP4.57mg/dL, CPK 74U/L, CKMB22U/L. Clinical examination revealed febrile with illness. A Chest X-ray reveal evidence of a mass noted in the left perihilar region with cavitation (Fig.1). Follow-up computed tomography of the chest demonstrated revealed A large cavitary lesion with uneven, thick wall and air-fluid level is occupying in the anterior segment of the left upper lobe, R/O abscess or TB (Fig.2). He was initial management of broad-spectrum antibiotics. However, his clinical symptoms status did not improve. He was received Endobronchial Ultrasound demonstrated a heterogenous lesion is noted over the anterior segment of the left upper lobe. Transbronchial biopsy and bronchoalveolar lavage was performed. Histological diagnosis: poorly differentiated adenocarcinoma. Immunohistochemical staining of the cancer cells revealed positive for CK7 and TTF-1 and EGFR exon-19 mutation detected. A bone scan showed Multiple bone metastasis at the T-L vertebrae. He underwent targeted treatment as Iresa and adjuvant radiotherapy tolerated.

Discussion: Non-small cell lung cancer (NSCLC) the most common type of lung cancer. Adenocarcinoma of the lung is a the most prevalent of NSCLC. The commonest metastatic sites in lung adenocarcinoma are nearby lymph nodes or a single distant lymph node, bone, brain, liver, lung, and adrenal gland. According to the American Society of Clinical Oncology: Five-year survival rate of lung adenocarcinoma with bone metastasis is approximately 15%. Standard therapy for advanced or metastatic non-small cell lung cancer (NSCLC) is Gefitinib.

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

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

PA29

術前輔助性免疫合併化學治療的初期手術結果-單一醫學中心報告

黃建勝 [1,6], 趙恆勝 [2], 丁英哲 [1], 江起陸 [2], 曾彥寒 [2], 沈佳儀 [2], 黃煦晴 [2], 羅永鴻 [2], 王蕾琪 [3], 葉亦成 [3], 徐博奎 [1], 林可瀚 [4], 邱昭華 [5], 許文虎 [1], 許瀚水 [1], 陳育民 [2]

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Preliminary surgical results of neoadjuvant nivolumab plus chemotherapy for locally advanced lung cancer

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Purpose: Neoadjuvant nivolumab plus chemotherapy in patients with locally advanced non-small cell lung cancers (NSCLC) significantly improves event-free survival and pathological complete response (pCR) rates. However, the real-world data regarding perioperative morbidity and pCR achievement for this treatment modality is not established well.

Materials and Methods: Twenty consecutive patients diagnosed as locally advanced NSCLC who received neoadjuvant nivolumab plus platinum-based chemotherapy at a single territory hospital from April 2019 to June 2023 were analyzed. Overall data presented in the median ± interquartile range (IQR).

Results: The median age was 61.5 (53.0-68.0) with a high percentage of male gender (n=15, 75%), a smoking history (n=16, 80%), and clinical stage III (n=18, 90%). Three patients with stable-disease and 2 patients with disease-progression were observed after neoadjuvant immunochemotherapy, and the pretreatment and preoperative median tumor sizes were 6.2 (5.0-8.0) cm and 4.4 (3.2-6.3) cm, respectively. Sixteen patients (80%) underwent scheduled surgical resection. The median duration after the last treatment to surgery was 34 (28.0-38.3) days, with 3 (18.8%) patients who received the operation > 6 weeks. All the patients underwent lobectomy (except one sleeve lobectomy). The VATS approach was performed for 13 patients, with 2 (15.4%) converted to the open thoracotomy, and the median lymph node harvesting numbers and stations were 23 (16-29) and 6 (6-7), respectively. The median operative time was 300 (207-418) minutes, and two patients (12.5%) had estimated blood loss of > 500ml due to severe adhesion to the parietal pleura and SVC. The median hospital stay after the surgery was 5.5 (5.0-6.8) days. Seven (43.8%) patients experienced operative-related complications, and two (12.5%) were ≧ Gr. III. In particular, 10 patients (62.5%) achieved a pCR, and none of the patients who had a pCR had a relapse during a median follow-up time of 6.6 (3.9-14.0) months.

Conclusions: A high pCR rate was observed in the locally advanced NSCLCs that received neoadjuvant immunochemotherapy, which was compatible with NADIM studies. Further real-world investigations will be needed, especially for the long-term outcome for pCR 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)

PA30

晚期表皮生長因子接收器基因突變非小細胞肺癌帶有 T790M 抗藥基因病人以 osimertinib 作為第二線或第三線以上治療之臨床效果比較：單一醫學中心回溯性研究

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The comparison of clinical efficacies between osimertinib as 2nd line and ≧3rd line treatment in advanced and recurrence EGFR-mutant NSCLC patients harboring T790M after 1st or 2nd generation EGFR-TKI therapy: a single center retrospective study

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Purpose: Osimertinib is a standard sequential treatment for advanced and recurrence Epidermal Growth Factor Receptor (EGFR)-mutant Non-small Cell Lung Cancer (NSCLC) patients harboring T790M after 1st or 2nd generation EGFR-Tyrosine Kinase Inhibitor (TKI) therapy. The aim of this study is to investigate the difference of clinical outcomes between osimertinib as 2nd line and ≧3rd line treatment in this population.

Materials and Methods: From September 2014 to March 2023, we enrolled advanced and recurrence T790M+-NSCLC patients with osimertinib as sequential treatment for analysis. All patients harbored exon 19 deletion or exon 21 L858R point mutation at baseline, and were treated by gefitinib, erlotinib or afatinib as first-line treatment. The results of T790M were confirmed by tissue or liquid biopsy.

Results: A total of 158 patients receiving osimertinib as sequential treatment were enrolled for final analysis. The median age was 62 years, and 108 patients (68.4%) were women. One hundred and thirty-seven patients (86.7%) were non-smokers, and most of patient's performance status were Eastern Cooperative Oncology Group performance status 0-1 (89.2%). Sixty patients (38.0%) had stage IVA disease, and 77 patients (48.7%) had stage IVB disease. Eighty-six patients (54.4%) harbored exon 19 deletion at baseline, and there were 59 patients (37.2%) with brain metastasis at baseline. Ninety-nine patients (62.7%) received osimertinib as 2nd line treatment, and 59 patients (37.3%) were treated with osimertinib as ≧3rd line therapy. The median progression-free survival (PFS) of osimertinib was 10.7 months (95% CI 6.1-15.3) in 2nd line group, and 8.9 months (95% CI 6.4-11.4) in ≧3rd line group. The median overall survival (OS) from first-line treatment was 73.2 months (95% CI 47.1-99.3) in 2nd line group, and 57.5 months (95% CI 52.9-62.1) in ≧3rd line group. There was no statistical difference of PFS and OS between two groups.

Conclusions: Our research demonstrated that not only osimertinib as 2nd line therapy but also as ≧3rd line therapy could provide promising clinical benefits to advanced and recurrence EGFR mutant-NSCLC patients harboring T790M after 1st or 2nd generation EGFR-TKI therapy.

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

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

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對超音波下肋膜積液極少的患者進行內科胸腔鏡檢查之安全性

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Safety of Medical Thoracoscopy to Patients with Minimal Pleural Effusion under Transthoracic Ultrasonography

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Purpose: Semi-rigid medical thoracoscopy (MT) is a mini-invasive, moderately sedated, and less expensive diagnostic procedure, compared to video-assisted thoracoscopic surgery. Previously, only one retrospective cohort reviewed 29 cases of MT performed without pleural effusion. We aim to analyze the safety of ultrasound-guided MT in the circumstances of minimal pleural effusion.

Materials and Methods: We defined minimal pleural effusion as <1cm of pleural space depth below the entry site under ultrasonography, and adequate pleural effusion as more than 1cm, on the contrary. The entry site was operator-determined by identifying positive regional lung-sliding sign and normal pleural line appearance. We approached the parietal pleura by a mosquito forceps after creating a minimal 1.5-2cm skin incision. The parietal pleura was penetrated by the pressure from the operator's finger. After the pleural cavity was explored, we introduced MT.

This retrospective cohort study included all of the 113 patients receiving ultrasound-guided MT from December 2017 to September 2020 in a medical center. Fisher's exact test was used to examine between-group differences in the incidence of procedure-related complications.

Results: Of the 113 patients, 3 patients were excluded due to pneumothorax before the procedure. The remaining 110 patients were included in the analysis. The mean age of the patient cohort was 69.5 years (SD ±15.2 years); 70 (63.6%) of them were male. Minimal effusion was detected in 22 patients (20%). Eight complications (7.3%) were recorded. One complication occurred in the minimal effusion group (4.55%); the other 7 complications occurred in the adequate pleural effusion group (7.95%). There was no significantly increased risk of performing ultrasound-guided MT from the minimal effusion site (p>0.99).

Conclusions: Minimal pleural effusion did not significantly increase the complication rate of ultrasound-guided MT.

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

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

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以腫瘤氣道擴散進行經手術原發性肺淋巴上皮癌之預後因子比較

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Tumor Spread Through Air Spaces Is an Independent Predictor of Recurrence- free Survival in Patients with Resected Pulmonary Lymphoepithelial Carcinoma

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Purpose: The spread of tumor cells through air spaces, known as STAS, has been recognized as a prognostic factor for various lung cancer types. Yet, the clinical implications of STAS in pulmonary lymphoepithelial carcinoma (PLEC) remain less explored. This study sought to examine the impact of STAS on the clinical outcomes for PLEC patients.

Materials and Methods: We retrospectively reviewed 56 surgically resected PLECs. STAS was characterized by the presence of tumor cells in lung parenchyma air spaces beyond the tumor's edge, while artifacts were disregarded. The recurrence-free survival (RFS) was assessed using the log- rank test and the Cox proportional hazards model.

Results: In our review, STAS was identified in 18 of the 56 patients (32.1%). It correlated with larger tumor sizes (over 3cm) (p=0.009), an elevated pathologic stage (p=0.026), and the presence of tumor necrosis (p=0.046). The 5-year RFS rate was notably lower for patients with STAS (p=0.025). Furthermore, a multivariate analysis indicated that STAS independently predicted a reduced RFS, with a hazard ratio of 3.395 (p=0.038). There was also a marked increase in the risk of locoregional recurrence for patients exhibiting STAS (p=0.049). Given these insights, we suggest a novel 3-tier grading system, taking into account tumor border patterns and STAS, to more accurately forecast the 5-year RFS for PLEC patients.

Conclusions: These results indicate that STAS independently predicts a diminished RFS. Additionally, a 3-tier grading system shows promise in forecasting the clinical outcomes for patients who have undergone PLEC resection.

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

PA33

Dacomitinib 首線治療 EGFR 突變型非小細胞肺癌之療效：針對腦部轉移與真實世界效果評估

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Efficacy of First-Line Dacomitinib in EGFR-Mutant NSCLC: A Focus on Brain Metastases and Real-World Outcomes

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Purpose: Dacomitinib is a potent, irreversible pan-HER tyrosine kinase inhibitor (TKI) designed for patients with non-small cell lung cancer (NSCLC) harboring EGFR sensitizing mutations. However, real-world data, especially regarding its efficacy on brain metastasis, is limited. Our study aims to assess the effectiveness and safety of dacomitinib as a first-line treatment in patients with EGFR-mutant advanced NSCLC, with a specific focus on its efficacy against brain metastases.

Materials and Methods: A total of 26 patients with advanced EGFR-mutant NSCLC underwent first-line treatment with dacomitinib were included in the study. Clinical characteristics of the patients, such as age, gender, smoking status, and specific EGFR mutations, were recorded. Additionally, details on combination treatments, organ metastases, and dose adjustments were also documented. Treatment outcomes and related adverse events were subsequently analyzed.

Results: The participants had a median age of 71 years, ranging from 61 to 85 years. Females constituted 62% of the study group, and all cases were adenocarcinomas. The Exon 21 L858R mutation was the predominant sensitizing mutation, accounting for 73% of cases. At baseline, 42% (11/26) of patients had brain metastases. Of the patients evaluated for responses (n = 23), the objective response rate (ORR) was 91.4% (21/23), and disease control rate (DCR) was 95.7% (22/23). Among the 11 patients with brain metastases, intracranial efficacy was evaluated in 8 cases, with both ORR and DCR being 100% (8/8). The median progression-free survival (PFS) was 13.9 months, and overall survival (OS) was not reached (median follow-up time: 18.5 months). In 84% (22/26) of patients, dacomitinib was administered at a daily dose of 30mg, with dosage modifications occurring in 32% (7/22) of these patients. Safety profile was acceptable, no adverse events related deaths was observed.

Conclusions: First-line dacomitinib appears to be a promising treatment for EGFR-mutant advanced NSCLC. Notably, dacomitinib demonstrates potent efficacy against central nervous system metastasis.

Keywords: Dacomitinib, Non-small cell lung cancer, EGFR mutations, Intracranial metastases

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

PA34

探討使用導引護套搭配支氣管內超音波是否能增加支氣管切片的診斷率

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Assessment of using radial probe endobronchial ultrasound with a guide sheath to increase the yield rate of transbronchial biopsy: A prospective randomized trial

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Background: Radial probe endobronchial ultrasound (rEBUS)-guided transbronchial biopsy (TBB) with a guide sheath (GS) is now widely used to diagnose peripheral lung lesions (PPLs), but there is no consensus on whether it increases the diagnostic yield or not. We conducted this prospective study to compare the diagnostic yield of the GS method to the conventional method without a GS.

Material and methods: From November 2019 to March 2023, patients with PPLs were recruited and randomly assigned to rEBUS-TBB with a GS (GS group) or without a GS (conventional group). The histopathology, cytology, and microbiology yield rates, as well as procedure time and post-procedure adverse events of the two groups were compared.

Results: A total of 102 patients were enrolled (54 in the GS group and 48 in the conventional group). The GS group exhibited a trend of increased pathology yield (75.9% vs. 68.8%, p=0.418), while the yield rates of brushing cytology (64.3% vs. 42.9%, p=0.030) and washing cytology (41.5% vs. 20.0%, p=0.0443) were higher in the GS group. Meanwhile, the yield from GS washing culture was lower than that of the bronchial washing culture yield (0% vs. 57.1%, p=0.017). The bleeding risk was also lower in the GS group (9.3% vs. 20.8%, p=0.049), but the procedure time was longer in the GS group (17.6 ± 4.7 min vs. 15.1 ± 4.5 min, p=0.008).

Conclusion: rEBUS TBB with a GS can increase the diagnostic yield of PPLs and decrease the risk of bleeding, while additional bronchial washing should be utilized to increase the microbiology yield.

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

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

PA35

小細胞肺癌併副腫瘤綜合症,罕見神經學表現

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Small cell lung cancer with paraneoplastic syndrome, a rare neurologic presentation

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Paraneoplastic syndromes represent a diverse range of clinical conditions that manifest alongside underlying neoplastic processes. They encompass various signs and symptoms related to both the central and peripheral nervous systems and often emerge before an official cancer diagnosis.

In this particular case, a 60-year-old man presented with a constellation of symptoms, including an unsteady gait, slurred speech, and confusion. Despite an series of diagnostic assessments, such as chest X-rays, computed tomography scans, magnetic resonance imaging of the brain, and cerebral spinal fluid analysis, no significant abnormalities were initially detected.

The patient's condition continued to deteriorate, marked by decline in consciousness, the onset of new cranial nerve deficits, and the occurrece of seizures. Even after udergoing pulse therpay and double plasma infiltration, his condition did not improve. Ultimatel, he experienced respiratory failure. necessitating intubation for airway support.

Following admission to the intensive care unit, a repeat analysis of the cerebral spinal fluid was performed, alone with the initiation of meningeal and paraneoplastic test panels. The subsequent report confirmed the presence of Anti-Sry-like high mobility group box 1 antibody and anti-Hu antibody, strongly indicating a paraneoplastic syndrome causing by neoplasm. Promptly, a chest computer tomography scan was arranged, revealing the presence of two mass lesions. A surgical biopsy subsequently confirmed a diagnosis of small cell lung cancer which further solidifying the link between the autoantibody finding in the serum and cerebral spinal fluid. The family decided hospice care as the patient had entered a comatose state. The withdrew of ventilator was done and the patient passed away.

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

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

PA36

CA125 及 CEA 在非小細胞肺癌合併惡性肋膜積液病人的診斷及預後價值

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Diagnostic and Prognostic Value of Serum CA125 and CEA in Lung Cancer Patients with Malignant Pleural Effusion

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Introduction: Approximately 15% of lung cancer patients present with malignant pleural effusions (MPEs) at initial diagnosis. The aim of this study is to assess the diagnostic and prognostic value of serum tumor markers (CA125 and CEA) for survival in lung cancer patients with MPE on the era of targeted therapies.

Materials and Methods: This retrospective study data was collected from June 2016 to June 2019 at E-Da Cancer Hospital. Inclusion criteria: histologically confirmed lung cancer by the pathologist and with stage IV disease in AJCC 8th edition, no other malignancy diagnosed , at least one tumor marker (CEA or CA125) was examined at lung cancer diagnosis. The upper limit of normal CEA and CA125 was defined as a cut-off value of 5.0ng/ml and 35.0 U/ml, respectively. Prognostic factors were analyzed by univariate and multivariate Cox proportional regression model. Overall survival was assessed with Kaplan-Meier survival analysis. Statistical significance was established at $p < 0.05$.

Results: A total of 160 NSCLC patients (94 males and 66 females) were analyzed in this study. The mean age was 66.4 year-old. The overall survival in stage IV lung cancer patients without MPE (n=74) were better than those with MPE (n=86) ($p = 0.026$). The serum CA125 was more relevant with MPEs than CEA($p<0.001$ and $p=0.014$, respectively). CA125 was associated with overall survival ($p < 0.001$), whereas not CEA ($p = 0.226$). Among patients with MPE, neither CA125 nor CEA was a significant prognostic factor ($p=0.120$ and $P=0.935$, respectively). But CA125 level was associated with survival in non-MPE patients ($p=0.008$). Univariate survival analysis showed male gender, high CA125 level, no DGM, smoking history, areca chewing, no target therapy, and MPE were associated with a poor OS. Multivariate Cox regression analysis showed that only high CA125 level (HR:2.784, $p=0.003$) and without target therapy (HR:0.227, $p=0.001$) were independent poor prognostic factors for overall survival

Conclusions: CA125 level is more relevant with MPEs than CEA. Neither CA125 nor CEA is associated with the prognosis of patients with MPEs. However, CA125 may be a significant prognostic factor in NSCLC stage IV patents in addition to accepting target therapy on the era of targeted therapies.

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

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

PA37

案例報告：低劑量 Afatinib 用於 Osimertinib 治療後發生 EGFR L718Q 突變的治療經驗

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Managing Subsequent EGFR L718Q Mutation with Low Dose Afatinib Following Osimertinib Treatment Failure

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Background: Lung cancer remains the leading cause of death worldwide. Epidermal growth factor receptor (EGFR) tyrosine kinase inhibitors (TKIs) have been hailed as saviors for EGFR-mutated non-small cell lung cancer (NSCLC) over decades. However, the emergence of acquired resistance to TKIs presents a significant challenge. Herein, we present a patient who received afatinib as salvage therapy after developing the EGFR L718Q mutation following treatment with osimertinib.

Case Presentation: An 81-year-old woman presented with decreased appetite and unintentional weight loss for a year, and was referred to our hospital in March 2021. Initial imaging studies revealed a left lower lung mass, along with mediastinal lymphadenopathy and multiple extra-thoracic lesions. Biopsies of the left lung mass and liver confirmed the diagnosis of left lower lung adenocarcinoma with distant metastasis (cT4N3M1c, Stage IVB). Initial molecular testing identified EGFR L858R mutation, and we initiated treatment with osimertinib at a daily dose of 80mg in April 2021, which achieved partial response after three months. However, in May 2023, progressive disease was observed with enlarging liver metastases, resulting in a progression-free survival period of 25 months. An attempted tissue biopsy of the hepatic metastasis did not yield sufficient tissue for analysis. Subsequently, a liquid biopsy detected EGFR L718Q mutation. Following an extensive review of the literature, the antineoplastic agent was shifted to afatinib at a daily dose of 30mg in June 2023. Two months into the afatinib treatment, shrinkage of the liver metastases was observed, accompanied by no prominent adverse reaction. To date, the patient has maintained stable disease during follow-up.

Discussion: Acquired resistance to TKIs is an obstacle in the management of EGFR-mutated NSCLC, especially resistance to osimertinib. The mechanisms underlying resistance to osimertinib are still under investigation. The EGFR L718Q mutation is a less common mutation, which disrupts the binding of osimertinib. The field of salvage therapy is an area of ongoing research, with second-generation TKIs emerging as potential options in the literature. In this report, we highlight our successful experience in treating EGFR L718Q mutation-driven acquired resistance with afatinib.

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

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

PA38

以 osimertinib 在不同 *EGFR* exon19 缺失的晚期非小細胞肺癌作為第一線治療的療效

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The Effectiveness of Osimertinib as A First-line Treatment in Advanced Non-Small Cell Lung Cancer Harboring Various *EGFR* Exon 19 Deletion Variants

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Purpose: Osimertinib is commonly employed for patients with *EGFR*-mutated non-small cell lung cancer (NSCLC). The aim of this investigation is to evaluate the efficacy of using osimertinib as a first-line therapy in advanced NSCLC with different *EGFR* exon 19 deletion variants.

Materials and Methods: This retrospective study, conducted across two centers, included individuals diagnosed with advanced NSCLC harboring exon 19 deletions and who received osimertinib as their initial treatment from January 2017 to December 2021. The *EGFR* exon 19 deletions were classified as two groups, E746del and non-E746del. The study involved an analysis of patient characteristics, the specific types of EGFR exon 19 deletions, treatment objective response rates (ORR), progression-free survival (PFS), time-to-treatment discontinuation (TTD), and overall survival (OS).

Results: A total of 115 patients with advanced NSCLC and exon 19 deletions who received osimertinib as their first-line treatment were identified. Among them, 47 patients with detailed data on exon 19 deletion variants were included for survival analysis. Thirty-six patients belonged to the E746del group, while 11 patients were in the non-E746del group. The ORR was 80.0% in the E746del group and 60.0% in the non-E746del group ($p = 0.194$). The PFS for osimertinib in the E746del group was longer than in the non-E746del group (25.7 vs. 17.0 months, $p = 0.289$). The median TTD for osimertinib in the E746del and non-E746del groups were 24.4 months and 17.4 months, respectively ($p = 0.922$). The median OS was not reached for NSCLC patients with E746del who received osimertinib. In the non-E746del group, the median OS was 36.6 months ($p = 0.142$)

Conclusions: Patients with advanced NSCLC and E746 deletion variants in exon 19 may experience a survival advantage when osimertinib is used as a first-line treatment, in comparison to those with non-E746 deletions. An extensive prospective study is needed.

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

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

PA39

核酸自組裝感測應用於敗血症患者之游離粒線體核酸檢測

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Catalytic Hairpin Assembly coupled plasmonic sensing for quantitative measurements of cell-free mitochondrial DNA

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Purpose: Cell-free mitochondria DNA (mtDNA) levels is a promising prognostic biomarker in various pulmonary and critical illness, such as idiopathic pulmonary fibrosis and sepsis. However, lack of an efficient method for detection hampers its clinical applicability. Here in this work, we propose the use of catalytic hairpin assembly coupled with plasmonic sensing toward the intended application.

Materials and Methods: Catalytic hairpin assembly(CHA) reactions targeting at mitochondrial gene *MTND* were firstly designed using algorithm. In the proposed reactions, 24 base-pair synthetic nucleic acid fragments were used as the target for mechanistic investigation. The two fuel hairpin molecules are of 67 base pairs and 47 base pairs in length, respectively, and 17 reactions were devised to evaluate the efficiency, specificity, and sensitivity, under the condition of 1 M NaCl in phosphate buffered saline supplemented with 0.1% tween 20. We combined offline calculational script, kinetic simulation web server, gel electrophoresis and tailored Surface Plasmon Resonance biosensing platform to comprehensively study all the proposed reactions.

Results: Most of the catalytic reactions produced the desired amplification effect within 1 hour. Among the reactions with relative binding energy between 1.00 to 1.70, the rich side reaction products can be seen. Taking advantage of the meta-analysis data, we proposed the homo-polymer leakage, which is the main cause of the dampened detection efficiency. Furthermore, the results of the catalytic hairpin reactions exhibit remarkable discrepancies between solid phase and liquid phase reactions. This provides vital insights into how restricted detection environment, such as solid state sensor, may exacerbate the different leakage types, thereby preventing high performance sensing result to be reached.

Conclusions: Among the 17 reactions, one of the reactions is of high potential for further applications into detecting *MTND* fragment in complex conditions. The detection of synthetic *MTND* fragment using the catalytic reaction coupled plasmonic sensor reveals a signal level of 22±2 mdeg, against a control signal of 2±0.5 mdeg. The systematic noise of the plasmonic sensing platform is estimated to be on level of 0.001 mdeg, thereby giving a limit-of-detection at pM level. This specific reaction is fast in kinetics and free of complex side reactions in both liquid in solid phase, shows a high signal-to-noise ratio, and serves as a corner stone for developing multi-layered catalytic reactions for enzyme-free detection of *MTND* gene fragments in biofluid samples.

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

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

PA40

肋膜積液酸鹼度於酸鹼度計下出現偽正常檢驗值

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Measuring pleural fluid pH with false normal under the pH meter

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Purpose: The pleural effusion pH is most useful in determining whether adequate drainage should be performed in patients with parapneumonic effusions. Pleural fluid pH measurement using a blood gas analyzer is the recommended method for guiding the management of patients with parapneumonic pleural effusions. However, in Taiwan, insurance policies do not cover the cost of blood gas analyzers for pleural effusion analysis, and many physicians, while aware of this issue, still use pH meters or pH indicator strips for examining pleural effusion pH.

Materials and Methods: We collected pleural effusion in commercially available blood gas syringes and sterile centrifuge tubes. The blood gas syringes were sent to the blood gas analyzer within 1 minute by the operator, while the sterile centrifuge tubes were processed using a pH meter following routine laboratory procedures for 21 pleural fluids.

Results: The mean pH measured by the blood gas analyzer (7.39 ± 0.18) was significantly lower than the mean pH measured by the pH meter (7.98 ± 0.21). There were significant differences between the pH measured by the blood gas analyzer and that by the pH meter ($p < 0.001$). The pH meter examination, on average, took 125 minutes after the procedure at room temperature.

Conclusions: The storage and transfer process resulted in a clinically significant overestimation of pleural fluid pH by both the pH meter and the blood gas analyzer (BGA), with a difference of 0.58 pH units. When pleural fluid pH is used for decision-making, it's crucial to note that only the blood gas analyzer provides accurate pH values. Relying on the pH meter may lead physicians to miss a diagnosis due to falsely normal pH readings.

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

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

PA41

預測縱隔淋巴結清除不完全的因素

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Predictive factors for suboptimal mediastinal lymph node dissection

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Purpose: Surgical intervention remains the gold standard for treating early-stage lung cancer. We conducted a retrospective study to assess the impact of the extent of mediastinal lymph node dissection on the overall survival of patients with early-stage lung cancer.

Material and Methods: We sourced our patient list from the E-Da Cancer Registry Database, selecting patients diagnosed between 2010 and 2020. The AJCC 8th edition staging system was employed. Eligibility criteria included patients aged 20 or older with non-small cell histology, clinical N0 staging, and who underwent surgical intervention. Exclusions were made for patients with a prior history of another malignancy, those who received neoadjuvant treatment, and those who underwent radiotherapy before surgery. The primary endpoint of our study was overall survival. To control for confounding, we considered the following variables: age, sex, ECOG performance status, clinical T stage, pathological T stage, pathological N stage, type of operation, and details of adjuvant treatment. We utilized the maximum selected statistics to determine the optimal cut-off point for categorizing patients based on appropriate mediastinal dissection. The basic characteristics of these two groups were then compared using the Chi-square (or Fisher's test) and t-test (or McNemar's test), depending on the variable type. All tables, charts, and statistical analyses were conducted using R language (Version 4.3.0).

Result: Totally 221 patients were included in this study. The median of follow-up time was 34.8 months. Fifty two patients were dead during follow up. Thirty-six patients were due to lung cancer (69.2%). The median retrieved number of regional lymph nodes were 21 (0-68), and the median number of explored mediastinal lymph nodes stations were 3. We used the maximal selected statics to choose the best cutpoint for survival analysis. The number for lymph node retrieve was 11 and the number for mediastinal lymphatic station was 2.

We made a multivariable logistic regression for suboptimal lymph node retrieval (LN <= 11). With backward selection, based on AIC, the important predictors included right-sided tumor, larger primary tumor, higher BMI, and more radical approach were independent variables.

Conclusion: Important factors for surgical quality were noted in the study, and the impact and physiological meaning should be discussed with chest surgeon.

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

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

PA42

短期置放自動擴張型金屬支架及氣球擴張術對於治療良性氣管支氣管狹窄的不同結果

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Different outcome of short-term self-expandable metallic stents placement and balloon dilatation for treated benign tracheobronchial stenosis.

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Purpose: Self-expandable metallic stents (SEMSs) have enabled an approving management of malignant airway stenosis. However, benign tracheobronchial stenosis usually did not used the SEMS due to more complication. Balloon dilatation usually the first treatment choice but frequent recurrent is still the problem. Herin, we conducted this study to retrospectively determine the efficacy and safety between short-term SEMS placement and balloon dilatation for treated benign tracheobronchial stenosis.

Materials and Methods: All patients treated with SEMSs or balloon dilatation in benign tracheobronchial stenosis from Aug 2019 to July 2023 were reviewed for outcome and complications.

Results: There were 44 benign tracheobronchial stenosis patients in China Medical University Hospital. Mean age was 69.5 years-old. The most common cause of benign tracheobronchial stenosis was post intubation (n=22) and TB (n=14). 20 of them treated with balloon dilatation and 9 patients demonstrated clinical improvement without recurrent stenosis after 3 months follow-up. 24 patients were treated with SEMS placement followed by balloon dilatation and 20 patients demonstrated clinical improvement without recurrent stenosis after 3 months follow-up (45% vs 83.3 %, p value =0.002). 21 patients (87.5%) was successfdully removed by flexible bronchoscopy with forcerps. One patient suffered trachea laceration after balloon dilatation. Five patients suffered from stent infection after 3 months placement. There was no mortality after these procedure.

Conclusions: Compared with balloon dilatation, SEMS placement followed balloon dilatation achieved most clinical improvement and less recurrent trachea stenosis in our study. The use of short term SEMSs after balloon dilatation for benign tracheobronchial stenosis was effective and safe for the majority of benign tracheobronchial stenosis 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)

PA43

術前心臟功能對第一期肺腺癌術後轉移之腫瘤學角色: 單一醫學中心經驗

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The oncological role of pre-operative cardiac function in post-operative stage I lung adenocarcinoma metastasis

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Purpose: Postoperative metastasis (POM) for resectable stage I lung adenocarcinoma is clinically infrequent and associated risk factor is not easily predictable before the operation. According to the animal models for cancer metastasis, cardiac function probably plays important role for the results. Aims of this study is to identify predictable factors for POM that is associated with cardiac function and parameters for surgical type precision, adjuvant therapy and neoadjuvant therapy.

Materials and Methods: From January 2014 to December 2021, four hundred fifty-one consecutive patients, who underwent resection for stage I lung adenocarcinoma without any adjuvant therapy or induction therapy in Kaohsiung Medical University Hospital, were included. Patients' clinical and pathological characteristics, including age, gender, surgical types, preoperative echocardiogram, pathologic tumor stage, size, location, and subtype of adenocarcinoma, were analyzed.

Results: A total of 27 cases had metastasis during follow-up (6.6%). Preoperatively, Tumor size adjust by mitral valve peak A velocity (MVpeakA), one of parameters for left ventricular diastolic function (≤1.23, sensitivity: 100%, specificity: 58.4%) can validly predict POM (area under receiver operating characteristic curve (AUC ROC): 0.824). Regarding surgical/pathological characteristics, those with solid component (>20%), T1c, and T2a were increased risk to have POM (odds ratio ((OR)): 1.05, 3.36, and 2.93, respectively, $p<0.05$). Based on the multivariate regression analysis, POM is associated with choosing sublobar excision for those with left side lesion, and MVpeakA >0.74 (OR: 5.115, $p < 0.05$).

Conclusion: For surgical plan, sublobar excision might increase the chance of POM when the patients' stage I lung adenocarcinoma was left-sided with MVpeakA is up to 0.74. We recommend the adjuvant therapy should be provided for those with high solid component, T1c, and T2a lesion. Moreover, preoperative tumor size adjusts by MVpeakA up to 1.23 might be a potential predictive factor of POM and more data is warranted to draw a firm conclusion.

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

PA44

以 Elixhauser Comorbidity Index 預測 Etoposide and Cisplatin 治療小細胞肺癌病人 Grade 3 以上嗜中性白血球低下症或白血球減少症的發生

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Elixhauser Comorbidity Index Predicts Grade 3 Neutropenia or Leukopenia in Small Cell Lung Cancer Patients Treated with Etoposide and Cisplatin.

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Purpose: Lung cancer, predominantly small cell carcinoma, accounts for a significant portion of cancer deaths in Taiwan. Often linked to heavy smoking, it predominantly affects older patients with multiple co-morbidities. Systemic treatment for small cell carcinoma has seen limited progress outside of immunotherapy. Currently, systemic chemotherapy remains the primary effective treatment, but its associated toxicities require careful monitoring and prediction. While physicians often adjust chemotherapy regimens based on a patient's age and performance, existing comorbidities can complicate this decision-making. This study aims to explore the relationship between co-morbidity index, treatment toxicities, and survival.

Materials and Methods: Patients diagnosed with lung small cell carcinoma at E-Da Hospital between 2010 and 2020, with histological confirmation and who underwent systemic chemotherapy (etoposide, cisplatin, or both), were included in this study. We excluded individuals with a prior history of other cancers. Our primary objective was to evaluate the relationship between the comorbidity index and hematological toxicities. We defined the early hematological toxicities was it occurred three months after the administration of chemotherapy. Data regarding patient demographics, laboratory tests, and follow-up were collected. We employed the modified Elixhauser comorbidity index(Ref 1) for classification. The optimal cutpoint was determined using the maximal selected statistics method.

Results: Totally 131 patients fulfilled the inclusion criteria and the median follow-up length was 10.5 months. Most patients passed away(121/131, 92.4%) were noted and the 1-year and 5-year survival rate of this cohort were 44% and 4.2%, respectively. The optimal cutpoint of the modified Elixhauser comorbidity index(AHRQ) is 23. No significant difference over the age or ECOG performance status between the two groups. The high AHRQ group had lower survival rate(2yr 11%, vs 13 %, $p = 0.025$), more incidence of leukopenia($p = 0.055$), and more grade 3 or higher neutropenia(39% vs 71%, $p = 0.022$). Renal injury, hematocrit or platetlet toxicities were not significant different between the two groups.

Conclusions: Higher modern comorbidity index, higher complication rate. With computer aided programs, it can help patients for better care.

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

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

PA45

舒張/身高體重指數可預測第一期肺腺癌術後轉移

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Diastole/Body Mass Index Ratio Can Predict Post-Thoracoscopic Surgery Metastasis in Stage I Lung Adenocarcinoma

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Purpose: According to recent animal models for lung adenocarcinoma metastasis, cardiac function may be related to the clinical outcome. Aim of this study is to identify a predictable index for postoperative metastasis (POM) that is associated with cardiac function.

Materials and Methods: Two-hundred and seven consecutive patients, who underwent thoracoscopic resection for stage I lung adenocarcinoma, were included. Disease-free survival (DFS), overall survival (OS), patients' clinical and pathological characteristics were analyzed. **Results:** Among the 207 patients, 17 cases demonstrated metastasis, 110 cases received preoperative echocardiogram, and six cases had POM. Mitral valve peak A velocity, which is one of the left ventricular diastolic function parameters for adjusted by BMI (MVPABMI), was associated with a negative factor for POM (hazard ratio (HR):2.139, p = 0.019) and a poor 5-year DFS in the above median (100% vs 87%, p = 0.014). The predictable rate increased from 30.7% to 75% when the MVPABMI was above the median = (3.15) in the solid subtype.

Conclusion: MVPABMI is a novel index for POM prediction in early-stage lung adenocarcinoma. This is a pilot study and the first research attempt to verify that the diastole and the BMI may be associated with POM in early-stage 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)

PA46

使用軟式支氣管鏡期間採用噴霧嘴進行局部麻醉: 一項隨機分派對照試驗

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Randomized Controlled Trial on the Use of Spray Nozzle for Topical Anesthesia During Flexible Bronchoscopy

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Purpose: The uncertainty remains regarding the effectiveness of a spray nozzle in delivering lidocaine for superior topical airway anesthesia during non-sedation flexible bronchoscopy (FB), when compared to traditional methods.

Materials and Methods: Patients who were referred for FB were randomly divided into two groups. One group received topical lidocaine anesthesia through the bronchoscope's working channel (referred to as the Classical Spray or CS group), while the other group received it through a washing pipe equipped with a spray nozzle (referred to as the SN group). The primary outcome measured was the cough rate, which was defined as the total number of coughs per minute. Other outcomes that were considered included the amount of lidocaine used, any complications that arose, and the subjective perceptions of both the patient and operator regarding the FB process. These perceptions were rated on a visual analog scale (VAS), with numerical ratings that ranged from 0 to 10.

Results: Our study included a total of 126 patients, with 61 in the CS group and 65 in the SN group. The SN group showed a significantly lower median cough rate than the CS group (4.5 vs. 7.1 per minute; p=0.021). Additionally, patients in the SN group reported less discomfort in the oropharynx (4.5±2.7 vs. 5.6±2.9; p=0.039), better tolerance of the procedure (6.8±2.2 vs. 5.7±2.7; p=0.011), and a higher willingness to undergo a repeat FB procedure (7.2±2.7 vs. 5.8±3.4; p=0.015) compared to those in the CS group. From the operator's perspective, patient discomfort (2.7±1.7 vs. 3.4±2.3; p=0.040) and cough scores (2.3±1.5 vs. 3.2±2.4; p=0.013) were lower in the SN group compared to the CS group, with less disruption due to coughing observed among SN patients (1.6±1.4 vs. 2.3±2.3; p=0.029).

Conclusions: This study demonstrates that the use of a spray nozzle for lidocaine delivery results in superior topical airway anesthesia during non-sedation FB, as compared to the conventional method.

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

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

PA47

比較不同抗血管新生藥物合併 EGFR-TKI 在轉移性肺腺癌的療效

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Comparing the Effectiveness of Different Anti-angiogenetic Agents Combined with an EGFR-TKI in Metastatic Lung Adenocarcinoma

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Rationale: EGFR-TKIs are indicated for advanced lung adenocarcinoma harboring EGFR mutation. Previous studies had demonstrated promising results of combining EGFR-TKIs with an anti-angiogenic agent, mostly bevacizumab, in treating advanced non-small cell lung cancer. Ramucirumab is a novel anti-angiogenic agent, and may improve progression free survival in combination with an EGFR-TKI. This study aimed to compare the effectiveness between bevacizumab and ramucirumab in combination with an EGFR-TKI in treating metastatic lung adenocarcinoma.

Methods: This retrospective study enrolled patients diagnosed of stage IV lung adenocarcinoma with exon 19 deletion or L858R point mutation, receiving a first-line EGFR-TKI, combined with bevacizumab or ramucirumab, in three hospitals. The initial treatment response was compared between groups with Fisher's exact test, while progression free survival (PFS) and overall survival (OS) were assessed and compared with Kaplan-Meier curves and log-rank test. Factors associated with PFS and OS were investigated with Cox regression.

Results: Between April 2014 and May 2022, 47 eligible patients were enrolled, including 34 (72%) and 13 (28%) patients receiving bevacizumab and ramucirumab, respectively. The response rate was similar in both groups (p=0.38). Patients received bevacizumab had similar PFS as those received ramucirumab (median PFS: 21.9 vs. 24.2 months, p=0.49). The OS was also similar between groups (p=0.46). Multivariable Cox regression found independent risk factors for worse PFS included poorer ECOG performance status (hazard ratio [95% confidence interval]: 7.21 [1.13-46.18]) and multiple metastatic sites (≥3) (3.96 [1.24-12.67]).

Conclusions: Ramucirumab may have similar effectiveness as bevacizumab while using as a first-line treatment in combination with an EGFR-TKI for treating patients of stage IV lung adenocarcinoma. Further large-scale prospective study is needed to confirm our findings.

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

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

PA48

記住藥物相關的發燒：一個 esomeprazole 相關發燒的案例報告

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Keeping drug fever in mind: a case report of esomeprazole related fever

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Introduction: Fever is a common clinical symptom in hospitalized patients. The etiologies for fever of unknown origin (FUO) are variable, and the common one is infection. Drug-induced fever is one of possible etiology, but it should be confirmed after other causes had been excluded. Drug fever could be induced by any drugs, and antimicrobials, anticonvulsants and antidepressants were most common. This time, we present a relatively rare case of drug fever, which induced by esomeprazole.

Case presentation: We presented the case of a 70-year-old retired teacher with underlying bilateral renal stones was admitted via the emergency department (ED) for suffering from progressive dyspnea for 3 days. Then he was diagnosed of aspiration pneumonia with acute respiratory failure and complicated with septic shock. Ventilator-associated pneumonia (VAP) was then developed one week later during admission, so we adjusted antibiotic to meropenem and colistin. During following admission, he was diagnosed as peptic ulcer and received proton pump inhibitor (PPI) with esomeprazole once per day, and spiking fever up to 38.4℃ was noted. Hospital acquired infection was the initial impression and we performed separate cultures like blood, sputum, urine culture. Series fever survey including autoimmune profile, endocrine profile were done and showed no obvious abnormal data. Finally, drug fever was suspected and we first suspended antibiotic that most commonly induced drug fever but in vain. Then we suspended esomeprazole and fever subsided gradually. Due to clinically stable, he was discharged.

Discussion: Drug induced fever is usually under-reported or misdiagnosed because it is an excluding diagnosis, therefore, occurring frequency still remain uncertain now. This time, we presented a case of a long-hospitalized patient who developed FUO, after ruling out common etiologies of fever, such as infection and inflammation, plus the clinical presentation of the patient, we suspected drug-induced fever at last. PPI using is common but induced fever is scarce, hence we presented this rare case report of esomeprazole related fever.

Conclusion: In conclusion, drug-induced fever should always be considered by physicians while encountering FUO and had excluded all the other possible etiologies, regardless of onset time and rarity of reported cases.

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

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

PA49

肺保留肋膜剝離術與術中輔助治療對惡性間皮瘤之應用

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Lung sparing decortication pleurectomy with intraoperative adjuvant therapy for malignant mesothelioma: a single institute experience in Taiwan

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Background: This study aimed to analyze the outcomes and overall survival rates in patients undergoing cytoreductive lung-sparing decortication pleurectomy surgery and intraoperative adjuvant therapy (hyperthermic intrathoracic chemotherapy or photodynamic therapy) for malignant pleural mesothelioma at a single center in Taiwan.

Materials and Methods: This was a retrospective review of patients who underwent cytoreductive lung-sparing decortication pleurectomy surgery and intraoperative adjuvant therapy for malignant pleural mesothelioma from April 2013 to December 2021.

Results: A total of 17 patients with malignant pleural mesothelioma underwent surgery. There was one case of surgical mortality due to intraoperative uncontrolled bleeding. The subtypes according to histology were epithelioid mesothelioma (58.8%), pleomorphic subtype of epithelioid malignant mesothelioma (5.9%), biphasic mesothelioma (11.8%), and sarcomatoid mesothelioma (23.5%). The median survival was 14.0 months. However, for the epithelioid type, the median survival was 20.0 months.

Conclusions: To our knowledge, this is the first report from a single center in Taiwan devoted to lung sparing decortication pleurectomy with intraoperative adjuvant therapy for malignant pleural mesothelioma. Although our hospital did the most operations for patients with malignant pleural mesothelioma in Taiwan, we were still far away from being a high volume center in the world. The outcome is not satisfactory, but still slightly better than that of patients who received chemotherapy alone, especially those with the epithelial sub type disease. One of our patients survived for more than 6 years. We provide an option for the treatment of patients with malignant malignant pleural mesothelioma in Taiwan.

Keywords: malignant pleural mesothelioma, lung-sparing decortication pleurectomy, intraoperative adjuvant therapy, overall survival

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

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

PA50

停經後婦女使用荷爾蒙治療與肺癌風險間的關聯：一項為期 16 年的全國人口研究

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The association between hormone therapy and the risk of lung cancer in postmenopausal women: a 16-year nationwide population-based study

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Purpose: Although an association between hormone therapy (HT) and the risk of developing lung cancer has been reported, the results on the topic are inconsistent. Our study objective was to investigate whether postmenopausal women who undergo HT exhibit a risk of developing lung cancer.

Materials and Methods: In this matched cohort study, we obtained the data of38,104 postmenopausal women older than 45 years who were treated using HT between 2000 and 2015 from Taiwan's National Health Insurance Research Database, and 152,416 matched participants who were not treated using HT were enrolled as controls at a 1:4 ratio.

Results: We used a Cox proportional hazards regression model to identify the risk of developing lung cancer during 16 years of follow-up, and the results indicate no significant difference in the proportion of postmenopausal women treated using HT (P = 0.129) who developed lung cancer and that of those not treated using HT (0.866% [330 of 38,104] vs 0.950% [1,449 of 152,416]). After adjustment for age and other variables, the adjusted hazard ratio was 0.886 (95% CI, 0.666-1.305, P = 0.433), indicating no association between HT and lung cancer development in post-menopausal women. In a subgroup analysis, the risk of lung cancer was significantly lower in the women who were treated using HT when the HT cumulative dosage was ≥401 mg or when the therapy duration was ≥5 years compared with in those not treated using HT; the adjusted hazard ratios were 0.633 (95% CI, 0.475-0.930; P < 0.001) and 0.532(95% CI, 0.330-0.934; P < 0.001), respectively, after adjustment.

Conclusions: Our results indicate that HT is not associated with the risk of lung cancer development in postmenopausal women; furthermore, a higher cumulative dosage and the long-term effects of HT reduce the risk of developing lung cancer.

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

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

PA51

免疫治療用於小細胞肺癌的真實世界成效

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Real world efficacy of immunotherapy in small cell lung cancer

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Purpose: Immunotherapy demonstrates survival benefit in two large randomized clinical trials but becomes first line standard of care in small cell lung cancer. However, the efficacy of immunotherapy in real world setting remained unclear.

Materials and Methods: We retrospectively enroll extensive stage small cell lung cancer patient in our institute from Jan. 2016 to Jul. 2023. Clinical characteristics are identified from electronic medical records. RECIST criteria is applied as evaluation of treatment response. Patient who treated with immunotherapy ever during the disease course would be categorized into immunotherapy group. Kaplan-Meier method is used as progression-free survival and overall survival analysis. Multi-variable Cox regression model is applied to evaluate risk factors for progression-free survival and overall survival.

Results: Totally 135 patients were enrolled in this analysis. 83 patients were treated with chemotherapy only and 22 patients incorporating immunotherapy in their treatment modality. 30 patients were not received any kind of therapy after diagnosis. The median progression-free survival showed a trend favor immunotherapy combined chemotherapy compared to chemotherapy only (9.8 months vs 8.4 months, p=0.09). There was statistically significance of better overall survival favored immunotherapy group over chemotherapy only population (13.2 months vs 9.3 months, p=0.05). Multi-variable analysis demonstrated that combined immunotherapy, better performance status (ECOG 0-1) and without liver metastasis were independent good prognostic factors for overall survival. Immunotherapy combination reduced 47% risk for progression (HR: 0.53, 95%CI 0.28-0.98) and 48% risk for mortality (HR: 0.52, 95%CI 0.27-0.98)

Conclusions: We report real-world clinical outcomes of extensive stage small cell lung cancer in our institute. Immunotherapy combined chemotherapy demonstrated favorable overall survival benefit and progression-free survival compared to chemotherapy only. Absence of immunotherapy during treatment course, poor performance status and liver metastasis are independent prognostic factors for overall survival. After multi-variable regression, immunotherapy combined chemotherapy is independent factors for better progression-free survival and overall survival.

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

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

PA52

在兩家轉介中心的結核肋膜病人中，比較經由肋膜腔鏡冷凍切片和鉗子切片的肋膜組織結核培養率

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Comparison of Pleural Tissue for Mycobacterial Culture Yield between Pleuroscopic Cryobiopsy and Forceps Biopsy among Tuberculous Pleurisy Patients from Two Tertiary Centers

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Purpose: This study aimed to investigate the comparison of mycobacterial culture from pleural tissue, obtained by cryobiopsy and forceps biopsy through medical pleuroscopy, in the diagnosis of TB pleurisy.

Materials and Methods: We retrospectively enrolled 57 TB pleurisy patients who received pleural biopsy by medical pleuroscopy. Among them, 22 patients received pleuroscopic cryobiopsy and 35 patients received pleuroscopic forceps biopsy from April 2016 to December 2021 in two tertiary hospitals. We analyzed the mycobacterial culture obtained from pleural tissue by cryobiopsy or forceps biopsy.

Results: The average age of the study participants was 67.9 years, and 71.2% of them were men. The sensitivity of positive *Mycobacterium tuberculosis* (M. TB) cultures of pleural tissue from cryobiospy and forceps biopsy were 45.5% (10/22) and 71.4% (25/35), respectively. The high sensitivity of M. TB culture from pleural tissue by forceps biopsy was up to 80.0% (20/25) when pleural characteristic patterns showed adhesion lesions.

Conclusions: We found higher TB culture positive yield of pleural tissue in forceps biopsy than cryobiopsy group. Once the TB pleurisy was highly suspected or cryobiopsy was not available, pleural forceps biopsy as a diagnostic procedure for TB tissue culture was suggested.

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

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

PA53

Trastuzumab deruxtecan 在 HER2 基因變異非小細胞肺癌患者的腦轉移展現顯著的疾病控制效果：一個案例報告

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Trastuzumab deruxtecan achieved great brain metastases control in HER2 mutated non-small cell lung cancer patient: a case report

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Antibody-drug conjugate (ADC), a novel type of biopharmaceutical drug which is composed of three key components: monoclonal antibody, linker molecule, and cytotoxic payload. The monoclonal antibody is designed to target a specific antigen or protein found on the surface of cancer cells. The linker is cleaved or degraded after internalization by the cancer cells, releasing the cytotoxic payload, which is the actual chemotherapy drug that is intended to kill the cancer cells.

Trastuzumab deruxtecan (T-DXd) is an ADC composed of a monoclonal antibody called trastuzumab, specifically binding to HER2 (human epidermal growth factor receptor 2) proteins found on the surface of cancer cells. The ADC also contains a cytotoxic payload called deruxtecan, which is a potent chemotherapy agent. The payload is designed to be released and cause damage to the cancer cell once the antibody has bound to the HER2 receptor.

In DESTINY-Lung02 Trial, T-DXd demonstrated clinically meaningful responses in previously treated HER2-mutant NSCLC patients at the dose of 5.4mg/kg, with acceptable and generally manageable safety profile.

Here we presented report a 62-year-old woman with the diagnosis of stage IVB right lower lung adenocarcinoma with hilar, mediastinal, celiac, para-aortic and aortocaval lymph nodes, bone metastases. The tumor was wild type for EGFR, ALK, ROS1 in the initial molecular study and the PD-L1 expression was <1%. She had been treated with pemetrexed with cisplatin, bevacizumab with gemcitabine, nivolumab with ipilimumab, and vinorelbine with carboplatin with variable response. Disease progression with multiple brain metastases was noted after the 4th line of anti-cancer treatment. The next-generation sequencing of excised supraclavicular lymph node reported ERBB2 amplification, AURKA amplification, CDKN2A/B loss, GNAS amplification, NOTCH3 G2035fs*60, equivocal ZNF217 amplification and TMB 6 mutations/Mb. Trastuzumab deruxtecan treatment started on February 7th, 2023 with only adverse effect of grade 1 fatigue. The treatment response assessment in brain MRI on April 25th, 2023 revealed almost complete resolution of the previously noted brain metastases. The serum CEA level also decreased from 366.23 ng/ml to 9 ng/ml. The patient is still undergoing trastuzumab deruxtecan treatment with the progression free survival of 8 months ongoing.

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

高解析度 CT 對非囊性纖維化患者支氣管擴張症嚴重度與臨床症狀、結果之相關性：台灣全國多中心研究

鄭文建[1], 廖偉志[1], 徐武輝[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], 台灣支氣管擴張症合作研究團隊

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Bronchiectasis Severity on High-Resolution CT: Implications for Clinical Symptoms and Outcomes in Non-Cystic Fibrosis Bronchiectasis Patients —A Nationwide Multicenter Study in Taiwan

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Background: Our study aimed to use a simplified radiological scoring system, based on a modified Reiff score, to assess clinical symptoms and predict outcomes in individuals with Non-cystic fibrosis bronchiectasis (NCFB).

Methods: This is a large multicenter retrospective study conducted on individuals with bronchiectasis confirmed through HRCT scans in Taiwan. We established correlations between the severity of clinical parameters, including symptom scores, pulmonary function, pseudomonas aeruginosa colonization, exacerbation and admission rates, and HRCT parameters using modified Reiff scores.

Results: Data from 2,753 patients were collected. Among them, 1,282 (46.5%) patients came from the Northern Hospital, 398 (14.4%) patients from the Central Hospital, 1,045 (37.9%) patients from the Southern Hospital, and 58 patients from the Eastern Hospital (2.1%). These patients were divided into four groups according to the severity of HRCT based on the Reiff score, ranging from Grade 1 to Grade 4. As HRCT severity increased, there was a significant correlation with reduced forced expiratory volume in the first second (FEV1) ($p < 0.001$), heightened clinical symptoms ($p < 0.001$), increased pathogen colonization (pseudomonas aeruginosa) ($p < 0.001$), more frequent emergency room (ER) visits ($p < 0.001$), and a higher rate of hospitalizations per year ($p < 0.001$). At multivariate analysis, hospitalizations per year was the only independent predictor of mortality

Conclusion: Based on the large cohort study, the simplified CT scoring system (Reiff score) can be used as an adjunct to clinical parameters to predict disease severity and prognosis in patients with NCFB.

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

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

OB02

間質性肺病在台灣的研究: NICEFIT-ON 的臨床研究分析-一年追蹤報告

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

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Purpose: Interstitial lung diseases (ILDs) represent a group of rare lung diseases affecting alveolar structures and the interstitium. This ongoing, prospective, non-interventional, multi-center study (NICEFIT-ON) aims to characterize the long-term treatment outcomes of nintedanib and identify prognostic factors for ILDs, including idiopathic pulmonary fibrosis (IPF), systemic-sclerosis-associated ILD (SSc-ILD), and progressive fibrosing ILD (PF-ILD). Here, we describe the baseline characteristics and outcomes at 52 weeks data with patients in NICEFIT-ON.

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

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

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

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

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

OB03

東亞族群支氣管擴張症患者第二型發炎的臨床特徵和預後：一個前瞻型世代研究

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Clinical characteristics and outcomes of type 2 inflammation in patients with bronchiectasis: A prospective cohort study from the East Asian population

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Purpose: Bronchiectasis has traditionally been associated with airway neutrophilic inflammation. However, the role of type 2 inflammation in bronchiectasis remains unclear. We aim to investigate the clinical characteristics and outcomes of type 2 inflammation in individuals with bronchiectasis in the East Asian population

Materials and Methods: We conducted a prospective cohort study on patients with non-cystic fibrosis bronchiectasis, excluding those with co-existing Asthma or Allergic bronchopulmonary aspergillosis (ABPA). This study included clinical, radiological, and microbiological assessments using bronchoalveolar lavage (BAL) samples for conventional culture and airway cytokines analysis during a stable state. Type 2 inflammation was defined as the presence of increased serum Immunoglobulin E (IgE) levels with atopy features or elevated blood eosinophil counts (BEC), higher fractional exhaled nitric oxide (FeNO) values, or a combination of these factors in the patients.

Results: Of 130 bronchiectasis patients analyzed, 15.3% (n=20) had BEC > 300 cells/uL, 26.1% (n=34) showed FeNO > 25 ppb, and 36.9% (n=48) had serum IgE > 75 IU/L. Up to 60.7% (n=79) of patients displayed type 2 inflammation, characterized by male predominance, higher BMI, more smoking exposure, and increased cardiovascular comorbidities. These patients also had older age, fewer symptoms, lower BAL TNF-α, and higher likelihood of Haemophilus influenzae colonization than those with non-type 2 inflammation. Analysis identified Haemophilus influenzae as a factor linked to type 2 inflammation (odds ratio=10.500, 95% CI 1.193-92.395, P=0.034). Moreover, Type 2 inflammation correlated with fewer future exacerbations, while Pseudomonas aeruginosa (PsA) and Neutrophil-to-Lymphocyte Ratio (NLR > 3.0) were predictors of more exacerbations.

Conclusions: Approximately 60% of patients with bronchiectasis display type 2 inflammation based on a broad definition. Our research indicates that Haemophilus influenza is an independent factor linked to type 2 inflammation in patients with bronchiectasis. Notably, type 2 inflammation is associated with a lower risk of exacerbation, in contrast to PsA and NLR, which are correlated with a higher risk of exacerbation. This highlights the dual faces of inflammation in bronchiectasis.

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

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

OB04

台灣非囊性支氣管擴張症的特徵：來自台灣支氣管擴張症註冊中心的數據

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Non-cystic Fibrosis Bronchiectasis Characteristics in Taiwan: data from the Taiwan Bronchiectasis Registry (TBARC)

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Background: Bronchiectasis is heterogeneous with various disease etiologies. To understand the disease's diversity, we must collect comprehensive epidemiological data to ensure precise management for patients with bronchiectasis. Our aim was to describe the clinical characteristics of bronchiectasis and compare differences in various phenotypes.

Methods: The Taiwan bronchiectasis registry is a multicenter, retrospective, observational cohort study. Adult patients diagnosed with bronchiectasis through CT scans, were recruited from 16 hospitals throughout Taiwan. We collected comprehensive clinical data upon enrollment and conducted one-year follow-ups using an electronic case report form.

Results: Between January 2017 and June 2020, 2753 patients were enrolled. The mean age was 67. 42% (1150/2753 patients) patients were male. The mean score of the modified Reiff score was 5.0 (1-18). 32% (512/1576) patients had airflow limitation. The proportions of bacteria, tuberculosis, non-tuberculous mycobacterium, and fungi cultured from sputum within one year of follow-up were 79.3% (759/957), 1.9% (25/1298), 27.4% (356/1298), and 48.2% (154/319), respectively. The most common bacterial isolate was Pseudomonas aeruginosa (22.4%), followed by Klebsiella pneumoniae (10.7%). 17% of patients were hospitalized at least once due to exacerbations within a year. One-year all-cause mortality was 3% (87/2563). One-year all-cause mortality was 3% (87/2563 patients). Female bronchiectasis patients had more severe imaging findings than male patients. However, they exhibited less obstructive lung function impairment (25.9% vs 40.1%, $p<0.001$), experienced fewer one-year acute exacerbations (15.2% vs 19.7, $p=0.002$), and had a lower mortality rate (2.1% vs 5.2%, $p<0.001$).

Conclusion: Our research more frequently observed Klebsiella pneumoniae isolates, compared to studies conducted in Western countries. Although female bronchiectasis patients had more severe imaging findings, their prognosis appeared to be better.

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

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

OB05

使用第二代深度學習演算法 Belun 睡眠系統 (BLS) 診斷阻塞性睡眠呼吸中止症 (OSA) 在疾病檢測、嚴重程度分類方面的有效性-一前導性研究

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The effectiveness of the diagnosis of obstructive sleep apnea (OSA) with second-generation deep learning algorithms, Belun Sleep System (BLS), in disease detection, severity categorization -A pilot study

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Purpose: The study aimed to evaluate the effectiveness of the diagnosis of obstructive sleep apnea(OSA) with second-generation deep learning algorithms, Belun Sleep System(BLS), in disease detection, severity categorization, and sleep stage classification in Kaohsiung Chang-Gung memorial hospital.

Materials and Methods: The focus technology was the Belun Ring with second-generation deep learning algorithms, and the reference technology was in-lab polysomnography (PSG). The sample consisted of eight subjects (M: F = 6:2) referred for an overnight sleep study. The design was a rigorous performance evaluation by comparing Belun Ring to concurrent in-lab PSG according to the American Academy of Sleep Medicine (AASM) Scoring Manual, version 2.03 (2014). A hypopnea event is defined as a decrease in nasal pressure signal excursions by 30%-90% of the baseline for ≥10 seconds accompanied by oxygen desaturation ≥4%. The core analytics were Wilcoxon Signed Ranks Test, Reliability-Intraclass Correlation Coefficient, sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), receiver operating characteristics curves with area under the curve.

Results: In Wilcoxon signed Ranks test of Nonparametric tests showed no significant difference between Sleep latency, apnea hypopnea index (AHI) in total sleep time (TST), Rapid-Eye-movement stage (REM) and Non-Rapid Eye movement (NREM) of sleep. Sleep latency, AHI in TST/REM/NREM sleep and oxygen desaturation index (ODI) in total recording time (TRT) had high degree of consistency between these two measurements (ICC: 0.922, 0.984, 0.984, 0.838, 0.991). The positive and negative predictive value and sensitivity, specificity in categorizing AHI ≥ 5 were 100%, 100%, 100% and 100%, respectively. The positive and negative predictive value and sensitivity, specificity in categorizing AHI ≥ 15 were 100%, 80%, 75% and 100%, respectively. The positive and negative predictive value and sensitivity, specificity in categorizing AHI ≥ 30 were 100%, 100%, 100% and 100%, respectively.

Conclusions: The core conclusion was that the Belun Ring with second-generation deep learning algorithms was a reliable and accurate tool for diagnosing OSA and its severity.

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

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

OB06

台灣慢性咳嗽的醫療資源耗用與疾病負擔

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Chronic Cough: Utilization of Healthcare and Burden in Taiwan

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Objectives: Chronic cough, defined as coughing that lasts for >8 weeks, has an estimated global prevalence of around 6.22–10%. However, the clinical and health-care burden of chronic cough in Taiwan is not well understood.

Methods: This multicenter observational study enrolled patients who reported daily cough for more than 8 weeks in 5 medical centers across Taiwan. Demographics, disease-related characteristics, and healthcare resource utilization patterns were prospectively collected through clinical interview and questionnaires. Past medical history, diagnostic tests, and medications were retrospectively obtained through medical chart review.

Results: *1. Patient characteristics:* Among the 200 enrolled patients, 60% were female. Average age was 59.5 years and 85% were non-smokers. *2. Disease burden:* 56% of patients with chronic cough experienced cough-related complications, including chest pain (46%), urinary incontinence (28%), sleep disturbance (38%) and nausea/vomiting (33%). 20% of patients with sleep disturbance reported that the sleep disturbance was severe to very severe. 78% experienced associated respiratory symptoms. *3. Health care utilization:* 85.49% of patients with chronic cough utilized healthcare resources for chronic cough, including 47.5% visited clinics, 32.5% visit regional hospital, and 46.5% medical center. 95% of patients underwent Chest X-Ray, 60% underwent pulmonary function testing, and 20% underwent chest CT scans. 60.62% use prescribed medications. The most commonly recorded medications for chronic cough included antihistamines (73.6%), antitussives and expectorants (69.1%), and nasal inhalers (31.4%). Traditional medicine use was reported by 31.37% in interviews, but not in medical chart review. These patients reported estimated self-paid medication cost for chronic cough was 60-100 USD/month/patient.

Conclusions: Not only did chronic cough pose a substantial impact on quality of life, but it was also associated with health care utilization burden in Taiwan. Our preliminary survey warrants future large-scale epidemiologic study for chronic cough 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)

OB07

驗證以光體積變化描記圖與三軸加速訊號建立的腕式睡眠自動分期：與整夜睡眠多項生理及腕動錶相較

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Validation of photoplethysmography-and acceleration-based sleep staging in a community sample: comparison with polysomnography and Actiwatch

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Study Objectives: Although wrist-worn consumer wearables are widely used for home sleep monitoring, few have been validated. It is unclear whether consumer wearables could be an alternative to Actiwatch. This study aimed to establish and validate an automatic sleep staging system (ASSS) utilizing photoplethysmography and acceleration data collected from a wrist-worn wearable device.

Methods: Seventy-five participants from a community population underwent overnight polysomnography (PSG) while wearing a smartwatch (MT2511) and Actiwatch Spectrum Plus (Philips Respironics, Inc; Murrysville, PA, USA). Photoplethysmography and acceleration data collected from the smartwatches were utilized to build a 4-stage (wake, light sleep, deep sleep, and rapid eye movement [REM] sleep) classifier, which was validated against PSG. The performance of the sleep/wake classifier was compared with Actiwatch. All analyses were conducted separately for participants with PSG sleep efficiency (SE) ≥ 80% and SE < 80%.

Results: The 4-stage classifier and PSG showed fair overall epoch-by-epoch agreement (kappa, 0.55; 95% confidence interval, 0.52 to 0.57). The deep sleep and REM times were comparable between ASSS and PSG, while ASSS underestimated the wake time and overestimated the light sleep time among participants with SE < 80%. Moreover, ASSS underestimated sleep-onset latency and wake after sleep onset and overestimated total sleep time and SE among participants with SE < 80%, while all were comparable among participants with SE ≥ 80%. The biases were smaller for ASSS than for Actiwatch.

Conclusions: Our photoplethysmography- and acceleration-based ASSS was reliable for participants with SE ≥ 80% and had a smaller bias than Actiwatch among those with SE < 80%. Thus, ASSS may be a promising alternative to Actiwatch.

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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)

OB08

阿奇黴素對支氣管擴張症患者肺部微生物菌叢基因體的影響：一個前瞻型觀察研究

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The impact of azithromycin on lung microbiome in patients with bronchiectasis: A prospective observational study

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Purpose: Azithromycin (AZM) has been shown to reduce exacerbations in patients with bronchiectasis. However, its effects on the lung microbiome and host immunity in these patients are not well-understood. This study aims to examine changes in the lung microbiota and airway inflammatory status before and after AZM treatment in bronchiectasis patients.

Materials and Methods: We conducted a prospective cohort study on patients with non-cystic fibrosis bronchiectasis. Participants prescribed oral AZM 250mg daily for 12 weeks were enrolled. Bronchoalveolar lavage fluid (BAL) and blood samples were collected both before (Day 0) and after (Day 84) AZM treatment. We used 16S ribosomal RNA (V1-V9) sequencing to assess the lung microbiome before and after the treatment. Quantitative high-resolution computed tomography (HRCT) was employed to evaluate the radiological severity of bronchiectasis.

Results: A total of 71 patients enrolled, with 57 patients completing AZM treatment. Their median age was 65.5; 54% were female and 75.4% were nonsmokers. Although AZM didn't affect alpha diversity (p=0.49), it altered lung microbiota communities (β diversity, p=0.001). DESeq2-based Differential Abundance Analysis (DAA) identified a decrease in six species post-AZM treatment, including Haemophilus parainfluenzae and Neisseria subflava. Remarkably, 64.9% of patients showed a symptom response (CAT >2) after AZM treatment and were categorized as the “responder group”. Compared to non-responders, this group had distinct microbiome profiles (β diversity, p=0.025) linked to higher Proteobacteria levels, particularly Pseudomonas aeruginosa and Klebsiella pneumoniae. This group also showed increased neutrophilic markers (such as IL-1β) pre-treatment but diminished neutrophilic inflammation (IL-1β, IL-18, IL-6, and TNF-alpha) post-treatment.

Conclusions: Our study revealed that AZM treatment led to a therapeutic response in some but not all patients with bronchiectasis. There were noticeable post-AZM treatment changes in the lung microbiome. The correlation between specific taxa and airway inflammation suggests potential for personalized therapeutic strategies in patients with bronchiectasis.

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

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

PB01

藥師教育後慢性阻塞性肺疾病患者之 SGRQ、WHOQOL-BREF 和 EQ-VAS 比較

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A Comparative Study of SGRQ, WHOQOL-BREF, and EQ-VAS in Patients with Chronic Obstructive Pulmonary Disease Following Pharmacist Education

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Purpose: Limited data exists for comparing the St. George's Respiratory Questionnaire (SGRQ), World Health Organization Quality of Life-BREF (WHOQOL-BREF), and EuroQol Visual Analogue Scale (EQ-VAS) among patients with COPD after pharmacist intervention. Our study aims to assess the impact of pharmacist education on COPD patients' inhaler usage by employing different questionnaires to evaluate their quality of life.

Materials and Methods: Enrollment encompassed COPD patients aged 40 and above who were using bronchodilators. These patients were randomly assigned to receive either pharmacist education or standard care. The survey incorporated three different versions of health-related quality of life questionnaires, administered both before and after the pharmacist education or standard care. The questionnaires included the Taiwan version of EQ-5D-5L, SGRQ, and the Taiwan Brief Version of WHOQOL-BREF. The study spanned from August 31, 2021, to December 31, 2022.

Results: The study was conducted over an 8-month period, from September 1, 2021, to April 30, 2022. Among the 250 COPD patients aged 40 and above who met the inclusion criteria and completed the study questionnaires, 125 received medication education (treatment group), while 125 received standard care. Patient characteristics were as follows: 71.13% were aged 65 or older, 90.03% were male, and 55.72% had a normal BMI. The average mMRC score was 0.97, and the average CAT score was 13.62. EQ-5D-5L and WHOQOL-BREF exhibited no statistically significant differences before and after pharmacist education. However, significant differences were observed in the results of the St. George's Respiratory Questionnaire (SGRQ) before and after pharmacist education ($P < 0.05$).

Conclusions: Our findings demonstrate that pharmacist education in inhalation techniques improved the quality of life assessed by SGRQ in COPD patients.

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

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

PB02

台灣不同學校系統新冠肺炎預防措施和疫苗接種的比較

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Comparison of COVID Precautions and Vaccination of Public School Sytem with International School System in Taiwan

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Background: The COVID-19 pandemic has posed unprecedented challenges to education systems worldwide, requiring schools to adapt rapidly to ensure campus safety. Within Taiwan's diverse educational landscape, public and international schools have distinct characteristics and needs, making it essential to examine how these different types of institutions have adapted to this health crisis. This study aimed to uncover the similarities and differences in strategies and protocols, ultimately contributing to a broader understanding of effective pandemic management within educational institutions.

Methods: The research involves a mixed-methods approach that combines qualitative and quantitative analysis. We conducted in-depth examinations to gain insights into the perceptions of COVID-19 precautions.

Results: The results highlighted the differences in COVID-19 precautions between the public and international school systems across various key areas. Both schools conducted temperature checks and thermal scanning at the entrance ($p=0.897$). The public school system encouraged students and their household members to check body temperatures before school every day and make a record daily ($p<0.001$). For hand washing and classroom cleaning, the public school encouraged students to wash their hands after every recess ($p=0.041$); teachers spray every student's hand with sanitizer when they enter the classroom in international schools ($p=0.032$). Tabletop dividers were used to help avoid virus transmission and ensure social distancing to keep students separated in public school, while international schools do not ($p<0.001$). Mask-wearing was mandatory for all students and staff inside school premises, both in public and international schools ($p=0.782$). Given the diverse age groups and varying eligibility criteria for vaccination, the COVID-19 vaccination strategies differed in public schools and international schools, which served students from kindergarten to 12th grade ($p=0.031$). In 2021, the immunization primarily focused on students aged 12 to 18 with the BNT-Pfizer vaccine. In 2022, Taiwan expanded its COVID-19 vaccination efforts to include younger students under 12. This expansion introduced the use of the BNT-Pfizer vaccine and the Moderna vaccine for this age group.

Discussion: The comparison of COVID-19 precautions in public schools and international schools within the Taiwanese education system will provide valuable insights into the efficacy of different approaches to future pandemic management in educational settings.

Conclusion: By comparing the COVID-19 precautions in public schools and international schools within Taiwan's education system, the findings of this study will not only contribute to the broader understanding of pandemic preparedness in schools but also offer practical recommendations for policymakers, educators, and school administrators worldwide as they navigate the complexities of ensuring safe and effective learning environments during and beyond the COVID-19 era.

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

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

PB03

呼吸衰竭患者的長期存活結果分析

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The long-term survival outcomes of prolonged mechanical ventilation patients

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Purpose: The 1-year survival rate of patients on prolonged mechanical ventilation was 29-42% before 2000. By 2012, Carson reported the 1-year survival rate of prolonged mechanical ventilation patients was 52%, an unsatisfactory improvement in survival time. Our objective is to explore the long-term survival rate of prolonged mechanical ventilation patients in one respiratory care center over six years and offered recommendations for improving long-term survival**.**

Materials and Methods: We analyzed retrospectively data from our respiratory care center patients to investigate the discharge status and long-term survival rate. We also compared the 5-year survival rates of prolonged mechanical ventilation patients and our hospital lung cancer patients.

Results: The long-term follow-up data of 403 prolonged mechanical ventilation until October 30, 2018. The 5-year survival rates of all prolonged mechanical ventilation patients, discharged prolonged mechanical ventilation patients, and respiratory care ward patients were 18.1%, 40.05%, and 11.7%, respectively. Successful weaning from mechanical ventilation was a key factor in the long-term survival of prolonged mechanical ventilation patients. The 5-year survival rate of discharged prolonged mechanical ventilation patients was better than that of all lung cancer patients. The 5-year survival rates of all prolonged mechanical ventilation patients and respiratory care ward patients were similar to that of stage IV lung cancer patients.

Conclusions: Prolonged mechanical ventilation patients had the worst long-term survival rate of all patients with chest diseases in our hospital. Successful weaning from the mechanical ventilator was most important factors for improving long-term outcomes in prolonged mechanical ventilation patients.

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

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

PB04

呼吸衰竭患者的性別差異

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Gender differences in prolonged mechanical ventilation patients

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Purpose: The gender differences in patients requiring prolonged mechanical ventilation are not understood. We investigated the effects of gender differences in terms of age, causes of respiratory failure, discharge status, successful weaning, mortality rate and long-term survival outcomes in patients receiving prolonged mechanical ventilation.

Materials and Methods: We conducted a six-year retrospective study of patients requiring prolonged mechanical ventilation. Survival curves for all patients requiring prolonged mechanical ventilation and those who were very old (aged ≥ 80 years) were compared based on gender.

Results: Among the 574 patients enrolled. There was no statistically significant difference between male and female patients regarding successful weaning, ventilator dependence, or in-hospital mortality. We gathered long-term follow-up data on 296 patients, including 70 very old male patients and 41 very old female patients. The 6-month, 3-year, and 5-year mortality rates for the 189 male patients were 75.1%, 85.2%, and 89.9%, respectively; the corresponding rates for the 107 female patients were 66.4%, 86.0%, and 88.8%, respectively. There was no statistically significant difference between two groups regarding mortality rates. The five-year survival curve of male patients was similar to that of female patients. The 6-month, 1-year, and 5-year mortality rates for the 79 very old male patients were 90.0%, 95.7%, and 97.1%, respectively; the corresponding rates for the 41 very old female patients were 63.4%, 90.2%, and 95.1%, respectively. There was a statistically significant difference between very old male and very old female patients in the 6-month mortality rate and the five-year survival curve.

Conclusions: There were no gender differences in weaning status, ventilator dependence, in-hospital mortality, or survival outcomes among patients requiring prolonged mechanical ventilation. Among very old patients requiring prolonged mechanical ventilation, the risk of death was 34% lower in very old female patients than in very old male patients for a period of five years.

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

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

PB05

超低劑量含釓顯影劑長期使用對人類纖維母細胞的影響

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Effects of Ultra-low Dose and Long-term Treated-gadodiamide on Human Fibroblast Cells

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Gadolinium has been reported to cause several human injuries such as liver lobular necrosis and nephrogenic systemic fibrosis. However, its toxicity to ultra-low-dose and long-term exposure on human fibroblast cells remains largely unknown. The current study aimed to investigate the effect of an ultra-low-dose and long-term treatment of gadolinium-based contrast agent gadodiamide on the human dermal fibroblast cell line, HDFn, for the first time. Cell viability was assessed using MTT assay, and autophagy were assessed using acridine orange and LysoTracker Red staining. Apoptosis was accessed by flow cytometry as usual. Western blotting was used for knowing the alterations of specific targeted proteins. Interestingly, ultra-low-dose and long-term treatment of gadodiamide did not cause significant autophagic vacuoles. Simultaneously, ultra-low-dose and long-term treatment of gadodiamide did not induce apoptosis either. The highlight findings are that gadodiamide significantly suppress the expression of Bax and Bad while enhance the expression level of Bcl-2. Although ultra-low-dose and long-term treatment of gadodiamide may not induce apoptosis or autophagy in HDFn cells, the enhance of HDFn proliferation may cause fibrosis in the long-term treatment with its residual ultra-low-dose. Physicians should carefully remove all the gadodiamide used clinically to prevent further potential fibrosis.

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

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

PB06

新冠肺炎感染後以肺部病變為臨床表現的Antisynthetase syndrome一位病例報告

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Antisynthetase syndrome presenting with lung involvement following COVID-19 infection, A case report

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Anti-synthetase syndrome (ASS) is an uncommon immune-mediated disease entity characterized by myositis, interstitial lung disease (ILD), non-erosive arthritis, and less common features such as fever, Raynaud's phenomenon, and skin changes, associated with anti-aminoacyl-transfer-RNA antibodies. The prevalence of ILD has been reported in 69–100% of ASS patients in several studies and the presence of ILD serves as a major predictor of mortality and morbidity. However, ILD is the presenting feature of ASS in only 15–30%. Several reports have also indicated that healing from COVID-19 may trigger the occurrence or flare of connective tissue disease including ASS, or induce the development of new clinical presentations.

In this case, we present a 30-year-old woman who had COVID-19 infection in June 2022. She was in good health prior to the COVID-19 infection. Subsequently, she began to experience mild cough and dyspnea, with symptoms gradually worsening. She came to our hospital in December, 2022 due to abnormal chest X-ray (CXR) on examination at other hospital, which showed bilateral infiltrates. Her COVID-19 test was negative. The chest CT scan (CT) revealed bilateral ILD pattern and steroid was prescribed. She was then discharged in a stable condition. However, she was admitted again in January, 2023 and then referred to medical center due to progressive dyspnea and worsening findings of ground glass opacities on CXR/CT. The autoimmune disease panel was checked for ILD and it revealed the presence of anti-PL 12 antibodies. Based on Connor's criteria, the diagnosis of Anti-synthetase syndrome (ASS) was established. Immunosuppressants, including systemic corticosteroid and azathioprine were carefully titrated, together with prophylactic Baktar(Sulfamethoxazole/Trimethoprim). Lung biopsy via Video Assisted Thoracoscopic Surgery (VATS) revealed nonspecific interstitial pneumonia (NSIP). Her condition subsequentlygot improved and became more stable.

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

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

PB07

Pirfenidone相關之抗利尿激素分泌不當症候群導致嚴重低血鈉

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Pirfenidone-related syndrome of inappropriate anti-diuretic hormone leading to severe hyponatremia

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Introduction: Pirfenidone has revealed its anti-fibrotic efficacy in patients with idiopathic pulmonary fibrosis (IPF). It is generally well tolerated but not free of side effects. Hyponatremia is a rare adverse effect of pirfenidone, which has been reported as early as in the pivotal CAPACITY trials. We present an elderly patient with IPF who developed severely aggravated hyponatremia following treatment with pirfenidone.

Case presentation: A 96-year-old man with heart failure, chronic mild-to-moderate hyponatremia (125~134 mmol/L), and idiopathic pulmonary fibrosis presented with worsening hyponatremia and confusion. Pertinent workups for the hyponatremia revealed urine osmolality 150 mOsm/KgH2O, urine Na 28mmol/L, serum osmolality 268 mOsm/KgH2O, cortisol 16.1μg/dL, TSH 31.16 uU/mL, free T4 0.80 ng/dL, albumin 2.5g/dL. The hyponatremia was initially attributed to hypothyroidism plus inadequate effective arterial volume caused by heart failure and hypovolemia. Levothyroxine supplement (12.5 μg/day) was initiated together with careful fluid status management. However, the hyponatremia deteriorated to 118 mmol/L (with serum osmolality 259 mOsm/KgH2O), and the follow-up workups revealed urine Na 86 mmol/L and osmolality 357 mOsm/KgH2O. The patient was not experiencing pain or physical or emotional stress at that time. The syndrome of inappropriate antidiuretic hormone (SIADH) was diagnosed. We implemented a careful restriction on water intake. The medication was also reviewed judiciously, and lansoprazole and pirfenidone were discontinued for their potential hyponatremic effect. The hyponatremia and consciousness of the patient then improved gradually.

Discussion: Although very rare, hyponatremia is a potential adverse effect of pirfenidone. Cases of hyponatremia have been reported previously, even among subjects of the treatment groups of the pivotal CAPACITY trials. SIADH has been suggested to be the main cause, though the exact mechanism is largely unknown. Similar to the previous reports, our case showed the possible exacerbating effect of pirfenidone on hyponatremia. Hyponatremia in most patients is frequently multifactorial, but the possibility of a medication adverse effect must always be considered and dealt with.

Conclusions: Pirfenidone may cause severe hyponatremia by SIADH, and monitoring sodium levels during the treatment course may be necessary.

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

PB08

肌少症在老年人睡眠呼吸中止症和肥胖之間的關聯性

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The association between OSA, sarcopenia and obesity in the elderly

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Purpose: Obstructive sleep apnea (OSA), a prevalent sleep-disordered breathing, is characteristic of upper airway obstruction repeatedly. Obesity is an important risk factor, and higher body mass index (BMI) is associated with the severity of OSA. Sarcopenia is a geriatric syndrome prevalent among the elderly, and aging is also known as a significant risk factor for OSA. Thus, our intention was to identify more clearly about the association between OSA and obesity in consideration of sarcopenia among the elderly.

Materials and Methods: Healthy adults aged over 60 years were invited to join the Integrating Systematic Data of Geriatric Medicine to Explore the Solution for Healthy Aging (ISD-HA) study between September 2019 and October 2020 during their general medical examination at Chang Gung Memorial Hospital. Sleep profile was accessed using questionnaires and polysomnography (PSG). Standardized in-home PSG was performed and apnea-hypopnea index (AHI), defined as the respiratory events per hour during sleep, was retrieved. Sarcopenia was defined as loss of muscle mass plus loss of muscle strength and/or reduced physical performance. We defined obesity as body fat percentage more than 25% in men and more than 33% in women. Linear regression was used to test the relationship between BMI and AHI, to see the changes of BMI with the severity of OSA

Results: The number of AHI increases with the age among people aged from 60 to 80. As to obesity, the BMI of people aged from 60 to 80 has significantly increased with aging. The proportion of sarcopenia increases with the advance of age, and sarcopenia is more prevalent in female than male among the elderly aged over 60. No remarkable relation between AHI and BMI was observed in this study. Among people with sarcopenia, there is subtle relation between obesity and OSA. However, we found that increasing BMI is associated with higher AHI among people without sarcopenia. Hence, we suggest that sarcopenia is a confounding factor when exploring the relation between OSA and obesity.

Conclusions: Without the confounding factor of sarcopenia, positive linear relation of obesity and OSA severity was noted. Hence, sarcopenia is suggested to be taken into consideration when exploring the influence of obesity on OSA among the elderly. More upcoming studies are expected to further 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)

PB09

在博萊霉素誘導的肺纖維化中，微小膠細胞受體二 (TREM2)調控天然淋巴細胞的表現

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Triggering receptor expressed on myeloid cells-2 regulates innate lymphoid cells expression in bleomycin-induced pulmonary fibrosis

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Purpose: This study evaluated the role of triggering receptor expressed on myeloid cells – 2 (TREM2) in regulating innate lymphoid cells (ILC) activation in bleomycin-induced pulmonary fibrosis.

Materials and Methods: We examined the role of TREM2 in regulating ILC expression in mice model of bleomycin (BLM)-induced pulmonary fibrosis. We assessed the levels of ILC expression, pulmonary fibrosis, and inflammation using histological staining and molecular biology techniques. These results were compared between wildtype (WT) and TREM2 knockout (KO) mice.

Results: Inflammatory cell aggregation and collagen fiber deposition were more prominent in TREM2 KO mice after intratracheal bleomycin injection compared with WT mice. There's a pronounced increase in GATA3 and ROR γ T expressions on lung tissues from TREM2 KO mice compared to WT mice. The adoptive ILCs isolated from WT mice after BLM stimulation transfer in vivo, enhanced the expression of TGF-β, α-SMA, and collagen-1 in naïve WT mice. Immunofluorescent staining highlighted GATA3 expression, excluding RORyt, in lung tissues of TREM-2 KO mice after BLM stimulation. TREM-2 KO ILCs transfer into WT mice demonstrated the more severity in lung fibrosis than WT ILCs.

Conclusions: TREM2 regulates ILCs activity to enhance the severity of bleomycin-induced lung fibrosis.

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

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

PB10

內質網蛋白 TXNDC5 通過增強內皮細胞間質轉化促進肺纖維化

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ER Protein TXNDC5 Promotes Lung fibrosis by Augmenting Endothelial-to-Mesenchymal Transition

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RATIONALE: Endothelial-to-mesenchymal transition (EndoMT), a process where endothelial cells (ECs) transdifferentiate into myofibroblasts, has been reported to be involved in the pathogenesis of idiopathic pulmonary fibrosis (IPF), a devastating interstitial lung disease with grave outcomes and limited therapeutic options. To what extent does EndoMT contribute to IPF and the underlying molecular mechanisms, however, remain incompletely understood. Recent studies indicate that ER protein thioredoxin domain containing 5 (TXNDC5), enriched both in endothelial cells and myofibroblasts, is a critical mediator of IPF by augmenting TGFβ signaling in myofibroblasts. The goal of this study was to test the hypothesis that TXNDC5 promotes lung fibrosis by transactivating lung myofibroblasts through EndoMT under the control of TGFβ signaling.

Materials and Methods: A triple transgenic mouse line (Cdh5-Cre-ERT2;ROSA26-tdTomato; Col1a1-GFP^{Tg}, abbreviated as EndoMT^{3Tg}) allowing the visualization of endothelial cells (labeled with tdTomato) that undergo EndoMT (GFP^{+}/tdTomato^{+}) was employed to monitor EndoMT in the mouse IPF lungs induced by bleomycin (BLM, 3mg/kg). EndoMT^{3Tg}; Txndc5$^{fl/fl}$ (Txndc5$^{Endo\text{-}cKO}$) mice to investigate the role of endothelial TXNDC5 in lung EndoMT and its contribution to the development of lung fibrosis. The extent and functional consequences of pulmonary fibrosis were evaluated using immunohistochemistry, immunofluorescence, and pulmonary function test.

Results: Using the EndoMT3Tg mouse line, a significant percentage (60.9%) of lung myofibroblasts were demonstrated to stem from endothelial cells in the lungs of mice with induced BLM-associated IPF. Following re-analysis of scRNA-Seq data (GEO1368831), we observed TXNDC5 to be markedly expressed in patients with IPF within endothelial cells. When compared to the controls (EndoMT^{3Tg}), deletion of Txndc5 in endothelial cells (Txndc5$^{Endo\text{-}cKO}$) resulted in a significant decrease of EndoMT and lung fibrosis induced by BLM. As a result, lung function was preserved. Moreover, Txndc5$^{Endo\text{-}cKO}$ lungs treated with bleomycin showed reduced endothelial permeability, detected by Evans blue dye.

Conclusions: The research highlights the significant role of EndoMT in BLM-induced mouse IPF lung fibrosis. By depleting Txndc5 from endothelial cells, there was a decrease in EndoMT and lung fibrosis, thereby preserving lung function. Furthermore, TXNDC5 deletion from endothelial cells decreased endothelial permeability in mice, suggesting that TXNDC5 plays a critical role in lung fibrosis through the regulation of EndoMT. Targeting TXNDC5 specifically in the lung endothelium may present a promising and effective therapeutic strategy in the treatment of lung fibrosis.

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

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

PB11

頸部電腦斷層舌頭亨氏單位與阻塞性睡眠呼吸中止的關係

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Relationship between Tongue Hounsfield Unit on Neck Computed Tomography and Obstructive Sleep Apnea

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Purpose: Obstructive sleep apnea (OSA) is a condition marked by intermittent airflow interruptions due to upper airway collapse during sleep. While full-night polysomnography at a sleep center is the gold standard for OSA diagnosis, it doesn't pinpoint the specific anatomical site of upper airway obstruction. We hypothesized that excess fat deposit in the tongue in OSA patients. Neck computed tomography (CT) provides a valuable Hounsfield Unit (HU) of tongue. our purpose was to investigate the potential relationship between tongue HU and OSA. To assess this relationship, we employed correlation analysis, which is a statistical method used to evaluate associations between two continuous variables. a P-value less than 0.05 was regarded as indicative of statistical significance by two-tailed test.

Materials and Methods: Our cross-sectional study included participants aged ≥ 18 years who underwent full-night polysomnography and neck CT scans at a regional hospital from March 1, 2020, to November 30, 2021. We delineated the HU of both the entire tongue and the tongue base examining both axis and sagittal views of neck CT scans.

Results: We recruited a total of 69 patients, with 48 males and 21 females. The participants had an average age of 54.7 ± 14.7 years, and their average body mass index was 27.8 ± 3.9 kg/m^2. In terms of sleep parameters, the average apnea-hypopnea index (AHI) was 36.6 ± 23.9 events per hour, and the AHI during rapid eye movement (REMAHI) stage was 44.6 ± 23.2 events per hour. The negative correlation between the whole tongue HU in a sagittal CT scan view and AHI was statistically significant. ($P < 0.01$). There was a significant and consistent negative correlation between REMAHI and the HUs of the entire tongue and the tongue base. regardless of axial and sagittal views.

Conclusion: the current study suggests that a decrease in tongue tissue density, possibly due to fat deposits, is related to an increased tendency for the tongue to drop during sleep, particularly during the REM stage. This is relevant in the context of sleep apnea, as a relaxed and obstructed tongue may contribute to breathing difficulties during sleep.

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

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

PB12

誘導性多功能幹細胞衍生培養基與尼達尼布通過抑制血管內皮間質轉化來減輕博來黴素引起之肺纖維化

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Induced pluripotent stem cell-derived conditioned medium and nintedanib ameliorate bleomycin-induced pulmonary fibrosis via inhibiting endothelial-mesenchymal transition

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Purpose: Pulmonary fibrosis is a progressive and debilitating interstitial lung disease. Pulmonary fibroblasts and myofibroblasts play a fundamental role in initiating and advancing pulmonary fibrosis. Pulmonary endothelial cells may serve as the source of pulmonary fibroblasts through a process known as endothelial-mesenchymal transition (EndoMT). Nintedanib and induced pluripotent stem cell-derived conditioned medium (iPSC-CM) has shown promise in attenuating bleomycin (BLM)-induced pulmonary fibrosis. However, it remains unclear whether nintedanib and iPSC-CM, whether used alone or in combination, can effectively suppress EndoMT to ameliorate BLM-induced pulmonary fibrosis.

Materials and Methods: Male C57BL/6 mice were induced with pulmonary fibrosis through intratracheal instillation of BLM. Nnintedanib was administered via oral gavage, and iPSC-CM was injected into the murine tail vein. In parallel, human pulmonary microvascular endothelial cells (HPMECs) were co-cultured with nintedanib and iPSC-CM, either separately or in combination. Subsequently, they were stimulated with BLM to assess whether nintedanib and iPSC-CM could suppress in vitro EndoMT. Immunohistochemistry (IHC) and immunofluorescence (IF) staining were employed to evaluate EndoMT in murine lung samples and HPMECs.

Results: Masson's trichrome staining of lung sections revealed significant collagen deposition in mice treated with BLM. The administration of nintedanib and iPSC-CM, either individually or in combination, markedly mitigated collagen deposition and pulmonary fibrosis. IHC staining and western blot analysis of lung tissue demonstrated an increase in the expressions of collagen-1, α-SMA, and vimentin following BLM stimulation. Concurrently, the expression of VE-cadherin, an endothelial marker, decreased. Notably, these changes were reversed by treatment with either nintedanib or iPSC-CM. Furthermore, IHC staining and western blot analysis of HPMECs after BLM stimulation showed an increase in EndoMT. Treatment with nintedanib and iPSC-CM, either individually or in combination, effectively downregulated EndoMT. In both in vivo and in vitro BLM-induced EndoMT, FAK activity, a regulator of EndoMT, exhibited a significant increase. Remarkably, treatment with nintedanib and iPSC-CM, either individually or in combination, led to a notable reduction in FAK activation.

Conclusions: Nintedanib and iPSC-CM, whether administered individually or in combination, effectively suppressed EndoMT and mitigated pulmonary fibrosis by reducing FAK 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)

PB13

成團泛菌菌血症於憂鬱症患

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Pantoea agglomerans bacteremia in individual with depression mood disorder

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Purpose: Pantoea agglomerans is rarely cause infections in humans mostly in immune-compromised individuals.We report here a case of Pantoea agglomerans bacteriemia in individual with depression mood disorder.

Case presentation: This 75 y/o woman had past history of (1)DM (2)HTN. This time, the patient CXR showed increased lung infiltration as pulmonary disorder. She as admitted for further management. After admission, the patient received supplemental O2 therapy to treat. Oral medications were prescribed as symptomatic treatment. Arranged cardiac echo for chest tightness. They suggested Tl-201 for r/o CAD.. The patient. Was consulted the Department of Traditional Chinese Medicine and wanted acupuncture consulting for rehabilitation. The patient often had negative emotions and expresses with family members, we consulted psychiatrist and added Lexapro(10) 0.5# HS to use. In response to these treatment, the patient was stable conditions. Fever up to 38 C. after chills on influenza A/B and covid-19 Ag collection showed Negative finding, Follow U/A/WBC/ESR all normal ranged, CXR showed no active lung lesion, added GM 1.5amp QD IVD tx.

Result: Blood culture showed GNB: Pantoea agglomerans antibiotics shift to Amikacin 500mg QD IVD then improved symptoms, the patient discharged . After 2 months of follow-up no febrile episodes recurred, and the patient maintains asymptomatic.

Discussion: Immune dysregulation has been consistently associated with depression and other psychiatric disorder. Pantoea agglomerans is usually as cutaneous infections occur as a wound - infection, sporadically cause bacteremia. Overall, spontaneous bacteremia has been associated with underlying illness such as malignancies, DM, hepatitis, heart failure, autoimmune diseases, CVA, COPD and ESRD. As consequence, the use of appropriate antibiotic treatment is usually associated with a therapeutic success. However, the clinical course was well controlled by antibiotic 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)

PB14

自行車交通意外與肺塌陷

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Lung atelectasis by chest pain after chest blunt injury from bicycle traffic accident

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Purpose: Focal hazy opacity of lung occurred in infectious, neoplastic non-infectious or nonneoplastic from acute or chronic condition. ll should be made into differential diagnosis.

Materials and Methods:

Case introduction: A 52 Y/O gentle man Self-reported: Riding bicycle, he was hit by a car accelerating from behind and was thrown away. He had a helmet. denied head injury right chest pain with local ecchymosis bilateral elbow contusion and local abrasion bilateral knees contusion and local abrasion no initial loss of consciousness; no headache; no vomiting; no neck pain; no abdominal pain; no limb numbness can walk in ED PH: denied BT: 37 , HR: 95 , RR: 20 , BP: 164/102 mmHg, SPO2 96 Conscious : clear, E4V5M6 pupil: 3mm/3mm Light reflex:+/+Neck: no tenderness, no deformity no jugular vein engorgement no tracheal deviation Head; no tenderness Chest: breathing sound : clear Heart beat : regular ; Heart sound: no murmur right anterior and chest wall tenderness Abdomen : soft and flat no tenderness, no rebound pain bowel sound : normoactive Extremities : free movable, no edema no tenderness Impression: right chest contusion, suspect ribs fracture, r/o pnuemo-hemothorax , r/o lung .bilateral elbow contusion and local abrasion .bilateral knees contusion and local abrasion CT: right chest wall soft tissue swelling, suspect right rib9 linear fracture, no pnuemothorax, no hemothorax right chest wall contusion with right rib 9 linear fracture, bilateral elbow contusion and local abrasion .bilateral knees contusion and local abrasion . Discharge with with tramadol wound care OPD f/u tomorrow with finding of RML lung opacity, few pleural effusion

Results: His RML opacity lung lesion cleared 3 day later, favored adhesive atelectasis

Disscussion: Symptoms of collapsed lung vary, may include: Falling in O2 saturation arrhythmias fever sharp chest pain. Causes for nonobstructive atelectasis include :Smoking COPD SCI or muscular dystrophy An illness or injury to breathe Medications: opioids or sedatives Obesity ,bed rest .elderly mucus plug, a tumor or fighter jet pilot Injuries, car accident Immobilization Scarring and shrinking of the membranes that cover the lungs and line the inside of the chest, exposure to asbestos smoking, surgery involved chest or abdomen .CXR is generally visible include lung opacification and loss of lung volume. atelectasis is reversible collapse of lung tissue with loss of volume; A large atelectasis may cause hypoxemia, but any other symptoms are due to superimposed pneumonia. Diagnosis is by CXR the cause is not clinically apparent, bronchoscopy or chest CT may be needed. Treatment involves maximizing coughing, deep breathing, and walking.

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

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

PB15

ICS-formoteraol 當作維持暨緩解療法與規律使用 furoate/vilanterol 但不以短效支氣管擴張劑為緩解療法於氣喘患者的影響

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Differences in ICS-formoterol maintenance and reliever therapy and maintenance fluticasone furoate/vilanterol (FF/VI) without short-acting reliever therapy in patients with asthma

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Purpose: This real-world study aimed to assess the efficacy of two asthma treatment approaches: ICS-formoterol maintenance and reliever therapy (MART) and maintenance fluticasone furoate/vilanterol (FF/VI) without short-acting reliever therapy in patients with asthma.

Materials and Methods: Patients with asthma who had received 6 months of treatment with maintenance inhaled corticosteroids (ICS) combined with a long-acting β2-agonist (LABA) were enrolled. We evaluated lung function, acute exacerbation rates, and Asthma Control Test (ACT) scores after this 6-month treatment period of the two different therapies.

Results: A total 161 patients with asthma were receiving maintenance ICS/LABA therapy were enrolled. 36 patients were treated with Budesonide/Formoterol (BUD/FOR) as ICS-formoterol maintenance and reliever therapy, while 125 patients were treated with maintenance fluticasone FF/VI without short-acting reliever therapy. Forced expiratory volume in 1 second (FEV1%) improved in both groups. (86.1% to 88.9%, p=0.208 for BUD/FOR; 91.6% to 93.2%, p=0.135 for *FF*/VI). The rates of moderate to severe acute exacerbations declined more significantly in patients treated with FF/VI, decreasing from 0.22% to 0.11% (p=0.026). In the BUD/FOR group, the acute exacerbation rate decreased from 0.27% to 0.13% (p=0.134). The mean ACT score for the BUD/FOR group increased from 22.3 to 23.8 ($p < 0.001$), and it increased from 21.5% to 22.6% ($p < 0.001$) in FF/VI group. There was no significant difference in the improvement of pulmonary function, ACT scores, or the decline in acute exacerbation rates between the two groups.

Conclusions: Patients treated with BUD/FOR as ICS-formoterol reliever therapy or maintenance FF/VI without short-acting reliever therapy led to improvements in pulmonary function, symptom control and decline in acute exacerbation rate. This implies that both treatment approaches may be effective, and the choice between them could depend on individual patient needs and preferences.

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

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

PB16

評估慢性肺阻塞急性惡化病人吸入劑技巧之不適當性

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Inappropriate skill of inhalers using in patients with exacerbation of COPD

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Abstract:

Subjective: Quality Care Program for chronic obstructive pulmonary disease (COPD) integrating case management and incorporating various healthcare professionals, including pharmacists, can form a care team to enhance the quality of care. In our hospital, when patient admission for COPD acute exacerbation (AE), our COPD team would visit patient, evaluate and educate COPD relevant issue, like dietary assessment, application medical assistive devise, and inhalation skill evaluation. Our study aims to identify the reasons for poor inhalation skill in order to enhance the effectiveness of inhalation.

Method: We collect patients admitted to National Taiwan University Hospital for COPD AE from 2019-2023.5. While patient admitted in general ward, case manager would inform all member visit patient for evaluation. We have designed assessment forms for various inhalers. Patients are asked to rate their inhalation skill based on their usual medication use and follow the drug administration steps.

Result: During 2019-2023.5, we visit 89 patients include 83 male and 6 female. Some patients admitted more than once. Different devises with different evaluation protocol separated by different mechanism, like dry powder inhaler, metered dose inhaler and soft mist inhaler were evaluated. Most patients (35%) are unable to describe the effects of the medication and do not know how to compensate for a missed dose when they forget to take their medication. Furthermore, patients know how to assess the remaining dose of the inhaler, they often do not replace the inhaler after the indicator reaches zero. Most patients wait until they are unable to spray the medication before replacing it. On the other hand, when it comes to using an aerochamber, most patients (25.4%) are unfamiliar with cleaning, maintenance, and the appropriate time for replacement.

After pharmacists intervened and assessed the patients' use of inhalers, they clearly identified many errors and oversights in the patients' usage. After providing proper education, patients became more proficient in their usage, enabling physicians to evaluate whether the efficacy of the inhaler was compromised due to improper handling.

Conclusion: The integrating COPD team including pharmacists visiting during admission for AECOPD can help to adjust inhaler using skills based on the patient's condition, further advancing the overall quality of care.

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

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

PB17

移植人類臍帶間質幹細胞改善肺纖維化優於脂肪間質幹細胞且無大量脂肪堆積與發炎反應

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Human Umbilical Mesenchymal Stem Cells Reverse Pulmonary Fibrosis much better than Human-Adipose-Derived Mesenchymal Stem Cells without Lipid Deposition and Significant Inflammation

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Purpose: Pulmonary fibrosis (PF) is a progressive, non-reversible illness with various etiologies. Currently, effective treatments for fibrotic lungs are still lacking. Various of stem cells had been applied to these diseases. Here, we compared the effectiveness and possible side effect of transplantation of human mesenchymal stem cells from umbilical cord Wharton's jelly (HUMSCs) versus those from adipose tissue (ADMSCs) in treating pulmonary fibrosis in rats.

Materials and Methods: Bleomycin(BLM) 5 mg was intratracheally injected to establish a severe, stable, single left lung animal model with PF. On Day 21 post-BLM administration, one single transplantation of 2.5×10^7 HUMSCs or ADMSCs was performed. Evaluation of pulmonary image, physiology, lung inflammation and regeneration were well studies.

Results: Lung function examination of Injury and Injury+ADMSCs rats displayed significantly decreased blood oxygen saturation and increased respiratory rates, while Injury+HUMSCs rats showed statistical amelioration in blood oxygen saturation and significant alleviation in respiratory rates. Reduced cell number in the bronchoalveolar lavage and lower myofibroblast activation appeared in the rats transplanted with either ADMSCs or HUMSCS than that in the Injury group. However, ADMSC transplantation stimulated more adipogenesis. Furthermore, matrix-metallopeptidase-9 over-expression for collagen degradation, and the elevation of Toll-like receptor-4 expression for alveolar regeneration were observed only in the Injury+HUMSCs. The Injury+ADMSCs, and the Injury+HUMSCs groups on Day 49, stained with oil red showed a large number of adipocytes in the left lung of the Injury+ADMSCs group with associated 2nd lung inflammatory response.

Conclusions: In comparison with the transplantation of ADMSCs, transplantation of HUMSCs exhibited a much more effective therapeutic effect on PF, with significantly better results in alveolar volume and lung function. While, transplantation of ADMSCs, but not HUMSCs, enhanced adipocyte accumulation with following lung inflammation in rats with PF.

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

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

PB18

呼吸衰竭老年患者的結果分析

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Prolonged mechanical ventilation in older patients

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Purpose: As the population ages, there is an increasing number of older patients who require prolonged mechanical ventilation. Information regarding its effects in older patients (aged ≥65 years) is limited. Our goal is to examine the impact of older patients receiving prolonged mechanical ventilation on successful weaning, ventilator dependence, and long-term survival during a 6-year period.

Materials and Methods: We investigated the effect of aging on the outcomes and progression of older prolonged mechanical ventilation patients by comparing the five age groups listed below: patients aged 65–69, 70–74, 75–79, 80–84 and ≥85 years. We collected data on age, sex, comorbidities, discharge status, weaning status, survival time, and long-term survival outcomes.

Results: There were no significant differences among the five age cohorts in terms of successful weaning, ventilator dependence, RCC mortality, and general ward mortality. There were age-related differences in the 5-year survival rate among the five age cohorts. Older prolonged mechanical ventilation patients showed that those with successful weaning and those who received tracheostomy had better 5-year survival rates as well.

Conclusions: Age is not the only factor influencing long-term survival in older age-prolonged mechanical ventilation patients. Successful weaning and tracheostomy are also associated with long-term survival.

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

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

PB19

血液中腺甘脫胺酶與慢性阻塞性肺病急性惡化之風險分析

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Evaluating the Influence of Serum Adenosine Deaminase Levels on the Risk of COPD Acute Exacerbation

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Purpose: COPD exacerbations have long been associated with adverse outcomes, emphasizing the importance of identifying predictive markers for timely intervention. Previous studies have identified several risk factors, yet the potential role of ADA in predicting exacerbations remains unexplored. In light of this, our study aims to contribute to the existing knowledge base by examining the relationship between ADA levels and the likelihood of COPD exacerbations.

Materials and Methods: Patients diagnosed with COPD who are willing to participate in this study will undergo a blood test to evaluate their baseline ADA value. Subsequently, a follow-up program in line with the COPD project will be initiated. Emergency room visits and admissions related to COPD acute exacerbations will be recorded.

Results: From January 2021 to December 2021, a total of 59 patients were enrolled in this study. The mean serum ADA level was 9.66, with a male predominance. Patients aged more than 65 years old constituted around 42 individuals (71.2%), and nearly all patients were current or ex-smokers, accounting for 54 patients (89.5%). The most common comorbidities were hypertension (25 patients, 42.4%) and heart diseases (16 patients, 27.1%). Compared with ADA level, higher ADA group (ADA ≥15) were associated with higher CAT score, mMRC, heart disease, and asthma. Admission were associated with higher BMI and mMRC more than 2 points. The serum ADA level was not found to be associated with ER visits or admissions due to COPD exacerbations.

Conclusions: While this preliminary analysis sheds light on the potential links between serum ADA levels and clinical aspects of inflammations in COPD patients. Asthma and heart diseases were found to be more prevalent in COPD patients with higher ADA levels. Further large-scale investigation to unravel the intricate connections between ADA and COPD exacerbations.

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

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

PB20

肺阻塞患者的最佳肺復原方式和時機：一項系統性回顧和網絡統合分析

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Optimal pulmonary rehabilitation program and timing on COPD patients: A systematic review and network meta-analysis

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Introduction: This study aimed to compare the pulmonary rehabilitation design using a network meta-analysis in stable chronic obstructive pulmonary disease (COPD) patients and those before and after discharge following an acute exacerbation of COPD.

Methods: PubMed, EMBASE, and Cochrane CENTRAL were retrieved from their inception until July 2022. The identified interventions were classified as **single-component programs** (endurance, resistance, and respiratory muscle trainings) or **multiple-component programs** (various combinations of these interventions). Network meta-analyses were performed separately for stable COPD and acute COPD exacerbations using a random-effects model to calculate the mean differences. The revised risk-of-bias tool 2.0 was employed to assess the Risk of Bias of the included studies. The Confidence in Network Meta-Analysis web application was utilized to rate the confidence in the synthesized evidence.

Results: The analysis included fifty-two trials with 2,686 patients. **For stable COPD patients**, multi-component rehabilitation programs combining endurance, resistance, respiratory muscle training showed significant improvements in the 6-minute walk test (6 MWT) distance (mean difference [MD] 72.09, 95% confidence interval [CI] 48.16 to 96.02) and St. George's Respiratory Questionnaire score (MD -24.51, 95% CI -45.26 to -3.75) compared to usual care. **In patients with an acute exacerbation of COPD**, initiating rehabilitation after discharge with endurance and respiratory muscle training yielded the most significant increase in 6 MWT distance (MD 51.09, 95% CI 5.42 to 96.76). Initiating rehabilitation before discharge with endurance training alone showed significant improvement in the 6 MWT distance (MD 167.69, 95% CI 81.23 to 254.15).

Conclusion: The combination of endurance, resistance, and respiratory muscle trainings significantly improves stable COPD patients. Additionally, in patients with an acute exacerbation of COPD, single-component rehabilitation programs focusing on endurance training showed significant improvements, whether initiated before or after discharge.

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

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

PB21

持續性正壓呼吸器對於呼吸中止症病人腎功能影響之系統性回顧與統合分析

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Effects of Continuous Positive Airway Pressure on Renal Function in Adults with Obstructive Sleep Apnea: A Systematic Review and Meta-Analysis

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Purpose: Obstructive sleep apnea (OSA) is highly prevalent among patients with chronic kidney disease (CKD), and it is associated with adverse renal risk factors and risk of developing CKD. However, it remains uncertain whether treatment with continuous positive airway pressure (CPAP) can mitigate the impairment of renal function. This study aims to evaluate the effects of CPAP treatment on renal function in adults with OSA.

Materials and Methods: We systematically searched PubMed, EMBASE, Cochrane Library, Web of Science, and ClinicalTrials.gov until September 2023 for studies on renal function in OSA patients. Two authors independently extracted data from eligible studies. All the outcomes reported in this review were continuous variables. Pooled estimates for all outcomes were calculated using a random-effects model. The primary outcome measures were estimated glomerular filtration rate (eGFR), urinary albumin-to-creatinine ratio (UACR), and serum creatinine levels.

Results: An analysis included a total of four randomized controlled trials (RCTs) and fifteen non-randomized controlled trials, comprising 2,825 patients with OSA. Comparing the CPAP group to the control group revealed a significant increase in eGFR (mean difference [MD]: 1.57, 95% confidence interval [CI]: 0.49 to 2.65, p: 0.004). However, no significant associations were found between CPAP therapy and UACR (MD: -0.05, 95% CI: -0.41 to 0.30, p: 0.77), serum creatinine (MD: -0.06, 95% CI: -0.14 to 0.03, p: 0.18), serum neutrophil gelatinase-associated lipocalin (MD: -6.39, 95% CI: -18.77 to 5.99, p: 0.31), and proteinuria (SMD: -0.19, 95% CI: -0.5 to 0.13, p: 0.25). In the comparison between pre-CPAP and post-CPAP, a significant difference was found in renal resistance index (p: 0.026), while filtration fraction (p:0.228), renal plasma flow (p: 0.161), and albuminuria (p: 0.265) yielded inconclusive results.

Conclusions: Our findings suggest that both the use of CPAP or maintaining good CPAP compliance, in comparison to receiving usual care or exhibiting poor CPAP compliance, led to a substantial enhancement in eGFR among patients with OSA. While, there were no notable differences in other renal parameters, such as UACR, serum creatinine, serum NGAL, and proteinuria. To further validate the therapeutic potential benefits of CPAP use on renal function in adult patients with OSA, including those with concomitant CKD, additional well-structured RCTs with larger participant cohorts are 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)

PB22

多次發生缺血性中風：與敗血症或癌症相關

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Exploring the Etiology of Repeated Ischemic Strokes: Sepsis, or Cancer-Related

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Case Presentation: A 71-year-old man, previously treated for advanced pancreatic cancer with liver metastasis (stage IV) and a history of coronary artery disease with three-vessel involvement, had previously undergone off-pump coronary artery bypass graft surgery. He presented to our hospital's emergency room with a sudden onset of slurred speech and weakness. A series of diagnostic imaging tests, including brain perfusion CT, revealed a substantial penumbra and a minimal core. As a result, he underwent a successful intra-arterial thrombectomy, and dual anti-platelet agents were used. Unfortunately, a week later, he experienced a generalized seizure. An urgent brain imaging study revealed recent infarctions in both the left and right middle cerebral artery territories, accompanied by brain swelling and mass effect. Additionally, scattered recent infarctions were found in the bilateral cerebellum and cerebrum, indicative of an embolic stroke. Simultaneously, he developed an unexplained fever, with blood culture identifying Salmonella O9 group. However, no infective vegetation was detected via transthoracic echocardiogram. Considering his advanced age and multiple underlying health issues, the patient's family made the difficult decision to transition to palliative care."

Discussion: Over the past two decades, there has been no notable shift in the recurrence of strokes. Instead, large artery disease and cardioembolic strokes have taken center stage in recurrent stroke cases. Notably, a quarter of ischemic strokes remain without a clear mechanism even after standard diagnostic assessments. Although cardioembolic and cryptogenic strokes exhibit a high rate of multiple recurrences, this doesn't seem to yield a significant difference. Active cancer has been firmly established as a risk factor for ischemic stroke. In a retrospective cohort study involving individuals with active solid cancer and acute ischemic stroke, nearly half of the cases had cryptogenic origins. Among these patients, the one-year cumulative rate of recurrent strokes and other significant thromboembolic events stood at 48%. However, there's a lack of a standardized diagnostic algorithm in this context. Additionally, prior literature has reported an association between nontyphoidal salmonellosis and ischemic stroke. The diagnostic criteria and treatment for antithrombotic agents currently remain a subject of controversy. In summary, diagnosing the causes and treating a senior gentleman who has experienced multiple episodes of ischemic strokes with various risk factors, including cardiovascular disease, advanced solid cancer, and salmonellosis, is a challenging task. The optimal use of antithrombotic agents in such cases also remains a topic of debate."

Conclusions: Recurrent ischemic strokes persist with an unclear cause, despite prominent links to large artery disease and cardioembolic strokes. Notably, active cancer and potential septic sources add complexity to the recurrence issue, demanding targeted research and clear guidelines.

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

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

PB23

應用機器學習模式探索肺阻塞病人使用三合一吸入型藥物

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Using Machine Learning for Predicting Triple Therapy Choice in Chronic Obstructive Pulmonary Disease Patients

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Purpose: The purpose of this study is to investigate the relevant and key factors for choosing triple therapy in Chronic obstructive pulmonary disease (COPD) patients, and could provide useful clues and suggestion for clinical healthcare professionals. COPD is an incompletely reversible airway disease characterized by chronic inflammation and destruction of lung tissue which resulted in persistent expiratory airflow limitation. Besides, reduced physical activity and poor quality of life were impressed. Although it could not be cured, it could be prevented and treatable. When managing COPD, inhalation therapy (single inhaler triple therapy: SITT or multiple inhaler triple therapy: MITT) plays a crucial role.

Materials and Methods: The database was retrospectively collected from the Healthcare Information System (HIS) and National Health Insurance case management system in central Taiwan hospital. The data was be collected during the period from April 2017 to March 2023, and included patients with COPD who were enrolled in the National Health Insurance Chronic Obstructive Pulmonary Disease Medical Improvement Program. Those were using triple therapy inhaler were enrolled. Total 105 cases were selected for analysis of COPD. In training dataset, total of 6 major categories and 28 research variables were selected as features. The type of inhaler was regarded as the decision variable. Furthermore, this study employed Classification and Regression Trees (CART) and Random Forest algorithms to analyze the relevant factors of COPD.

Results: In the empirical result, CART showed that accuracy rate is 0.93 and area under the receiver operating characteristic curve is 0.9, and random Forest shows accuracy rate is 0.6 and out-of-bag error is 0.4. Our study disclosed that variables related to the triple inhalation therapy were age at least and above 60 years-old, post-bronchodilator forced expiratory volume in one second (FEV1) at least and above 0.99L, and air flow limitation with obstructive type in Global Obstructive Lung Disease (GOLD) classification, GOLD 2 to GOLD 4. For single inhaler triple therapy (SITT) related variables, treatment adherence was high. For multiple inhaler triple therapy group (MITT), the key variable was Eosinophil count greater than or equal to 1.45% and less than 4.05%.

Conclusions: Machine learning model could help us further approaching the device choice in COPD.

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

PB24

肺阻塞之周邊血液 T 細胞 DNA 甲基化變化

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Landscape of DNA methylation alteration in peripheral T cells from chronic obstructive pulmonary disease

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Purpose: Extensive research has been conducted on the roles of T cell in the local microenvironment of Chronic Obstructive Pulmonary Disease (COPD), but the specific functions of systemic T cell remained unclear. DNA methylation is a crucial epigenetic modification capable of altering gene expression and function, and it plays a significant role in T cell development and function. This study aims to characterize and identify epigenetic changes in peripheral T cells of COPD patients.

Materials and Methods: The study was conducted from March 2021 to July 2023 and included a total of 55 COPD patients and 55 healthy volunteers (HV). COPD patients were further categorized as positive or negative for clinically important deterioration (CID) based on criteria such as lung function decline, acute exacerbation occurrences, and health status deterioration. T cells (CD3 positive) were isolated from peripheral blood mononuclear cells (PBMC) using flow cytometry. Whole genome methylation arrays (Infinium MethylationEPIC array) were performed after DNA extraction and bisulfite treatment. Differential methylation probes within promoter regions were identified for COPD versus HV and CID-positive COPD versus CID-negative COPD.

Results: The methylation array revealed marginal decreases in methylation levels among hypermethylated probes in COPD patients. A total of 312,943 differentially methylated probes were identified between COPD and HV groups, with 28.5% of them located within gene promoter regions. Gene set enrichment analysis showed enrichment of effector T cell genes in the hypermethylated genes, while hypomethylated genes were associated with gene sets differentiating naïve T cells from B cells. Subgroup analysis of CID-positive COPD patients revealed that hypermethylated genes were associated with the IL-5 stimulation effect in T cells, while hypomethylated genes were associated with IL-4-related T cell stimulation.

Conclusions: This study successfully identified changes in T cell methylation in the peripheral blood of COPD patients, as well as differences among COPD phenotypes. Methylation array results suggested alterations in T cell functions, and further transcriptomic and functional validation will help unveil the mechanistic roles of peripehral T cells in COPD.

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

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

PB25

以 Deep Convolutional Generative Adversarial Network 實作胸腔影像之經驗

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Experiences in Chest Imaging Generation with Deep Convolutional Generative Adversarial Networks

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Purpose: Deep Convolutional Generative Adversarial Network (DCGAN) is a variant of GANs and designed specifically for generating lifelike images, making it particularly suitable for image generation. DCGAN was first introduced by Radford and his colleagues in 2015. In this report, we modified a standard DCGAN architecture upto five training layers and a final 256x256 output. The results of this training will be discussed.

Materials and Methods: This model is modified from the original DCGAN model. We implanted it on TensorFlow 2.10 in a local machine with RTX3060 6G GPU. We use a publicly available dataset, provided by Kermany et al for discriminator. Total 1341 images in normal part in TRAIN category was selected and resized to 256x256 for image preprocessing. After training, two weights were saved as pre-trained models for generating images. EPOCH was set to 500. Hyperparameters were as follows: latent dim = 128, image height = 256, image width = 256, image channels = 1, batch size = 32, kernel size = 5. Adam with a learning_rate set at 0.00001 and beta_1 set at 0.5 in generator and discriminator as optimizer. Keras built-in BinaryCrossentropy function as generator and discriminator loss.

Results: Total traing time was 4143 seconds. After the weights were saved, images generation was done at anytime without traing.

Conclusions: This experience confirms that the generative model DCGAN can successfully train chest X-ray images. The final image results are acceptable in gross anatomy, although the resolution needs to improve. Comparing with that experience in fine-tuning Stable Diffusion, the DCGAN model is smaller and can be trained in local machine. The overall cost is limited. The image quality is better than those trained in Stable diffusion. In summary, DCGAN is a powerful model suitable for generating high-quality images with local machine and affordable costs.

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

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

PB26

以 Dream booth 配合 Google-Keras 提供的 Stable Diffusion 預訓練模型生成胸腔影像之經驗

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Experiences in generating chest images using the Stable Diffusion pre-trained model provided by Google-Keras with Dream booth

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Purpose: Generative imaging is one of the most promising branches of artificial intelligence. Well-known generative models include Midjourney, DALL-E, Imagen, and Stable Diffusion. These large-scale image generation models require significant time and financial resources to train on advanced hardware. While they can generate a wide range of realistic and cartoon images, their application in medical imaging has been lacking. This paper attempts to utilize the Stable Diffusion pre-trained model provided by Google-Keras, coupled with the fine-tuning technique of Dream Booth, to train images of chest X-rays. The results of this training will be discussed.

Materials and Methods: 190 normal chest X-rays were chosen as class images, and eight standard pleural effusion chest X-ray images were selected as instance images. The Keras-core Stable Diffusion pre-trained model was adopted, including (diffusion model: kcv_diffusion_model, 3.36 GBytes; variational encoding model: vae_encoder, 133 MBytes; image decoding model: kcv_decoder, 193 MBytes; text encoding model: kcv_encoder, 480 MBytes). Stable Diffusion modified from diffusers in PyTorch to TensorFlow, by Sayak Paul and Chansung Park, was use as main code. Google Cloud-Computing, specifically A100 and 40GB of RAM, was rented for computation. Both class images and instance images were uploaded to the cloud platform. The overall model architecture is referred to as the Stable Diffusion model. EPOCH was set to 10, and the maximum training step set to 800. Original image resolution was set to (512, 512) with 3 color channels to align with the Dream Booth model. After training, the trained model was downloaded from the cloud to a local machine for image generation. The prompt used was "a photo of pe cxr".

Results: The lowest loss was achieved at the 9th EPOCHs. Each training procedure took 15 minutes. A total of 55 compute units were used, resulting in an overall cost of approximately 180 NTD in all traing procedures.

Conclusions: The generative model Stable Diffusion can successfully train chest X-ray images. Although the final image results may not meet expectations, it is possible that Stable Diffusion is a generalized introductory model and not specifically designed for medical imaging.

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

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

PB27

慢性阻塞性肺疾的診斷與治療指引在台灣實施運用之趨勢演變

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Trends in guideline implementation for diagnosis and management of COPD in Taiwan

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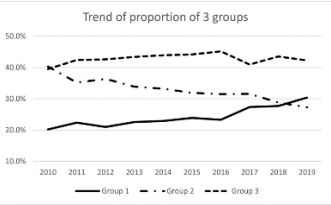
Rationale: The GOLD guidelines emphasize the necessity of employing spirometry for an accurate COPD diagnosis. However, in real-world medical practice, just around 30% of physicians who diagnose COPD have conducted a prior lung function test (PFT). This study's objective is to analyze the trends in implementing guidelines for COPD in Taiwan.

Methods: We recruited subjects diagnosed with COPD from the National Health Insurance dataset between 2010 and 2019. COPD diagnosis was based on their primary diagnosis codes for hospitalization due to severe AE, accompanied by at least two primary COPD codes at outpatient visits following an AE. Survival analysis was performed using the Kaplan-Meier method, extrapolated to estimate lifetime expectancy (LE). Subgroup analyses were conducted for LE and loss-of-LE in subjects diagnosed with COPD, with and without a reported PFT.

Results: A total of 34,046 COPD patients were included and followed until death or the end of the study on December 31, 2020. Among them, Group 1 comprised 8,138 (23.9%) individuals diagnosed with COPD using PFT, Group 2 included 11,386 (33.4%) individuals diagnosed without PFT, and Group 3 encompassed 14,522 (42.7%) undiagnosed COPD individuals before their first severe AE. The trend in guideline implementation from 2010 to 2019 showed an increase in the ratio of Group 1 from 20.2% to 30.4%. Conversely, the ratio of Group 2 declined from 40.3% to 27.3%, while the ratio of Group 3 remained consistently around 40% (see Figure). The proportion of guideline adherence for pharmacotherapy was 78.8% for Group 1, 56.5% for Group 2, and 52.7% for Group 3. The comparison of mortality rates and loss of LE for Group 1 and 2 were 45.3% vs. 56.8% and 7.9 vs. 8.6 years, respectively.



Group 1: physicians diagnosed COPD with PFT

Group 2: physicians diagnosed COPD without PFT

Group 3: undiagnosed COPD

Conclusions: A precise COPD diagnosis necessitates not only clinical judgment but also confirmation through PFT. The study demonstrates a steady increase in the proportion of COPD diagnoses using PFT since 2010. Patients diagnosed using PFT displayed higher adherence to guideline-recommended pharmacotherapy and better outcomes, with lower mortality rates and less loss of LE. This suggests a growing tendency among physicians to adhere to guidelines, seek accurate diagnoses, and improve management, reflecting enhancements in the healthcare system. However, the subgroup of underdiagnosed COPD cases did not exhibit significant improvement, emphasizing the need for future efforts to reduce this subgroup.

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

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

PB28

未成功的 Benralizumab 過敏減敏治療 - 案例報告和潛在原因調查

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Unsuccessful Benralizumab Hypersensitivity Desensitization - A Case Report and Underlying Causes Investigation

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Purpose: Benralizumab is one of the effective biologic treatments for uncontrolled eosinophilic severe asthma. Despite its proven safety, a few patients have experienced hypersensitivity-like symptoms after the medication injection. Desensitization has been used to alleviate hypersensitivity to omalizumab; however, there have been no reports of desensitization for benralizumab, and its efficacy remains unknown.

Materials and Methods: A 27-year-old female with severe eosinophilic asthma experienced hypersensitivity-like symptoms after 6 months of benralizumab treatment. Consequently, desensitization for benralizumab was arranged. We also conducted in vitro investigations by treating the patient and healthy subject PBMC with benralizumab, mepolizumab, and Der-P, to assess cell proliferation and cytokine production before and 7 days after benralizumab desensitization.

Results: A four-step dose escalation protocol for benralizumab was implemented. The patient experienced a headache and mild dyspnea starting from the second dose. Itchy throat, rhinorrhea, and pruritus developed later and persisted for a few days. However, after completing the desensitization, her hypersensitivity symptoms did not improve with the subsequent cycle of benralizumab. In the vitro study, the patient's CD3+ cell levels of IL-5, IL-13, and IFN-γ were higher 7 days after benralizumab treatment compared to baseline. Benralizumab did not reduce these cytokines on day 7 but successfully did so on day 63. Comparatively, benralizumab and Der-P increased BrdU and CD3+ cell percentage in PBMC, while mepolizumab did not.

Conclusions: Desensitization failed to reduce the hypersensitivity symptoms of this patient. The result of in vitro study suggest benralizumab increases T cell proliferation and cytokine production in CD3 cells, suggesting the patient had a lymphocyte-mediate hypersensitivity reaction.

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

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

PB29

類升糖素肽-1 受體促效劑對大鼠急性肺損傷的保護效應與機制

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The protective effect of glucagon-like peptide-1 receptor agonist on acute lung injury in a rat model

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Purpose: Acute lung injury (ALI) remains a major cause of morbidity and mortality in critically ill patients. Lung ischemia-reperfusion (I/R) injury is a significant clinical problem in cardiac surgery and, particularly, lung transplantation. Glucagon-like peptide-1 (GLP-1), which is well known for regulating glucose homeostasis, exhibits multiple actions in cardiovascular disorders and renal injury. However, little is known about the effect of GLP-1 receptor (GLP-1R) activation on ALI. Liraglutide is a GLP-1R agonist. In previous study, liraglutide has been reported to demonstrate promising anti-inflammatory and immunomodulatory activities. The protective mechanism of liraglutide in ALI is unclear. These findings prompted us to examine whether liraglutide could prevent the development of ALI.

Materials and Methods: Acute I/R lung injury was induced by producing 40 min of ischemia followed by 60 min of reperfusion in isolated perfused rat lungs.

Results: Treatment with liraglutide significantly attenuated the increases in lung edema, lung injury scores, and TNF-α, IL-1β, CXCL-1, and IL-6 concentrations in bronchoalveolar lavage fluid in the I/R group. Additionally, liraglutide mitigated I/R-stimulated degradation of IκB-α and nuclear translocation of NF-κB in the injured lung tissue. Furthermore, liraglutide increased Bcl-2 in the I/R rat lungs. The protective effect of liraglutide was mitigated by the administration of SIRT1 inhibitor.

Conclusions: Our findings suggest that liraglutide has a protective effect against I/R lung injury, and its protective mechanism is via SIRT1 signaling.

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

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

PB30

手術固定對於多節肋骨骨折患者的生活品質影響

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Quality of life outcomes after surgical intervention in patients with multiple rib fractures: a prospective cohort study

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Background: Optimized conservative treatment of rib fractures has long been practiced, but surgical fixation has not been promising until recently. We aimed to examine and analyze immediate postoperative outcomes and six-month quality of life after injury in patients with moderately severe traumatic rib fractures.

Methods: We conducted a prospective cohort study between July 2017 and June 2019 at the National Taiwan University Hospital. Seventy-two patients with moderately severe thoracic trauma were enrolled; 38 received conservative treatment, and 34 underwent surgical fixation. Quality of life was measured using the 36-item Short Form Survey at: the first three days of hospitalization; before discharge; and at one-, three-, and six-month follow-ups (visit 1–5). Baseline characteristics and clinical outcomes were recorded, and linear regression analysis was conducted using the generalized estimating equation.

Results: Among patients with moderately severe thoracic injury (chest Abbreviated Injury Scale [AIS] score≥ 2), the operative group had more severe injuries and longer intensive care unit and in-hospital stay. However, they had comparable quality of life at six months after injury and higher physical component scores in the early postoperative period. Linear regression analysis obtained an equation with several factors positively affecting prediction of mean the physical component score (PCS), such as body mass index ≤25, age ≤36 years, fewer ribs requiring fixation, and diabetes mellitus. Mental component score did not show an upward trend, but work quality index largely determined the predicted mean value of the mental component score.

Conclusions: Surgical rib fixations hasten recovery in patients with severe thoracic injury (chest AIS≥3) to achieve six-month quality of life comparable to patients injured less severely (chest AIS≥ 2). The ability to resume previous work positively influenced the mental component score; thus, surgical intervention should also aim to help patients regain their social function.

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

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

PB31

台灣特發性肺纖維化之流行病學研究

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The Epidemiology of Idiopathic Pulmonary Fibrosis In Taiwan

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Background: Idiopathic pulmonary fibrosis (IPF), a disease of unknown etiology, is characterized by lung inflammation and structural disruption, ultimately resulting in interstitial pulmonary fibrosis. The classification of idiopathic interstitial fibrosis varies across regions. IPF is the most common form and is known for its severity, with the most severe clinical manifestations and the worst prognosis.

Objective: 1. To analyze IPF prevalence, incidence, and mortality rates. 2. To determine the number of cases initiating treatment with antifibrotic medications during the observation period in Taiwan.

Materials and Methods: This retrospective study analyzed data from Taiwan's National Health Insurance Research Database for adults diagnosed with IPF (ICD-10-CM code J84.112) between 2016 and 2020. The inclusion criterion was at least one outpatient or inpatient diagnosis during the study period. In the medication analysis, eligible IPF patients prescribed anti-fibrotic medications one or more times were placed in the medication group.

Results: The annual prevalence rates showed a significant increasing trend ($p < .0001$), from 3.63 to 7.76 per 105 population, between 2016 and 2019. Meanwhile, The annual incidence rates were 3.63, 3.03, 2.52, 2.26, and 1.28 per 105 population, between 2016 and 2020. Furthermore, the mortality rate showed consistent changes during the same periods, with rates of 0.59, 1.25, 1.77, 2.18, and 2.16 per 105 population. The year 2020, marked by the COVID-19 pandemic, was not included in the trend analysis due to potential disruptions in healthcare-seeking behaviors. There were 872 individuals in the medication group and 1,639 individuals in the non-medication group during the study period.

Conclusions: Our study of the epidemiology of IPF in Taiwan reveals an increasing prevalence. Notably, the results suggest that anti-fibrotic medications might have contributed to prolonging survival, potentially influencing prevalence trends. Further research is warranted to comprehensively assess the impact of medication on IPF 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)

PB32

腦膜膿毒性伊莉莎白菌菌血症於陳舊性肺結核糖尿病患者

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***Elizabethkingia meningoseptica* bacteremia in an old TB patient with DM**

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Purpose: Infections caused by *E. meningoseptica* were seldom reported amongst immunocompetent neonates and patients with underlying disease. ***Elizabethkingia meningoseptica*** infections have emerged as noteworthy infections globally and increasing incidence of occurrence.

Materials and methods: case report

This 64 y/o patient had past history of 1.TB history: 1997, Relapsed on 9308 and under treatment on and off and had 2.gout history 3.acute appendicitis

s/p op 4 DM. According to the patient, he complained general discomfort, mild cough and chest tightness recently. Thus he came to our CM for help. This time, he admitted due to general discomfort and chest tightness. After admission, we kept empirical beta-lactam IV since for lower respiratory tract infection. Potassium supplementation was prescribed for hypokalemia. Therefore one high fever episode was found on 10^{th} day with neutropenia WBC 1500/dl.

Result: The 10/11 B/C yield1.Acinetobacter spp and 2.Elizabethkingia meningoseptica, we shifted oral Baktar 2# PO Q12H since then. Under stable vital sign and no complication developed, the patient discharged

Conclusion: Literature recorded cases of severe infection about *Elizabethkingia meningoseptica in* children with neonatal meningitis most commonly presented by septicemia and bacteremia. *Elizabethkingia* spp. infects not only immunocompromised host but also immunocompetent patients Combined antibiotic therapy is reported to be the choice of treatment for *Elizabethkingia meningoseptica* with adding trimethoprim/sulfamethoxazole, Prevention of transmission and infection enable better control of the extremely pathogenic and highly resistant bacteria *Elizabethkingia meningoseptica* which is an opportunistic emerging pathogen infected patients with risk factors primarily included neutropenia combining with other 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)

PB33

Nintedanib 在不同劑量下對特發性肺纖維化的安全性和有效性：一項回溯性研究

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The safety and efficacy of Nintedanib at various doses in idiopathic pulmonary fibrosis: A retrospective study

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Background: In a multicenter, multinational randomized clinical trial (INPULSIS trial), involving 1066 individuals diagnosed with idiopathic pulmonary fibrosis (IPF), it found that the use of nintedanib 150 mg twice daily significantly reduced the rate of forced vital capacity (FVC) decline. 123 out of the 638 individuals in the experimental group had to discontinue the medication due to side effects. While some individuals experienced adverse reactions, these were generally mild to moderate and often improved with dose adjustments. However, there is currently insufficient evidence, especially real world data, to show whether individuals can tolerate long-term medication use after dose adjustments while still effectively slowing the deterioration of lung function.

Methods: Adult patients diagnosed with IPF and treated with nintedanib at a medical center in Northern Taiwan between January 1, 2016, and December 31, 2020, were retrospectively identified. Patients with nintedanib treatment duration of less than one month, those without baseline lung function test, and those lacking follow-up lung function assessments were excluded. We analyzed changes in FVC and diffusing capacity for carbon monoxide (DLCO) between two groups, one with dose adjustments and the other without. Additionally, we conducted an investigation into adverse events and compared event rates before and after dose reductions.

Results: A total of 67 patients (77.6% male) with a median age of 72 were enrolled. Among them, 48 patients received nintedanib at a dosage of 150 mg twice a day without any dose reduction, while 19 patients received 150 mg twice a day with intermittent dose reduction to 150 mg once daily. All of the patients were followed while on treatment for a median duration of 27.6 months (ranging from 13.8 to 42.5 months). Analysis of the annual rate of decline in absolute FVC showed no significant difference between patients with or without dose reduction (-0.05 ± 31.5 ml vs. +0.87 ± 27.37 ml; p=0.945), as well as in the percentage of predicted DLCO (-10.25 ± 11.00% vs. -5.23 ± 4.71%; p=0.149). Following dose reduction, there was a significant decrease in adverse events of diarrhea and nausea (73.7% vs. 36.8%; p=0.037 and 15.8% vs. 0%; p=0.004) while other adverse events exhibited no significant differences, including vomiting, abdominal pain, decreased appetite, weight loss, headache, elevated alanine transferase, and aspartate transferase.

Conclusions: Dose reduction of nintedanib in patients who experience intolerance to adverse events may offer comparable effectiveness while potentially lowering the occurrence of diarrhea and nausea side effects.

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

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

PB34

胸腺腫瘤切除術後併發瀰漫性泛細支氣管炎與重症肌無力：案例報告與文獻回顧

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Sequential development of diffuse panbronchiolitis and myasthenia gravis after thymectomy for thymic neoplasm: A case report and review of the literature

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Introduction: Myasthenia gravis (MG) is the most common paraneoplastic disorder associated with thymic neoplasms, and MG may develop after thymectomy, known as post-thymectomy MG (PTMG). Diffuse panbronchiolitis (DPB) is a rare form of bronchiolitis and is largely restricted to East Asia. DPB has been reported in association with thymic neoplasms, probably arising as a consequence of immune dysregulation. To our knowledge, only three cases of combined MG and DPB have been reported previously.

Case Presentation: A 45-year-old Taiwanese woman presented to our hospital with a productive cough, rhinorrhea, anosmia, ear fullness, shortness of breath, and weight loss. She had a history of thymoma and underwent a thymothymectomy as well as adjuvant radiotherapy seven years ago. Physical examination revealed coarse breathing sounds with inspiratory crackles. The chest computed tomography scan revealed progressive diffuse bronchitis and bronchiolitis. DPB was confirmed after a video-assisted thoracoscopic surgery (VATS) lung biopsy and her sputum culture grew *Pseudomonas aeruginosa* (PsA). Her respiratory symptoms improved after treatment with oral azithromycin, levofloxacin, and transient use of inhaled amikacin. Three months after DPB diagnosis, the patient developed ptosis and muscle weakness, along with hypercapnia(PaCO2=78.6 mmHg), requiring the use of noninvasive positive pressure ventilation (NIPPV). MG was diagnosed based on the acetylcholine receptor antibody and repetitive stimulation testing. Her muscle weakness improved after treatment with pyridostigmine and corticosteroids, and NIPPV was successfully tapered off. She was discharged and the dose of oral prednisolone was tapered gradually. Unfortunately, she was readmitted several months later due to another episode of PsA respiratory infection. Currently she is in a stable condition with long-term maintenance therapies, including pyridostigmine, corticosteroid, azithromycin, and inhaled amikacin.

Table 1. Diagnosis timeline and serial respiratory function testing results.

M=month	VATS biopsy	3M (MG)	4M	8M	10M
FVC (% predicted)	53.1	49.1	68.1	52.5	52.6
Pimax/Pemax (cmH_2O)	NA	NA	-81/+107	-52/+50	-88/+92

Conclusions: To our knowledge, this might be the first case of sequential development of DPB followed by PTMG. This coexistence poses a therapeutic challenge for the balance between infection control for DPB and immunosuppressant therapy for MG.

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

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

PB35

從常見的紀錄參數衍生的衰老症評估指標有助於評估肺阻塞病人的預後

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Modified frailty criteria derived from frequently recorded parameters predicts clinical outcomes in patients with COPD

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Purpose: Frailty had been linked to poor disease outcome. However, no universal criteria exist. Fried's frailty phenotype had been widely used and the criteria itself share similarities with existing frequently adopted parameters for COPD. Hence, we modified Fried's frailty phenotype criteria with commonly recorded clinical indicators and hypothesized that the modified criteria be useful in frailty evaluation and predicts clinical outcomes.

Materials and Methods: This cohort study enrolled spirometry confirmed patients who participated COPD pay-for-performance program. The modified Fried frailty phenotype criteria comprised five dimensions. Weakness was defined as a handgrip strength less than 28kg for men and 18kg for women. Slowness was indicated by a walking speed less than 1.0m/s or a time greater than 12 seconds in 5-times chair-to-stand test. A score of 5 on the 5th item of COPD assessment test (CAT) represents low physical activity. Exhaustion was identified by a score of 5 on the 8th item of CAT. Shrinking was represented by unintentional weight loss ≥ 4.5 kg or 5% of normal weight in the past 6 months or a body mass index (BMI) less than 21 kg/m^2.

Results: Totally 355 patients were enrolled and divided into three groups: 112 patients in non-frail group, 173 patients in pre-frail group and 76 patients in frail group. Patients were elder in the frailty group, followed by pre-fail group and non-frail group (77.1 years old vs.71.3 years old vs. 66.7 years old, $p<0.05$). There was a decrease of weight from non-frail, to pre-frail and frail group (68.9kg vs. 62.4kg vs. 59.7kg, $p<0.05$, respectively). A similar trend was observed pertaining to forced expiratory volume in the first second (FEV1) in three groups (1.65L vs. 1.35L vs. 1.23L, $p<0.05$, respectively). There were more patients with at least one episode of severe acute exacerbations within one year in frailty group, than pre-frail or non-frail group (22.4% vs. 16.8% vs. 6.7%, $p<0.05$, respectively). Higher mortality rate was observed in frail group than pre-frail and non-frail group (32.9% vs. 16.8% vs. 3.6%, $p<0.05$, respectively).

Conclusions: Modified frailty criteria derived from COPD daily clinical practice is easy-to-perform and demonstrate excellent outcome predictivity. We advocate including this model as a tool for frailty screening in the holistic care of COPD.

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

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

PB36

慢性肺部疾病之肌少症盛行率與預測因子: 前瞻型多中心世代研究

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Prevalence and Predictive Factors of Sarcopenia in Patients with Non-malignant Chronic Lung Diseases: A Prospective Multicenter Cohort Study

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Purpose: Our goal is to determine the prevalence and predictors of sarcopenia in patients with comorbid non-malignant chronic respiratory diseases in the outpatient departments of two medical centers in Taiwan.

Materials and Methods: We prospectively enrolled 148 patients with comorbid non-malignant chronic respiratory diseases, including COPD, asthma, bronchiectasis, and interstitial lung disease, at Taichung Veterans General Hospital and Taipei Medical University Hospital during the period from March 1 to October 1, 2023. Patients were assessed using a frailty questionnaire, SARC-Calf score, and grip strength, and they were included in the study cohort if they met any of these three criteria. The diagnostic process followed the guidelines of the European Working Group on Sarcopenia in Older People 2 (EWGSOP2).

Results: A total of 148 patients with comorbid non-malignant chronic respiratory diseases who met at least one risk factor were included in the sarcopenia evaluation process. Among this population, 30.4% had asthma, 30.4% had COPD, and 34.5% had fibrotic ILD. The overall prevalence of sarcopenia was 29.7%, with severe sarcopenia observed in 26.4% of the cases. Among the three screening tools, only the SARC-Calf score and grip strength showed significant differences between patients without sarcopenia, those with sarcopenia, and those with severe sarcopenia (all $p<0.001$). Furthermore, we observed that patients with severe sarcopenia exhibited shorter 6-minute walking distances, performed fewer repetitions in the 1-minute sit-to-stand test (1MSTS), and attained higher scores on the Borg scale after both the 1MSTS and 6-minute walk test (6MWT).

Conclusions: Sarcopenia and severe sarcopenia are highly prevalent in patients with non-malignant chronic respiratory diseases, including COPD, asthma, and ILD. Early identification of these individuals through grip strength and the SARC-Calf score is essential. The ongoing assessment of the health impact of sarcopenia and severe sarcopenia in this patient cohort will be a focus of our 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)

PB37

脈衝震盪檢查結果新公式以預測肺功能檢查符合肺阻塞之初步適應性報告

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New formula in impulse oscillometry to predict spirometry-defined chronic obstructive pulmonary disease: A preliminary report.

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Purpose: The spirometry-defined chronic obstructive pulmonary disease (COPD) by post-bronchodilator FEV1/FVC ratio less than 0.7 is well accepted but with some limitation due to incomplete forced exhalation difficulty in the elderly. Air droplets might be another concern after the COVID-19 pandemic. Impulse oscillometry (IOS) would be alternatively used as a tool in low airway resistance and reactance detection but, it remained uncertainty in which standard cut-off value would be the best to fulfil spirometry definition.

Materials and Methods: A case parallel study was performed in a regional teaching hospital. Total 189 cases received both IOS and spirometry since 2023/Apr/1 to 2023/Sep/30 were reviewed and 44 cases of spirometry-defined COPD with another 44 body-mass index (BMI) matched non-COPD cases were enrolled. Airway resistance (R5, R5%, R20 and R5-R20) and reactance (X5, Fres and AX) were recorded. A new formula composed of [(R5%*Fres)/BMI] was calculated as an index for statistical analysis. The pre-test probability is defined to be positive of COPD when either the index is greater than 160 (BMI<28) or greater than 100 (as obese subjects, BMI>=28). The sensitivity and the specificity of the index are calculated. ROC curves are performed from each item from IOS and from the formula.

Results: N=88, medium BMI= 25.79 +/-5.19. Post-bronchodilator FEV1/FVC ratio is significantly lower in COPD (0.64 +/- 0.08) than in non-COPD (0.80 +/- 0.04) (p<0.01). There is no BMI related statistical difference between spirometry-defined COPD (24.52) and non-COPD subjects (24.64). R5% is significantly higher in the COPD (166.7% +/-41.1%) than in non-COPD (125.1% +/-29.4%) (p<0.01). Fres is also different between these two groups (22.7 +/- 5.2 Hz v.s.17.8 +/- 3.7 Hz) (p<0.01). True positive value (TPV) by the formula index is 40.9% and its false positive value (FPV) is 6.8% in non-obese subjects. The positive predictive value (PPV) is 85.7%. For the 29 obese subjects, TPV, FPV and PPV for COPD by index are 78.6%, 20% and 78.6% separately. The area under ROC (AUC) for prediction of spirometry-defined COPD from IOS by R5%, Fres and the formula index are 0.794 +/- 0.049, 0.771 +/- 0.050 and 0.796 +/- 0.047 separately. When cut-off of the formula index equaled to 100, the sensitivity and the specificity were 77.3% and 62.4% respectively and both, by cut-off equaled to 160, were 38.6% and 93.2% respectively.

Conclusions: BMI-adjusted airway resistance by [(R5%*Fres)/BMI] might be with its own role in clinical prediction of spirometry-defined COPD.

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

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

PB38

Tocilizumab 使用於特發性肺纖維化急性惡化合併嚴重 COVID-19: 病例報告與文獻回顧

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Tocilizumab in Severe COVID-19 with Acute Exacerbation of Idiopathic Pulmonary Fibrosis: A case report and literature review

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Abstract

Tocilizumab, a potent interleukin-6 receptor antagonist, demonstrated survival benefit against severe COVID-19 in clinical trials. However, the safety and efficacy in multiple comorbidities population is unknown. Here, we report a challenging case with acute exacerbation of idiopathic pulmonary fibrosis triggered by SARS-CoV-2 infection which being first ever presented. Acute exacerbation of idiopathic pulmonary fibrosis is commonly triggered by pulmonary infection and results in poor prognosis with limited treatment options. Superimposed SARS-CoV-2 infection may further complicates the management and outcome. Hesitation about the prescription of tocilizumab has been solved by comprehensive multidisciplinary discussion in our interstitial lung disease board. The rationale of tocilizumab prescription is based on flourishing data on the role of IL-6 in acute exacerbation of idiopathic pulmonary fibrosis and the potential benefit of fibroblast suppression both in vivo and in vitro. Successful management with much improved oxygenation and pulmonary infiltration is documented and further supports the use of tocilizumab in such complex situation. Since scarcity of effective treatment for acute exacerbation of idiopathic pulmonary fibrosis, investigations on the role of IL-6 antagonist in management of acute exacerbation of idiopathic pulmonary fibrosis are needed.

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

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

PB39

一次「破肺」的旅程：壓力性損傷造成氣胸的個案報告

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A "Lung-Busting" Journey: A Case Report of Pneumothorax Caused by Barometric Trauma

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Background: In recent years, the use of self-contained underwater breathing apparatus (SCUBA) has gained widespread popularity as a recreational pursuit in Taiwan. It is estimated that each year, between 4,000 to 5,000 new individuals attain diving licenses. However, the increasing number of divers has brought about a corresponding uptick in the incidence of diving-related illnesses.
Case presentation: On January 10, 2014, a 58-year-old Taiwanese woman encountered an abrupt onset of dyspnea and right-sided chest pain while vacationing in the Maldives. Upon her return to Taiwan, she presented with decreased breath sounds on the right side, all the while maintaining stable vital signs. Subsequent chest CT imaging confirmed the presence of a residual pneumothorax on the right and ground-glass opacities in the right lung.
The following day, she underwent Video-Assisted Thoracoscopic Surgery (VATS) with wedge resection to address the pneumothorax. Pathological examination of the resected lung tissue unveiled emphysematous blebs accompanied by hemorrhage and focal fibrosis.
Conclusion: Barotrauma, a condition caused by changes in pressure, is one of the diving-related injuries and is the most common complication. It occurs when the body cannot equalize internal pressure with the surrounding pressure as it changes. During descent, the volume of gases in the tissues decreases, leading to mucosal swelling, vascular congestion, and bleeding. Conversely, during the ascent process, the volume of gases in the tissues increases, which can result in tissue damage and rupture, often leading to more severe long-term consequences.

Keywords: Barometric Trauma, Pneumothorax

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

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

PB40

跨團隊介入肺阻塞病人治療之成效

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The Effect of Multidisciplinary Intervention on Patients with Chronic Obstructive Pulmonary Disease

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Introduction: Chronic obstructive pulmonary disease(COPD) is the major cause of death worldwide. COPD has great effect in socioeconomic and public health issue. Acute exacerbations of COPD (AECOPD) are associated the morbidity and mortality.

Methods: The patients enrollment receive COPD management by team consisted of specialist physician, respiratory therapist, pharmacist, nurse, case manager, dietitian, smoking cessation management, rehabilitation therapist and social worker. Multidisciplinary intervention and teamwork are provided to enhance effectiveness of COPD management. These include consistent education, skilled performance of inhaler, nutrition recommendation, promotion of pulmonary rehabilitation, social media, share decision making and appropriate home exercise.

Results: A total 146 patients were included, 132 male and 14 female. Before and after intervention, the acute exacerbation was 5.5% and 2.7%; CAT(COPD Assessment Test) was 7.04 and 4.9($p<0.0001$); mMRC(modified British Medical Research Council) was 1.04 and 0.77($p=0.004$). A greater decrease in in the incidence of COPD-related emergent department visits and hospitalizations after intervention. The improvement in symptom score was observed. The accuracy rate of inhaled drugs increased to 95.8% from 61.2%.

Conclusions: The study demonstrates that a multidisciplinary intervention decreases the exacerbation rate in COPD patients. The clinical outcomes and symptoms improve significantly, too. The study shows the benefit of multidisciplinary intervention and teamwork on patients with 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)

PB41

智能化肺阻塞多元衛教模組開發及其臨床可用性評估

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Development and usability of chatbot-based multi-component education module in COPD

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Purpose: Recently, a chatbot-based module has been employed for disease management, and it has shown reported efficacy and clinical benefits. Previous, we have found that the “COPD question prompt list (COPD-QPL)" can help patients clarify their own question before the appointment and improv patient-physician communication. However, the development and application of a chatbot-based module allied with COPD-QPL and multi-component education package for COPD disease management in Taiwan relatively uncommon. In this study, our primary aim is to develop a chatbot-based multi-component education module that integrates chatbot-based COPD-QPL and multi-component education package. Further, we evaluate the learnability and usability of this integrated module and explore its relationship with patient-specific features.

Materials and Methods: We evaluated the acceptability and usability of multi-component education module in prospective study. Demographic and clinical feature included age, smoking status, education level, family history, occupation, comorbidities, family history of chronic disease, CAT score and mMRC score. The acceptability and usability were evaluated by System Usability Scale. The Descriptive data are reported as means ± SD or percentages as appropriate. Logistic regression was used to evaluated the relationship between patient-specific features and learnability or usability, respectively. A two-tailed P value of 0.05 was considered statistically significant in all analyses.

Results: 63 patients with COPD who had included in this study. The mean age was 68.81 years, mean CAT and mMRC score were 8.43±0.72 and 1.25±0.82, respective. 99.8% of patients were men, 28.6% of patients were senior high school graduate, 27% of patients who had occupation. The mean score of learnability was 74.6±3.31. and the mean score of usability was 78.37±2.30. Higher availability is associate with younger age (Odds ratio (OR): 0.04, 95% CI: 0-0.89), higher education level (OR: 2.71, 95% CI: 1.18-6.18), patients who has occupation (OR: 2.35, 95% CI: 1-5.54) or family history of chronic disease (OR: 3.55, 95% CI: 1.16-10.85). Higher likelihood of learnability was associated with higher education level (OR: 5.37, 95% CI: 1.63-17.74) and patients who have occupation (OR: 2.92, 95% CI: 1.02-8.42).

Conclusions: In present study, the learnability and usability multi-component education module is “acceptable”. Education level and occupation status were positively associated with learnability and usability of this module, whereas dose not associate with clinical feature. Therefore, we suggest that the novel module is useful for remote patient-physician communication and patient education. However, future revisions should focus on making it more accessible and applicable to the entire COPD 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)

PB42

支氣管擴張症-肺阻塞重疊綜合徵的微生物組與臨床結果之關聯性分析

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The association between microbiome and clinical outcomes in bronchiectasis-COPD overlap syndrome

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Purpose: Co-existed COPD and bronchiectasis is associated with worse outcomes, including, more frequent exacerbations, longer duration of hospitalization, and higher disease severity. The microbiome could serve as a valuable tool in identifying specific patient subgroups at greater risk of adverse outcomes, potentially enabling the implementation of precise treatment strategies to improve their prognosis. Despite, the microbiome and clinical outcomes in patients with bronchiectasis or COPD have been reported. Evidence of a relationship between the microbiome and clinical outcomes in bronchiectasis patients with COPD is limited. The aim of this study is to evaluate the role of the microbiome in determining clinical outcomes in patients with co-existing COPD and bronchiectasis.
Materials and Methods: We conducted a retrospective observation study to investigate the between the microbiome and clinical outcomes in patients with co-existing COPD and bronchiectasis using the Taiwan Bronchiectasis Registry (TBARC)database. Patients with bronchiectasis were classified into with or without COPD (BCOS group and bronchiectasis group). Then, patients in the BCOS group were matched at a ratio of 1:1 based on age, gender, BMI, smoke status, and wheezing to create the bronchiectasis group using propensity score matching. Logistic regression was used to evaluate the association between the microbiome and clinical outcomes, including emergency visit, hospitalization and rapid lung function deterioration (≥ 100 ml decline in FEV1). Categorical variables are expressed as a percentage and continuous variables are expressed as mean and SD. The chi-square test and the Mann–Whitney U test was used to compare categorical variables continuous variables, respectively. Two-sided P values of < 0.05 were considered statistically significant.
Results: 518 patients were enrolled before matching. The mean age was 68.40±0.68 years in the BCOS group and 67.12±0.71 years in the bronchiectasis group (P=0.208).63% of patients in the BCOS group were mem, whereas 33.5% of patients in the bronchiectasis group were mem. Significant lower smoking amount (0.74±0.11) in the bronchiectasis group in comparison with BCOS group (1.83±0.13). And Significant higher rate of wheezing in BCOS group (68%) compared to bronchiectasis group (47%). After the 1:1 patient matching process, 167participants were assigned to each group. In overall matched cohort, patients in whom Pseudomonas aeruginosa and Klebsiella pneumoniae was dominated more likely to experience emergency visits or hospitalizations (Pseudomonas aeruginosa: 4.01, 95% CI: 1.43-11.23; Klebsiella pneumoniae: 6.31, 95% CI: 1.38-28.88). Moreover, a positive correlation was observed between Candida albicans dominance and rapid lung function deterioration (8.71, 95% CI: 1.13-66.94). In bronchiectasis group, Pseudomonas aeruginosa-dominant was significant positively associated with emergency visitor hospitalization (6.71, 95% CI: 1.68-26.73). Additionally, the positive association between Klebsiella pneumoniae dominance and emergency visits or hospitalizations was modest, as was the positive relationship between Candida albicans dominance and rapid lung function deterioration.
Conclusions: In present study, we have identified an association between the microbiome and clinical outcomes, encompassing emergency visits, hospitalizations, and rapid lung function deterioration, in patients diagnosed with bronchiectasis, both with and without co-existing COPD. This finding suggests that the microbiome could serve as a valuable tool for pinpointing patient subgroups at elevated risk of adverse outcomes, potentially opening avenues for precision treatment strategies to improve their prognosis.

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

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

PB43

一氧化碳擴散能力作為慢性阻塞性肺病疾病預測因子

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Diffusing Capacity for Carbon Monoxide Values as a Prognostic factor for Acute Exacerbation and Exercise Performance in Chronic Obstructive Pulmonary Disease Patients

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Background: Chronic obstructive pulmonary disease (COPD) is a heterogeneous lung condition characterized by chronic respiratory symptoms (dyspnea, cough, sputum production and/or exacerbations) due to abnormalities of the airways (bronchitis, bronchiolitis) and/or alveoli (emphysema) that cause persistent, often progressive, airflow obstruction. Diffusing capacity for carbon monoxide (DLCO) measurement evaluates the gas transfer properties of the respiratory system. However, the Global Initiative for Obstructive Lung Disease (GOLD) does not promote DLCO values in the evaluation of COPD. This study aimed to test whether the DLCO value is an efficient prognostic factor for acute exacerbation and exercise capacity.

Method: There were 681 patients enrolled in the case management service of our hospital. Totally 461 patients received DLCO test within the first 1 year after enrolled. Age, sex, BMI, mMRC score, CAT score, lung function measurements (FVC, FEV1), 6 minute walking test, and history of exacerbations were recorded.

DLCO percent predicted was primarily analyzed as a continuous variable. Risk factors for acute exacerbation within 1 year were analyzed by logistic regression. Possible prognostic factors for exercise capacity were tested by using linear regression. We classified patients by severity of DLCO (< vs. ≥70% predicted), Kaplan-Meier method was performed to evaluate the time to the event of acute exacerbation.

Result: Receiver operating characteristic (ROC) curve showed optimal cutoff value of DLCO located at 70% predicted. Patients was classified by severity of DLCO (< vs. ≥70% predicted). There were 223 (48.4%) patients in the group who's DLCO ≥70% predicted. There were 238 (51.6%) patients in the group who's DLCO <70% predicted. The rate of exacerbation in 1 year between two groups were 44 (19.7%) vs. 86 (36.1%), p<0.001. The time to exacerbation followed for 5 years were 467.9 ±344.5(days) vs. 381.8 ±367.1(days), p=0.008. The distance of 6 minutes walking test between two groups were 86.7 ±17.68(% predicted) vs. 69.8 ±23.15(% predicted), P<0.001.

Conclusion: DLCO < 70% predicted is associated with increased risk of acute exacerbation within 1 year and worse exercise performance in our study. DLCO value might be an efficient prognostic factor in COPD patients.

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

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

PB44

探討多種特異性過敏原同時測試陽性個案血液中的總 IgE 濃度分布情形

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Total serum IgE levels among adults patients with positive multiple-antigen simultaneous test

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Purpose: Allergic asthma or allergic rhinitis are chronic inflammatory airway disease mediated by immunologic mechanisms. IgE plays an important role in mediating allergic response in allergic diseases; however, it is not clear about the serum IgE levels among adults patients with positive multiple-antigen simultaneous test (MAST). This study aimed to determine the distributions of serum total IgE levels between adult patients with positive MAST.

Materials and Methods: We retrospective analysis 306 case with positive MAST. The serum IgE levels was collected for analysis.

Results: The lowest level of total serum IgE was 3.1 in positive MAST cases. The highest level total serum IgE was 9403. In positive mite specific IgE cases, the lowest serum total IgE was 8 for +; 17 for ++; 9 for +++; and 77 for ++++. Positive Mite cases was 37% in positive MAST cases.

Conclusions: We demonstrated the distribution of serum total IgE levels in positive MAST cases. It is necessary to check MAST in allergic diseases even with low serum total IgE level.

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

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

PB45

針對縱膈腔腫瘤病人的超音波合併剪力波彈性超音波之探索性研究

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An exploratory investigation of ultrasound 2-dimensional shear wave elastography on patients with mediastinal tumor

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Purpose: Ultrasonography can aid in the diagnostic evaluation of mediastinal lesion and provide guidance for biopsies. Ultrasound features of mediastinal disease may not be specific and accurate diagnoses usually rely on histologic examination. No prior study has explored the utility of 2-dimentional ultrasound shear wave elastography (SWE) on mediastinal disease. This study aims to investigate the role of SWE as a complement tool for diagnosis.

Materials and methods: This prospective cohort study was conducted at a tertiary medical center at northern Taiwan. All participants were screened from the referral for thoracic ultrasound examination. Conventional gray-scale images, color Doppler images, and two dimensional SWE were performed. The elasticity value and the elasticity pattern were assessed. All diagnoses were based on the histopathology reports.

Results: From Dec. 2017 to Jul. 2023, a total number of 78 participants were included for analysis. The majority of the cases had lesions located at anterior mediastinum (74, 95%), with 29 cases being lymphoma, 22 cases being thymic epithelial tumor and 18 cases being other malignancy. The median age of patients with lymphoma was younger than that with thymic epithelial tumors or other malignancy. Common echographic features for lymphoma include sharp border (97%), conglomeration (76%), homogeneous echogenicity (59%), and acoustic enhancement (48%). Common sonographic features of thymic epithelial tumors include isoechoic (86%), sharp border (77%), homogeneous echogenicity (59%), and cystic content (59%). In lymphoma cases, Color Doppler revealed a feature of peripheral vasculature surrounding the conglomeration (52%). The highest elasticity value in different groups of mediastinal tumors were similar (lymphoma 82 ± 37 kilopascal [kPa], thymic epithelial tumor 94 ± 34 [kPa], other malignancy 87 ± 39[kPa]). In cases of lymphoma, a greater percentage of the SWE patterns exhibited a voiding phenomenon near the central part (48%) along low elasticity background (45%). Conversely, in cases of thymic tumors, a higher proportion displayed an overall high elasticity background (72%).

Conclusions: Besides echographic features, the pattern of two-dimensional shear wave elastography may be incorporated into diagnostic workup of mediastinal tumors. Future research is needed to elaborate on the full potential of ultrasound assessment in mediastinal tumors.

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

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

PB46

骨水泥肺栓塞與肺肋膜積水

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Pleural effusion from bone cement pulmonary embolism

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Purpose: Pulmonary embolism is one cause of pleural effusion. The possibility of pulmonary embolus should be evaluated for all patients who have undiagnosed pleural effusion. Percutaneous vertebroplasty act as common procedure for vertebral compression fractures. Bone cement extravasation may lead to emboli in the lungs.

Material and Methods: This 74 y/o woman had past history of (1)TypeII DM (2) Compression fracture at L1 and L3 s/p bone cement s/p percutaneous vertebroplasty. The patient suffered from dyspnea few days ago. The patient ever visited an LMD but the symptoms sustained. This patient denied headache and vomiting, cough, rhinorrhea, short of breath, diarrhea, Due to above condition, she visited OPD. Under the impression of right effusion, the patient was admitted for further management. CT scan for chest and upper abdomen without contrast medium shows the There is massive right side pleural effusion. There is subegmental atelectasis at the RLL Massive right pleural effusion, Subegmental atelectasis at the RLL. Pleural effusion, cell block and cytology ---

Negative for malignant cell	**Glucose**	**Pl Amylase(**	**Pl LDH**	**Pleura Total prot**
	191.000	**80.000**	**71.000**	**4.800**

Appearance	**PH**	**SP.GR**	**RBC**	**WBC**
7.000	***1.034**	**370.000**	**680.000**	**-**

Neutrophil	**Lymphocyte**	**Histocyte**
6.000	**90.000**	**4.000**

Result:

Bone cement pulmonary embolism

Exudative pleural effusion

Conclusion: Pulmonary cement embolism after vertebroplasty is a well-known complication that usually remains asymptomatic. The imaging finding of pulmonary cement embolism was solitary or multiple fine radiodense lines with occasional branching patterns. Clinical experiences shared with this case report of cement embolisms will increase awareness. Pleural fluid caused by pulmonary emboli is usually exudative but is occasionally transudative. CT should be obtained to confirm the diagnosis

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

肺結核感染致病機轉中 PD-L1 的甲基化調控機制探討

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DNA methylation and control of PD-L1 expression in Mycobacterium tuberculosis infection

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Purpose: Activation of PD1/PD-L1 pathway in tuberculosis (TB) patients is reported to be associated with increased disease severity and worse outcomes. The modulating mechanisms of increased PD-L1 in TB remain unknown.
Materials and Methods: Patients with active TB and non-TB individuals were prospectively enrolled and peripheral blood mononuclear cells (PBMCs) were collected before and after anti-TB treatment. The expression of PD-L1 and methylation-related enzymes (DNMTs, TET1s) were investigated. The methylation status of PD-L1 promoter was analyzed by bisulfite sequencing. The impact of methylation status on PD-L1 expression was also verified in THP-1 cells with MTB-related stimulation and DNMT/TET1 inhibition.
Results: A total of 128 participants were enrolled for analysis, including 88 active TB patients and 40 non-TB individuals. Patients with active TB had increased expression of PD-L1, TET1, and decreased expression of DNMT1A and DNMT3A in PBMCs, compared with non-TB subjects. The expression of PD-L1 and TET-1 in TB patients was significantly associated with 1-month smear and culture non-conversion. Immunohistochemistry (IHC) analysis of lung tissues obtained from active TB patients demonstrated the co-localization of TET1 and PD-L1 in alveoli macrophages. In THP-1 cells with treatment of MTB whole-cell lysate and recombinant ESAT-6 protein, the expression of PD-L1 is increased. Immunofluorescence (IF) analysis also confirm the co-localization of TET1 and PD-L1 in THP-1 cells. The expression of PD-L1 can be upregulated by DNMT inhibitor (5'AZA) and inhibited by shRNA-TET1 suppression. Bisulfite sequencing analysis of PD-L1 promoter of PBMCs demonstrated decreased methylation in patients with active TB as compared to those of non-TB individuals.
Conclusions: PD-L1 expression is increased in patients with active TB and is correlated with treatment outcomes. DNA methylation is involved in modulating PD-L1 expression in human macrophages.

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

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

OC02

潛伏結核感染於台灣慢性肺阻塞族群之盛行率及相關危險因子

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The prevalence and predictors of latent TB infection among COPD population in Taiwan

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Background: Chronic Obstructive Pulmonary Disease (COPD) is a common comorbidity with pulmonary Tuberculosis (TB), increasing the risk of TB by over threefold. The link between COPD and TB remains unclear but may involve activation from latent TB infection (LTBI) status. We launch a multicenter study to investigate the prevalence, as well as the predictors of LTBI among COPD patients to guide further LTBI policy establishment.

Methods: Patients aged > 60 years with COPD for more than 1 year, were enrolled for LTBI screening by using QuantiFERON-plus from Kaohsiung medical university hospital and Taichung Veterans General Hospital during Jan. 2021 and June 2022. The candidate LTBI treatment regimen included 3HP, 1HP, 3HR, 4R or 9H, and the final choice of the regimen was made through shared decision making by case and physician in charge. We record the baseline demographic information, frequency of acute exacerbation in preceding 2 years, and LTBI treatment completion rate of each participant, and predictors for QFT-positivity were evaluated using multivariate logistic regression.

Results: During study period, a total of 443 patients with COPD (age: 72.2± 7.3 years) received IGRA test, 358 (80.8%) were males, 371 (83.7%) were ever/current smokers and 68 (15.3%) were concomitant with asthma. Among them, 118 (26.6%) were QFT-plus positive. The baseline characteristics and comorbidities were similar between LTBI and nonLTBI group. Smoking amount (adjusted odds ratio (aOR) 1.027, confidence interval (CI) 1.015-1.040, p<0.001), duration of COPD (aORa: 1.116, CI: 1.052-1.292, p=0.03) and inhaled corticosteroid use (aORa: 2.81, CI: 1.58-5.01, p<0.001) were associated with QFT-positivity. Of them, 92 (80.0%) received LTBI treatment, and 3HP was the predominant regimen (79.3%). A total of 81 cases (88%) completed LTBI treatment, and with competition rate of 94.5% in 3HP, 85.7% in 1HP, 40% in 3HR, 80% in 4R and none of 9H group completed treatment.

Conclusion: Prompt LTBI intervention is recommended for patients with COPD as the prevalence exceeding 25%, particularly those with heavy smoking history, long COPD duration, and use of inhaled corticosteroid are at high risk for LTBI. LTBI treatment for COPD patients are safe using applicable LTBI treatment regimens with high completion rate up to 88%.

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

OC03

運用人工智慧輔助判讀胸部 X 光之氣管內管位置

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Using Artificial Intelligence to Assist Interpretation of Endotracheal Tube Position on Chest Radiographs

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Purpose: Unplanned extubation events in the intensive care units (ICU) occasionally occur, and they could cause lethal injury to patients. Theoretically, the position of endotracheal tube (ETT) on every single chest radiograph should be checked carefully. However, malposition of the endotracheal tube is sometimes overlooked, as the physicians are usually attracted by other conspicuous lesions. We therefore developed an artificial intelligent (AI) model to assist interpretation of ETT position on chest radiographs automatically.
Materials and Methods: We randomly selected de-identified chest radiographs of ICU patients to build upthe training data set and testingdata set. We use the Python YOLOv5 model to establish the artificial intelligent model, which can identify the carina, ETT, and tracheostomy tubes on chest radiographs. The distance between the tip of ETT and carina was automatically measured, and the value “less than 3 or greater than 5 cm” triggered alerts.
Results: We used 2278 chest radiographs as a training set and another 253 chest radiographs as a testing set to construct the artificial intelligent model. The precision, recall, mean average precision (mAP)@50, and accuracy of the model were 0.963, 0.964, 0.966, and 0.962, respectively. As an external validation, we deployed the model to our clinical practice. With the alert system triggered by the AI model, the median (interquartile range) duration of ETT malposition markedly decreased from 3.00 (1.25-4.00) to 2.00 (1.00-3.00) days.
Conclusions: We have developed an AI model to assist automatic interpretation of ETT position on chest radiographs of ICU patients, which has good performance in development and testing stage. Applying this model in our clinical practice leads to better quality and efficiency of care for ICU 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)

OC04

鳥型分枝桿菌肺病的易感受性及疾病嚴重度: 探索 TIM3 基因多態性的多重關連性

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The susceptibility and severity of *Mycobacterium avium* complex lung disease: correlations with polymorphisms in the T-cell immunoglobulin and mucin domain-3 (TIM-3) gene.

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Purpose: Prior studies have shown an association between single nucleotide polymorphisms (SNPs) in certain genes and the development of *Mycobacterium avium* complex lung disease (MAC-LD) but did not report any correlation with the disease severity. Given that MAC-LD patients may display immune exhaustion, marked by increased T-cell immunoglobulin and mucin domain-3 (TIM-3) protein expression on T lymphocytes, it is valuable to explore whether TIM3 polymorphisms are linked to both the susceptibility to MAC-LD and the disease's severity.

Materials and Methods: Between May 2015 and June 2019, adult patients aged 30 to 80 with MAC-LD and controls without any active respiratory diseases, active cancer, or autoimmune diseases were recruited from two medical centers in Taiwan. Three single-nucleotide polymorphisms in TIM3 genes, located on chromosome 5q33.2, were genotyped, and their associations with MAC-LD and disease severity were analyzed by logistical regression. The extent of disease was evaluated in six lung zones in chest radiography, each rated on a scale of 0 to 3, resulting in a score ranging from 0 to 18.

Results: 135 patients with MAC-LD and 139 control participants were enrolled. In terms of genomic data analysis, there were a higher proportion of females in MAC-LD group compared to the control group (66% vs. 53%, p= 0.037) and a higher prevalence of the TIM3 rs13170556 CC+CT genotype (33% vs. 22%, p= 0.042). In an additive model, TIM3 rs13170556 polymorphism was associated with increased risk of MAC-LD after adjustment for gender (adjusted odds ratio [OR] for CC vs CT vs TT, 1.658 [1.014-2.711]; p= 0.044). Both TIM3 rs13170556 CC+CT and female were independent genomic factors for MAC-LD (adjusted OR, 1.752 [95% confidence interval, 1.015-3.025], p= 0.044 and 1.746 [1.068-2.852], p= 0.026). The risk of MAC-LD was lowest for male participants with TIM3 rs13170556 TT genotype (29/83, 35%), followed by female with TT genotype (62/117, 53%), and highest for male and female with CC+CT genotype (17/29, 59%, and 27/45, 60%) (p value for trend= 0.005). Among patients with MAC-LD, 23 (17%) were sputum-smear high positivity (> 2+) and 50 (37%) had a radiographic score >5. Notably, TIM3 rs13170556 polymorphism was also additively associated with sputum-smear high positivity (OR, 2.183 [1.016-4.694], p= 0.046) and radiographic score >5 (OR, 1.960 [1.023-3.755], p= 0.043).

Conclusions: TIM3 rs13170556 SNP was associated with both the susceptibility to MAC-LD and its disease severity. Further investigation is warranted to explore its functional correlations in MAC-LD.

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

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

OC05

台灣族群非結核分枝桿菌肺病的全基因組關聯分析

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Genome-wide association study of nontuberculous mycobacterial lung disease in the Taiwanese population

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Background: Prevalence of nontuberculous mycobacterial lung disease (NTM-LD) is increasing but the genetic susceptibility remains unclear. Genome-wide association study (GWAS) has been scarcely investigated for NTM-LD.

Methods: This prospective study was conducted from May 2015 to Sep 2021 in multi-centers in Taiwan. GWAS was performed using C2-58 Axiom Genome-Wide TWB 2.0 Array Plate. Logistic regression was performed to analyze the relationship between genetic polymorphism and NTM-LD risk, adjusting for age and sex. We divided the participants by randomly assign into two subgroups and by sex for validation and analyzing sex effect, respectively.

Results: During study period, a total 318 patients with NTM-LD were prospectively enrolled and 594 healthy controls were included from the previous control cohort. Three SNPs (rs6499165 in the intron of *SLC7A6,* rs77685532 in non-coding region, and rs75485498 in the 3'-UTR variant of *RNF115*) were significantly associated with NTM-LD risk in the total group (p=4.59 × 10^{-24}, 2.47 × 10^{-16} and 3.60 × 10^{-9} respectively). In a random selected 100 participants, We randomly assigned the participants into two validation subgroup in a 1:1 ratio. Both subgroups showed consistent results for rs6499165 and rs77685532. Sex-specific analysis revealed that rs6499165 remained significant in the female group but not in the male group.

Conclusions: In this GWAS study, we identified three SNPs associated with NTM-LD, including rs6499165 in *SLC7A6*. In stratification by sex, the association of rs6499165 with NTM-LD risk was significant only in female subgroup. These findings suggest a potential sex-specific genetic susceptibility to NTM-LD, and further study 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)

OC06

使用胸部電腦斷層影像發展深度學習模型，以區分非結核分枝桿菌之疾病狀態：多中心驗證研究

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Developing a deep learning model with chest computed tomography images to distinguish between nontuberculous mycobacterial pulmonary disease and colonization: multi-center validation study

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Purpose: The presence of nontuberculous mycobacteria (NTM) in respiratory specimens doesn't necessarily indicate the presence of NTM pulmonary disease (NTM-PD), posing considerable challenges in clinical assessment and subsequent management. Even experienced professionals often hold varying opinions regarding the disease status of NTM. Therefore, this study aimed to assess whether artificial intelligence could differentiate between patients with NTM-PD and those with NTM pulmonary colonization (NTM-PC) from chest computed tomography.

Materials and Methods: We retrospectively recruited patients with NTM isolation from respiratory specimens in two hospitals. NTM disease status was determined by three NTM experts using a majority rule approach. We developed a three-dimensional convolutional neural network (3D-CNN) based on chest computed tomography with or without clinical information (including age, sex, acid-fast smear and mycobacterial species) to predict the NTM disease status and evaluated model performance using the area under the receiver operating characteristic curves (AUC) in both internal and external test sets.

Results: A total of 324 NTM-PC and 285 NTM-PD patients were included. NTM-PD patients were younger (66.6±13.7 vs 69.9±14.5, $P = 0.004$), had a higher proportion of females (59.3% vs. 48.5%, $P = 0.007$), and a higher rate of positive acid-fast smear (46.3% vs. 11.4%, $P < 0.001$) compared to NTM-PC patients. Among the internal and external test sets, our 3D-CNN model achieved AUCs of 0.73 (95% CI: 0.62-0.82) and 0.78 (95% CI: 0.75-0.83) for predicting NTM disease status, respectively. When combining 3D-CNN-derived imaging model with clinical information, our ensemble model achieved higher AUC values of 0.85 (95% CI: 0.80-0.93) and 0.82 (95% CI: 0.78-0.89) compared to using imaging alone (both $P < 0.001$).

Conclusions: Our ensemble model, incorporating 3D-CNN and clinical information, demonstrated satisfactory performance in distinguishing disease status among patients with respiratory NTM isolates.

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

OC07

香煙煙霧透過誘導活性氧化物上調 ACE2 蛋白表現以增加肺泡巨噬細胞對於新型冠狀病毒的易感性

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Cigarette smoke increases susceptibility of alveolar macrophages to SARS-CoV-2 infection through inducing reactive oxygen species-upregulated angiotensin-converting enzyme 2 expression

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Purpose: Alveolar macrophages (AMs) are believed to play a significant role in driving the pulmonary cytokine storm during severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. However, the regulatory factors affecting the entrance protein of SARS-CoV-2, Angiotensin-converting enzyme-2 (ACE-2), in AMs remain unknown.
Materials and Methods: We analyzed the expression of ACE2 on AMs in the bronchoalveolar lavage (BAL) fluid from 56 patients. Spearman's correlation and multivariable linear regression were employed to examine the relationship between clinical factors and ACE2. In accordance with clinical investigation result, we then treated ex-vivo human and mice AMs with SARS–CoV–2 spike protein (CoV–2 SP) and pseudovirus (CoV–2 PsV), and transgenic ROS deficiency Cybb$^{-/-}$ mice was used to explore the potential mechanisms involved in the regulation of ACE2.
Results: In the AM from 56 patients, ACE2 expression in AMs exhibited a positive correlation with smoking pack-years (Spearman's r = 0.347, P = 0.038). In multivariable analysis, current smoking was associated with an increase in ACE2 expression in AMs (β-coefficient: 0.791, 95% CI: 0.019–1.562, P = 0.045). Ex-vivo human AMs with higher ACE2 expression were more susceptible to CoV-2 PsV. Treating human AMs with cigarette smoking extract (CSE) increased ACE2 expression and susceptibility to CoV-2 PsV, and also increases the TNF-α and LPS secretion of AM in administration of CoV-2 Sp. Notably, CSE did not increase ACE2 expression in AMs of Cybb$^{-/-}$ mice; however, the addition of exogenous ROS increased ACE2 expression in Cybb$^{-/-}$ AMs. N-acetylcysteine reduced ACE2 expression by suppressing intracellular ROS levels in human AMs.
Conclusions: Cigarette smoking increases the susceptibility to SARS-CoV-2 by increasing ROS–induced ACE2 expression of AMs. Further investigation into the preventive effect of NAC on the pulmonary complications of COVID-19 is required.

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

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

OC08

以小鼠模型探討非結核性分枝桿菌肺病中的外泌體細胞程式死亡-配體 1 的作用

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Exploring Exosomal PD-L1 in NTM-LD by mice model

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Purpose: Nontuberculous Mycobacterial Lung Disease (NTM-LD) is on the rise globally, yet our understanding of host susceptibility remains limited. While the role of exosomal PD-L1 expression has been recognized in immune regulation within the context of cancer, its implications for NTM-LD in terms of disease pathogenesis, severity, and treatment response have been underexplored.

Materials and Methods: Exosomes were isolated from donor plasma and cell culture using either the ExoQuick ULTRA EV Isolation Kit or ExoQuick-TC. The presence of exosomal PD-L1 was quantified using both ELISA and Western blot techniques. Jurkat cells were exposed to exosomes, with or without PD1/PD-L1 blocking antibodies, and their viability was assessed one day later using the CCK-8 assay. Eight-week-old C57BL/6 mice were intranasally infected with 4×10^7 CFU (colony-forming units) of *Mycobacterium avium* Chester (ATCC 700898). Subsequently, these mice were sacrificed at 2, 7 and 14 days post-infection, and their plasma and lung exosomes were isolated and purified for further analysis.

Results: Plasma exosome levels were similar between 18 NTM-LD patients and 19 healthy controls. However, NTM-LD patients exhibited elevated exosomal PD-L1 expression, with higher levels in those with radiographic cavities. NTM-LD patient-derived exosomes induced increased lymphocyte cell death compared to controls in exosome-stimulating assays. This effect was ameliorated by anti-PD-1 and PD-L1 blocking antibodies. To validate exosomal PD-L1 production during NTM infection, THP-1-derived macrophages were infected with *Mycobacterium avium* Chester, resulting in elevated exosomal PD-L1 levels. Exosomes from MAC-infected macrophages induced significant lymphocyte cell death, which was reversed by adding PD-1/PD-L1 blocking antibodies. These findings suggest a potential role for exosomal PD-L1 in NTM-LD, particularly in relation to disease severity and immune responses. Significantly, exosomes purified from MAC-infected mice were able to replicate the findings observed in clinical specimens and cell infection experiments, further validating the results.

Conclusions: In our current study, we observed an elevated level of plasma exosomal PD-L1 expression in NTM-LD patients. This increase may be associated with immune attenuation, disease status, as reflected in lymphocyte cell death. Furthermore, we validated the production of exosomal PD-L1 during NTM infection using a macrophage model and mice model, indicating a direct correlation between NTM-LD and the secretion of exosomal PD-L1 which involves in a immune modulation.

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

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

PC01

使用體組成分析可改善敗血症病患之營養介入及預後：一個前瞻介入性研究

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Using Body Composition Analysis for Improved Nutritional Intervention in Septic Patients: A Prospective Interventional Study

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Abstract:

The study aimed to determine whether using body composition data acquired through bio-electrical impedance analysis (BIA) to adjust diet formulas could improve outcomes in septic patients. There were 132 septic patients in medical intensive care units enrolled in the prospective, randomized, double-blind, interventional study. For intervention group, dietitians had access to BIA data for adjusting diet formulas according to body composition variables on day1, 3 and 8. The patients were also stratified based on nutritional risk using the modified Nutrition Risk in Critically ill (mNUTRIC) score. Patients with intervention were more likely to achieve caloric and protein intake goals compared to the control group, especially in the low-risk group. The intervention did not significantly affect mortality, but the survival curves suggested potential benefits. The high-risk group had longer ICU stays and mechanical ventilation duration, which were mitigated by the intervention. Certain body composition variables (e.g., extracellular water to total body water ratio and phase angle) showed differences between high-risk and low-risk groups and may be related to patient outcomes. Non-invasive body composition assessment using BIA can help dietitians adjust diet formulas for critically ill septic patients. Body composition variables may be associated with sepsis outcomes, but further research with larger patient numbers 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)

PC02

機械通氣下的重症 COVID-19 患者：Alpha 和 Omicron 變異株在合併院內肺炎情況下的臨床結果比較

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Comparison of Clinical Outcomes in Critically Ill COVID-19 Patients on Mechanical Ventilation with Nosocomial Pneumonia Between Alpha and Omicron Variants

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Purpose: The aim of this study is to compare the clinical characteristics and outcomes and associated risk factors of Alpha and Omicron SARS-CoV-2 variants in critically ill patients on mechanical ventilation (MV) with nosocomial pneumonia.

Methods: This observational study was conducted at Taipei Veterans General Hospital, Taiwan from May 2021 to September 2022. Critically ill patients who had confirmed SARS-CoV-2 infection and intubated on a mechanical ventilator with bacterial pneumonia were enrolled. Demographic data, laboratory results, treatment information, and clinical outcomes were collected and analyzed.

Results: This study included 94 critically ill COVID-19 patients who required intubation and intensive care unit (ICU) admission. The Alpha group had a longer duration of SARS-CoV-2 viral shedding, MV days, and ICU stay, while the Omicron group had older age, more comorbidities, higher APACHE II scores, and higher in-hospital mortality (47.0% vs. 25.0%, p = 0.047). However, independent risk factors for in-hospital mortality included malignancy, lower serum albumin levels, and lack of Remdesivir treatment, except for SARS-CoV-2 variant.

Conclusion: Our study discovered higher in-hospital mortality rate in severe COVID-19 patients with MV and secondary pneumonia infected with Omicron variant compared to Alpha variant, however, real independent risk factors for in-hospital mortality are malignancy, lower serum albumin level, and lack of Remdesivir 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)

PC03

加護病房呼吸衰竭病患具碳青黴烯抗藥性之克雷伯氏肺炎菌血流感染的死亡預測因子

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Predictors of mortality in intensive care unit respiratory failure patients with blood stream infection caused by Klebsiella pneumoniae carbapenemase-producing Klebsiella pneumoniae

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Background: The Klebsiella pneumoniae carbapenemase-producing Kp (KPC-Kp) strain infection is gradually emerging as a significant problem contributing to the mortality of intensive care unit (ICU) patients, especially blood stream infection. The effective therapy is limited to KPC-Kp because it is difficult to provide active antibiotics early and only few active antibiotics are available for use. The aim of this study was to identify factors associated with mortality in ICU patients with blood stream infection caused by KPC-Kp.

Materials and Methods: The study enrolled 168 adult patients hospitalized in the ICU from Chang Gung Memorial Hospital, Taoyuan, Taiwan. All data from patients who suffered from blood stream infection caused by KPC-Kp in ICU from January 2017 to December 2021 were retrospective analyzed. All patients simultaneously suffered with respiratory failure and were all received mechanical ventilation. We analyzed outcome of blood stream infection with KPC-Kp in ICU respiratory failure patient.

Results: A total of 168 patients, who have been admitted to the ICU and blood stream infection with KPC-Kp, were identified during the study period. The severity of patient was presented by Charlson Comornidity Index (CCI; median 6.2±3.1), Pitts bacteremia score (median 5.9±3.0), and SOFA score (median 9.8±4.9). The 30 days mortality rate was 61.9%. Patients who died had a higher Pitt bacteremia score, higher SOFA score, developed acute kidney injury, and continue renal replacement therapy in ICU. In addition, the higher counts of white blood cell (WBC), lower counts of platelet, lower hemoglobin level, and higher C-reactive protein (CRP) level were noted in ICU non-survival group. The result of multivariate analysis showed CRP level and SOFA score, which were independently associated with mortality; on the other hand, Ceftazidime-Avibactam based regimen and appropriate antibiotic treatment within 48 hours after KPC-Kp bacteremia onset were independently associated with favorable outcomes.

Conclusions: We found that appropriate antibiotic treatment within 48 hours after KPC-Kp bacteremia onset can reduce mortality rate in ICU respiratory failure patients. In addition, the Ceftazidime-Avibactam use also can led favorable outcome. Thus, we should utilize novel tools for rapid diagnosis of KPC-KP infections and administer prompt effective therapy to reduce mortality rates.

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

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

PC04

COVID 患者的不明原因休克

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Profound Shock in An Old Lady with COVID-19: Complex Drug-Drug Interaction of Nirmatrelvir/Ritonavir

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Case presentation: An 81-y-old lady presented to our emergency room with severe dizziness and general weakness. She had been diagnosed with coronavirus disease 2019 (COVID-19)1 d earlier. Nirmatrelvir/ritonavir (Paxlovid®) and the herbal formula Taiwan Chingguan Yihau (NRICM101)were prescribed. She had a history of hypertension. Physical examination revealed extremely low blood pressure and impaired peripheral circulation. High dose vasopressor and inotropic agent infusion were applied to maintain adequate blood pressure. Catastrophic hypotension was observed as a result of drug–drug interaction (DDI) between nirmatrelvir/ritonavir, benidipine, and the herbal formula NRICM101.

Discussion: Nirmatrelvir/ritonavir is approved for mild-to-moderate COVID-19 treatment. Ritonavir-drug interactions with concurrent medications metabolized by the CYP3A4 enzyme may result in potentially life-threatening adverse effects. Huang Qin, or Scutellaria baicalensis Geprgi, is one of the 10 natural plant components in NRICM101 and exhibits the strongest CYP3A4 inhibition abilit. However, there was no clinical research available for the evaluation of possible DDI between NRICM101 and other concomitant medications.

Calcium channel blockers (CCB) are mainly metabolized by CYP3A4. Several case reports about antiviral drug interactions with CCBs via CYP3A4 inhibition. Benidipine, an extended-release CCB developed in Japan, should be avoided in combination with a CYP3A4 inhibitor; however, there is a lack of awareness due to its limited use in western countries.

Conclusion: Our case report points out the critical aspect of complex drug-drug interaction between nirmatrelvir/ritonavir and concurrent medication. Concomitant use of ritonavir and Scutellaria baicalensis Geprgi in herb formula NRICM101 contribute to the powerful CYP3A4 inhibition and resulting in accumulating benidipine vasodilation effect and profound shock. More dedicated research and organized algorithm are needed to safely prescribe those life-saving antiviral agents during a pandemic.

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

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

PC05

一罕見病例「伴隨急速胸腔積液積聚的肺結核併發腎類澱粉變性」

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An Unusual case: Renal Amyloidosis Linked to Pulmonary Tuberculosis with Rapid Developed Pleural Effusion

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Abstract: Amyloidosis encompasses a group of diseases characterized by the abnormal deposition of amyloid fibrils in various organs or tissues, resulting in organ dysfunction. Renal amyloidosis represents a severe and potentially life-threatening complication that can arise in patients with pulmonary tuberculosis (PTB). Renal involvement is the most prevalent, with approximately 50% of cases presenting with nephrotic syndrome as the primary clinical manifestation.

Here, we describe the case of a 74-year-old man diagnosed with pulmonary tuberculosis who exhibited symptoms of dyspnea, cough, and leg edema. Rapid pleural effusion accumulation is an uncommon presentation, and the diagnosis of amyloidosis was confirmed through lung and bone marrow biopsies.

Case presentation: The 74-year-old man, who had been undergoing medical treatment for pulmonary tuberculosis for 1 month, arrived at the emergency department in May 2023, presenting symptoms such as difficulty breathing, productive cough, and leg swelling. Laboratory tests indicated an elevated C-reactive protein (CRP) level and abnormal renal function. A chest X-ray displayed cardiomegaly and bilateral lung consolidation.

While hospitalization, the rapid development of pleural effusion, necessitating frequent thoracentesis, raised several possible underlying causes. These including tuberculosis, cardiac or renal problems, or pleural malignancy. Chest computed tomography was conducted, and pleural biopsy confirmed the presence of amyloidosis. A subsequent bone marrow biopsy provided a definitive diagnosis of multiple myeloma.

Despite the dedicated and intensive treatment efforts, the patient's condition continued to deteriorate, ultimately resulting in profound shock. Unfortunately, the patient passed away in June 2023.

Discussion/conclusion: Amyloidosis, a subtle medical condition marked by the abnormal buildup of amyloid fibrils in various organs or tissues, presents the serious risk of organ dysfunction [1]. In the context of systemic AA amyloidosis or secondary amyloidosis, it typically arises as a consequence of chronic inflammatory conditions such as tuberculosis, rheumatoid arthritis, and inflammatory bowel disease. Notably, tuberculosis remains a common trigger for renal amyloidosis [2], placing patients in a significant and potentially life-threatening predicament.

The patient far from fitting the classic presentation, exhibited not only the typical signs of foot edema and nephrotic syndrome but also endured the torment of swift had rapid accumulation of pleural effusion, requiring frequent thoracentesis.

This alarming sequence of events prompted us to conduct thorough tomography scans, as well as lung and bone marrow biopsies, ultimately leading to the sobering diagnoses of amyloidosis and multiple myeloma.

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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)

PC06

治療方案和持續時間在治療鳥型分枝桿菌肺病的角色：真實世界的經驗

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The role of treatment regimen and duration in treating patients with Mycobacterium avium complex lung disease: a real-world experience

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Purpose: The guidelines all recommend that the essentials of treatment success of Mycobacterium avium complex lung disease (MAC-LD) are three-drug combinations (triple therapy) with durable duration, which preferably include macrolide. The real- world experience of the triple therapy to MAC-LD could provide more information but there is still paucity of study.

Materials and Methods: The retrospective study was to screen patients with MAC-LD from Jan 2011 to Dec 2020 and enroll those who received anti-MAC treatment into the study. The treatment of initial three months was defined as the main treatment regimen. The favorable outcome included microbiologic cure or clinical cure if no microbiologic persistence.

Results: During study period, a total of 106 patients with MAC-LD were enrolled. Among them, 88 subjects (83%) received triple therapy, 58 (54.7%) had MAC treatment ≧ 12 months, and 66 (62.3%) had favorable outcome. The group of favorable outcomes had more subjects with triple therapy (90.9% vs. 67.5%, p = 0.008) and treatment ≧12 months (62.1% vs. 42.5%, p = 0.07) than those with unfavorable outcome. By multivariable logistic regression, age ≧ 65, comorbidities of COPD and prior tuberculosis, low hemoglobulin and high grade of sputum acid-fast smear, triple therapy (OR: 0.018, 95% CI: 0.04 – 0.78, p = 0.022) and treatment duration ≧ 12 months (OR: 0.20, 95% CI: 0.055 – 0.69, p = 0.012) were independent factors for unfavorable treatment outcome.

Conclusions: In real-world experience, 83% patients received triple therapy and 54.7% had treatment duration ≧; 12 months. Both strategies of the treatment adherence might increase favorable treatment outcome.

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

PC07

先天性右冠狀動脈缺失合併急性心肌梗塞

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Congenital absence of the right coronary artery with acute myocardial infarction

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Background: Congenital absence of the right coronary artery (RCA) is a rare coronary anomaly. Approximately 40 patients have been reported in the literature. Most individuals with this anomaly are asymptomatic. However, it is a challenge for patients suffering from acute myocardial infarction. Herein, we present a case of congenital absence of RCA with ST-elevation myocardial infarction (STEMI), successfully treated with percutaneous coronary intervention (PCI) to address the total occlusion of the left anterior descending artery (LAD).

Case presentation: A 72-year-old male, previously healthy, experienced a 30-min acute-onset chest pain before admission. Physical examination revealed a body temperature of 35°C, pulse rate of 56 beats/min, respiratory rate of 20 breaths/min, blood pressure of 82/62 mmHg, and SpO_2 of 92% on room air. The initial electrocardiography (ECG) showed sinus bradycardia, ST elevation in leads I, aVL, V1 to V3, and ST depression in II, III, and AVF, suggesting STEMI. Laboratory data showed creatine phosphokinase, creatine kinase-myocardial band, and troponin-I levels to be 190 ng/mL, 5.7 ng/mL, and 0.011 ng/mL, respectively. Emergency coronary angiography revealed a total occlusion of the proximal LAD, 30%–50% occlusion of the left circumflex artery (LCx), and an invisible RCA. The LAD proximal lesion was successfully scaffolded with a 3.0 × 32-mm stent. We thus found the proximal LAD and distal LCx supplied to the right side of heart, suggesting a total occlusion or congenital abnormality of the RCA. No adverse cardiac event was observed on admission. During the follow-up period, 640-slice computed tomography coronary angiography showed that the RCA was undeveloped, a finding consistent with the congenital absence of the RCA.

Conclusion: Congenital absence of the RCA with STEMI is an extremely rare condition and is a challenge while performing an emergency PCI. ECG may provide effective information. If the RCA could not be completely approached, examining the presence and how the circulation to the RCA territory from other vessels should be highly suggested.

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

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

PC08

COVD-19 疫苗與確診住院病人之關係

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The Association between COVID-19 Vaccination and Hospitalized Situation in Omicron Era, A Retrospective Study

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Purpose: With the emergence of Omicron variant of SARS-CoV-2, Taiwan has encountered the greatest COVID-19 pandemic since 2022 spring. In this study, we analyzed the characteristic, vaccination and outcome of hospitalized COVID-19 patients in dedicated ward.

Materials and Methods: This retrospective study enrolled hospitalized COVID-19 patients in dedicated wards of the district hospital in southern Taiwan from May 2022 to January 2023. We assessed the severe disease of COVID-19, death at 30 days (primary outcome) and 90 days.

Results: Among 469 cases confirmed COVID-19, the mortality rates in 30 days were 15.9% and 23.8% between patients with and without vaccination. Age, Charlson Comorbidity Index (CCI), and quick Sequential Organ Failure Assessment score (qSOFA) were recognized as strong prognostic indicators for survival in multivariable analysis, but the effect of vaccination became less significant. In subgroup analysis, vaccination demonstrated significantly lower hazard ratio among relatively young populations and group with low CCI.

Conclusions: COVID-19 vaccination had significant efficacy in hospitalized COVID-19 patients in the relatively young and low-CCI groups. The effect may decline among individuals with advanced age and 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)

PC09

一位免疫正常的病人感染巨細胞病毒並罕見的造成肺膿瘍–病例報告

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An unusual presentation of cytomegalovirus infection, lung abscess, in an immunocompetent patient – a case report

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Introduction: Cytomegalovirus (CMV) infection is a well-recognised etiology that causes substantial morbidity and mortality in immunocompromised patients. Among different infection sites, lung is rarely involved. We reported a case of a 76-year-old man who presented with an unusual manifestation of CMV infection - lung abscess.

Clinical case: A 76 years old man with past medical histories of DM, HTN, CKD, and COPD presented with general malaise, low body temperature, and shortness of breath for one week. Community acquired pneumonia, complicated with acute hypercapnic respiratory failure was diagnosed and he received endotracheal tube intubation with mechanical ventilation, and was admitted to ICU. The blood culture yielded Haemophilus influenzae and positive CMV viral load: 354000 IU/mL. We then added Ganciclovir. Chest CT scan showed multifocal ill-defined peribronchial mottled infiltrates and patchy consolidations in bilateral lung, and bronchiectasis change in the visible LUL and RLL of lung. Hemothorax was diagnosed via thoracentesis to left pleural effusion. Thoracic surgeon performed VATS and bloody pleural effusion is cleaned out along with some fibrin and hematoma. The LUL abscess was resected and the pathology reported lung tissue with abscess formation and chronic inflammation. Virus inclusions are noted in the section. CMV immunostain is positive. PAS-D stain shows no other microorganism. We continued ganciclovir, and his condition improved and the CMV viral load gradually decreased. However, ventilator associated pneumonia and acute-on-chronic kidney disease happened to him, and he passed away on the 55th hospital day.

Conclusion: CMV lung abscess is a rare condition, however, it could be life-threatening to immunocompetent patients. Although biopsy is the gold standard for diagnosing CMV tissue-invasive disease, positive CMV serology plus active lung lesion could be regarded as active disease and initiate antiviral therapy.

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

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

PC10

支氣管擴張症的病人罹患非結核分枝桿菌肺病之臨床特點-台灣支氣管擴張症登錄計畫

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Clinical characteristics of non-tuberculous mycobacteria lung disease in bronchiectasis from Taiwan Bronchiectasis Registry

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Purpose: Non-tuberculous mycobacteria (NTM) lung disease (NTM-LD) is a well-known complication of bronchiectasis. NTM species and clinical characteristic of NTM-LD may vary as geographic factor. There is scarce information about this issue in Taiwan.

Materials and Methods: Adult patients diagnosed as bronchiectasis by computed tomography (CT) from Jan 2017 to June 2020 were screened and the date of CT was as the index day. Those who had at least two follow-ups with the major diagnosis of bronchiectasis since the index day were enrolled. The data of microbiological variables and hospital admission within one year of the index day were recorded.

Results: NTM-LD was diagnosed in 79 subjects (2.9%). The other 2535 (93.4%) subjects without positive NTM sputum cultures (non-NTM group). Risk factors of NTM-LD in bronchiectasis by multivariate analysis were hemoptysis [adjusted OR (aOR):1.72], post infectious bronchiectasis (aOR: 2.09), tree-in-bud (TIB) score ≧2 (aOR: 1.75), modified Reiff score ≧ 4 (aOR: 2.87) and hospital admission (aOR: 2.00). There was higher risk of pneumonia in one year was noted in NTM-LD than non-NTM isolates (20.3% vs. 9.8%, p = 0.003). Pseudomonas aeruginosa (PsA) was the first leading potential pathogenic microorganism (PPM) in NTM-LD and non-NTM group (10.1% vs. 7.8%, p = 0.40). The rate of potential pathogenic microorganisms isolates in NTM-LD, including Acinetobacter baumanii (AB) (3.8% vs. 0.7%, p = 0.027) and Escherichia coli (E.coli)(3.8% vs. 1.0% p= 0.05) were higher than non-NTM isolates.

Conclusions: Post-infectious bronchiectasis with hemoptysis, radiological extent with TIB patten, and hospital admission were risky for NTM-LD. NTM-LD patients had higher risk suffering pneumonia and isolation of AB and E.coli

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

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

PC11

重症病人於加護病房發生之低血糖與一年死亡率增加之相關性

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Hypoglycemia during ICU stay is associated with increased risk of one-year death in critical ill patients

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Introduction: Hypoglycemia is a known emergency and may lead to death(1-3). Hypoglycemia can lead to short-term mortality no matter related with intensive sugar control strategy(4, 5) or sepsis(6). However, the association of hypoglycemia during ICU stay and long-term outcome remains unclear.

Materials and methods: This is a retrospective study conducted by using critical care data warehouse from Taichung Veterans General Hospital (TCVGH). We analyze status of survival after discharge from hospital by combing Taiwanese nationwide death registration files as well. Critically ill patients admitted to the adult intensive care unit (ICU) of TCVGH from 2015 to 2019 were included for analysis. Clinical data, including demographic characteristics, laboratory data, and severity scores such as Acute Physiology and Chronic Health Evaluation (APACHE) II score, Sequential Organ Failure Assessment (SOFA) scores at ICU admission were included for analysis. Patients without blood sugar examination or ICU stay less than 24 hours survivors were excluded for analysis.

Results: A total of 14,116 patients were eligible for analysis. The mean age of these patients was 64.5±15.9 years old and 64.4% were male. The average APACHE II score was 22.8±7.8 and SOFA score 7.6±4.0 at the day of ICU admission. Among these patients, 5525(35.6%) had diabetes and 1849(13.1%) experienced hypoglycemia (blood sugar ≤ 70 mg/dL) during ICU stay. The mean ICU stay was 8.6±8.1 days. The multivariate Cox proportional hazard regression model identified that experience of episode of hypoglycemia during ICU stay was independently associated with increased 1-year mortality after adjustment of relevant covariates including age and disease severity.

Discussion: In critically ill patients admitted to the ICU, experience of hypoglycemia is associated with increased risk of one-year mortality. We suggest further investigation about the mechanism for this finding.

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

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

PC12

列線圖用以預測高齡呼吸衰竭患者脫離呼吸器後之長期呼吸穩定性

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Nomogram to predict the long-term respiration stability of elderly patients recovering from acute respiratory failure treated with invasive mechanical ventilation

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Purpose: This study aimed to evaluate the long-term respiratory stability and occurrence of recurrent acute respiratory failure (ARF) 1 year after discharge in patients with ARF.

Materials and Methods: This was a retrospective cohort study, and the setting was a tertiary medical center. Elderly patients (≥65 years) admitted to our hospital between January 2010 and December 2019 with ARF who were treated with invasive mechanical ventilation (MV) and discharged with MV liberation were included. Patients who were MV dependent at discharge or died in the hospital were excluded. A total of 554 elderly patients were enrolled. Demographic data, primary diseases, severity scores, performance status, and laboratory data were collected. The primary outcome was 1-year survival without MV reuse.

Results: Overall, 383 (69%) patients survived for 1 year without MV reuse, 99 (18%) had MV reuse within 1 year, and 72 (13%) died within 1 year without MV reuse. The rates of 1-year survival without MV reuse in three age subgroup were 76% (65–74 years), 74% (75–84 years), and 52% (≥85 years). Older age, pneumonia, sepsis, an MV duration of >21 days, and a calcium level of <8 mg/dL before discharge were significant factors for poor weaning outcomes. A higher body mass index, stroke, trauma, and a white blood cell count of <10 k/uL before discharge were associated with better outcomes.

Conclusions: Long-term respiratory stability was poor in the oldest old patients (≥85 years) recovering from ARF, with only half of the patients surviving and remaining free of MV for 1 year. In this study, we developed a nomogram that may help predict the probability of elderly patients recovering from ARF remaining alive and free of MV.

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

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

PC13

細胞色素P450 基因多型性與抗結核藥物誘發肝毒性的關聯性

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Association of Cytochrome P450 Gene Polymorphisms with Antituberculosis Drug-Induced Hepatotoxicity

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Purpose: The first-line antituberculosis drugs widely used in clinical practice include Isoniazid (INH), Rifampicin (RMP, RIF), and Pyrazinamide (PZA). It has been observed clinically that the use of these drugs can lead to drug-induced hepatitis in certain patients. Previous studies mainly focused on patients who did not have abnormal liver indices or hepatitis before treatment. The objective of this study is to assess whether polymorphisms in cytochrome P450 genes are associated with antituberculosis drug-induced hepatotoxicity (ATDH) in patients with or without a history of hepatitis.

Materials and Methods: A total of 180 tuberculosis patients, comprising 45 with pre-existing liver diseases and 135 without any history of liver diseases (including hepatitis B/C, fatty liver, and abnormal AST/ALT levels) before treatment were prospectively followed. Polymorphisms in CYP2D6, CYP2C9, CYP2C19, CYP3A4, and CYP3A5 were determined using polymerase chain reaction with the TaqMan assay.

Results: Among pulmonary tuberculosis patients without liver diseases before treatment, the study revealed that the CYP3A4 *18*18 (rs28371759 TT) genotype was significantly associated with increased susceptibility to hepatotoxicity (p=0.014; odds ratio = 9.10; 95% CI, 1.56-53.16). Similarly, among pulmonary tuberculosis patients with pre-existing liver diseases, the CYP3A4 *18*18 genotype was also found to be associated with higher susceptibility to hepatotoxicity (p=0.038; odds ratio = 4.67; 95% CI, 1.02-21.36).

Conclusion: This study identified a strong association between the CYP3A4 *18*18 genotype and ATDH in tuberculosis patients, regardless of their history of prior hepatitis.

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

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

PC14

加護病房患者因具碳青黴烯抗藥性之克雷伯氏肺炎菌而引起的菌血症和肺炎的預後預測因子

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Predictors of outcome for intensive care unit patients with bacteremia and pneumonia caused by Carbapenem-resistant Klebsiella pneumoniae

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Background: Infections caused by carbapenem-resistant Klebsiella pneumoniae (CRKP) have emerged as a serious threat to the lives of patients in intensive care units (ICUs). We aimed to identify predictive factors for ICU patients with CRKP-induced bacteremia and pneumonia to enhance treatment and prognosis.

Materials and Methods: We conducted a retrospective study involving data from ICU-treated patients with CRKP-induced bacteremia and pneumonia at Chang Gung Memorial Hospital, Linkou branch from January 2017 to December 2021. Clinical characteristics, laboratory data, as well as treatment and outcome information were collected. Predictive factors were analyzed using statistical methods to determine their association with outcomes.

Results: A total of 161 patients were included in the study. Thirty-day mortality was reported for 105 patients (65%). Most CRKP clinical isolates were carbapenemase producers (132/161; 81.9%), of which K. pneumoniae carbapenemase (KPC)-producing isolates were most prevalent (112/132; 84.8%). Cox regression analysis revealed that a Ceftazidime-Avibactam-containing antibiotic regimen (hazard ratio (HR) 0.22, confidence interval (CI) 95% 0.10–0.50, $p < 0.001$) and the use of active antibiotics within 48 hours (HR 0.47, CI 95% 0.26–0.85, $p = 0.013$) were associated with a favorable outcome, while a high sequential organ failure assessment (SOFA) score (HR 1.24, CI 95% 1.15–1.35, $p < 0.001$) was associated with death.

Conclusions: The use of a definitive antibiotic within 48 hours and a Ceftazidime-Avibactam-containing antibiotic regimen had a better 30-day mortality outcome. Early detection of the pathogen and specific isolates is important in clinical practice and can improve mortality.

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

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

PC15

探究重症加護病房插管使用呼吸器病人的死亡因子

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Mortality predictors of ventilated patients in the critical care units

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Purpose: Acute respiratory failure (ARF) is a frequently encountered and severe complication in critical care patients. Managing severe ARF often necessitates the use of invasive mechanical ventilation (MV) or noninvasive ventilation. Unfortunately, severe ARF is associated with a high in-hospital mortality rate, which poses a challenging dilemma for both patients and healthcare providers. Specifically, deciding whether to pursue invasive MV or opt for hospice care becomes a critical decision. Our study aimed to investigate the factors that were closely associated with the mortality of ARF patients who received MV in the critical care units (CCUs) of a regional hospital in central Taiwan.

Materials and Methods: All ARF patients aged 20 years and above who received MV and were admitted to the CCUs in a regional hospital between July 1, 2016, and December 31, 2017, were included in the study. Patients who requested discharge against medical advice after admission to CCU (N = 8) were excluded. We employed the chi-squared test to assess differences in binomial variables and Student's t-test to compare differences in continuous variables. Furthermore, we employed logistic regression models to estimate the impact of various variables on the mortality of ventilated patients admitted to the CCUs.

Results: A total of 354 patients with ARF who received MV in the CCUs were included in the study, comprising 215 males and 139 females. The mean age of the study patients was 74.78 ± 15.60 years, with an overall mortality rate of 28.2%. The results of multivariate logistic regression analysis identified vasopressor use and albumin levels upon admission as independent factors significantly associated with mortality. Vasopressor use was associated with an adjusted odds ratio (OR) of 5.701 (95% CI = 2.174-14.949), while albumin levels upon admission demonstrated an adjusted OR of 0.434 (95% CI = 0.200-0.940).

Conclusion: Our findings suggest that patients requiring vasopressor use exhibit a significantly higher mortality rate, while higher levels of albumin upon admission are associated with lower mortality. These results highlight the clinical relevance of considering vasopressor therapy and albumin levels as crucial factors in managing and predicting outcomes for patients with ARF receiving MV in CCUs.

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

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

PC16

探討肺部非結核分枝桿菌與身體形態分析的相關性：一項前瞻性研究

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Body morphotype in patients with pulmonary nontuberculous mycobacterial infection: a prospective cohort study

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Purpose: Patients with nontuberculous mycobacterial lung disease (NTM-LD) frequently exhibit symptomatic distress and specific demographic traits, such as being older, predominantly female, and presenting with lean and skeletal abnormalities. This study aims to explore whether other body morphotype parameters could act as indicators in patients with NTM-LD.

Materials and Methods: Patients who had respiratory aspirates culture testing positive for NTM and the controls were enrolled between 2015 and 2023 at two medical centers in Northern Taiwan. NTM-LD was diagnosed based on clinical and microbiological criteria. Body morphotype parameters, such as body fat, visceral fat, and skeletal muscle, were measured using the Tanita BC-751. Measurements of body morphotype were completed at baseline and repeated three months after the initial evaluation.

Results: A total of 147 patients with NTM-LD, 115 with NTM colonization and 65 controls were enrolled. In NTM-LD group, 59.2% of them were infected by *Mycobacterium avium* complex and 22.4% by *Mycobacterium abscessus* complex; 41.8% of them were smear-positive. The proportion of females was 71.4% in NTM-LD group, which was significantly higher than the 49.6% in NTM colonization and 50.8% in control groups (both $p<0.001$). When compared to NTM colonization and the control groups, NTM-LD group had a lower BMI (20.0 vs 23.3 and 23.9, both $p<0.001$), reduced levels of visceral body fat (5.5 vs 8.8 and 9.8, both $p<0.001$) and skeletal muscle mass (34.8 vs 41.2 and 45.7, both $p<0.001$). NTM-LD patients with radiographic improvements at least 3 months later exhibited increased BMI (20.0 to 20.4, $p=0.001$), visceral body fat (4.0 to 4.5, $p=0.003$), and skeletal muscle mass (34.2 to 34.9, $p=0.008$) following the treatment. Moreover, NTM-LD patients who experienced sputum conversion after treatment demonstrated increased BMI (20.7 to 21.0, $p=0.043$) and visceral body fat (4.5 to 5.0, $p=0.007$). By contrast, those without radiographic improvements or sputum conversion had no significant changes in those body morphotype parameters.

Conclusions: Lower BMI, visceral body fat, and skeletal muscle mass were associated with NTM-LD. Both increases in BMI and visceral body fat were linked to radiographic improvement or sputum conversion in NTM-LD 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)

PC17

低劑量胸部電腦斷層在潛伏性結核感染診斷治療的應用

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The impact of Low Dose Computed Tomography (LDCT) of Chest on the decision making of Latent Tuberculosis Infection (LTBI) Treatment

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Purpose: By the literature, about 10% pulmonary tuberculosis has normal CXR. CXR was essential tool to exclude active pulmonary tuberculosis when LTBI treatment was considered. We wondered if LDCT can find subclinical pulmonary tuberculosis when CXR was normal among LTBI comfirmed cases.

Materials and Methods: LTBI patients diagnosed by positive IGRA with normal CXR was included for low dose computed tomography examination. Demographic data and risk factors like age, gender , symptoms and signs , DM , malignancy , smoking were analyzed.

Results: 69 LTBI patients without active TB lesions by CXR examination was enrolled for LDCT examination. Pulmonary TB was suspected among 10 patients (14.5%) by LDCT. 5 patients was hold LTBI treatment and kept observation because active TB cannot be ruled out. 5 patients (7.2%) was treated as active TB included 2 patients with positive TB culture (2.9%). Among 69 LTBI patients, 5 patients had cough and 2 patients was diagnosed as TB (40%). Among 2 culture positive TB cases, only one patient had cough. 5 patients had DM, but no one had TB. 7 patients had smoking and one had TB. The value of IGRA had no significant correlation with TB diagnosis

Conclusions: LDCT examination will increase the diagnosis of suspicious pulmonary TB up to 14.9% among LTBI patient with normal CXR and lead to hold LTBI treatment . 7.9% patient will be diagnosed and treated as pulmonary TB after LDCT examination. Cough may be the indicator for active TB. We still did not know who should check LDCT when LTBI was diagnosed. We suggested that patient had cough more than 3 weeks should check LDCT and sputum mycobacteria study among LTBI patient with normal CXR.

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

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

PC18

GeneXpert Ultra 在痰抗酸菌抹片陰性之懷疑肺結核病人之支氣管鏡沖洗液的診斷成效

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The role of GeneXpert Ultra in the diagnosis of sputum AFB smear negative pulmonary TB by bronchoscope bronchial washing or lavage specimen

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Purpose: Sputum smear AFB stain negative TB patient was labile to delayed diagnosis. Bronchoscope examination with bronchial washing or lavage for bacteria study was important for these patients. This study was designed for the evaluation of GeneXpert Ultra in the diagnosis of TB and rifampicin resistance in these patients.

Materials and Methods: Patients with suspected smear-negative TB was enrolled during 2021 January and 2021 November in Chest Hospital. Chest computerized tomography and bronchoscope examination with bronchial washing should be done. Bronchial washing specimen was sent for GeneXpert, GeneXpert Ultra, AFB stain smear and TB culture. The Sensitivity, specificity, positive predict value and negative predict value for TB diagnosis was evaluated.

Results: If positive TB culture of bronchial washing specimen or sputum was golden standard, the sensitivity , specificity of GeneXpert G and GeneXpert Ultra 15.7%, 97.9% and 64.3% , 96.8%。, PPV and NPV was 75%, 91.0% and 80%, 95.8%。If Clinical diagnosis combined culture and CT of chest as Golden Standard , the sensitivity , specificity of GeneXpert G and GeneXpert Ultra 27.9% , 100% and 46.5%, 100%。, PPV and NPV was 100%, 79.7% and 100%, 84.4%。If CT findins as Golden Standard , the sensitivity , specificity of GeneXpert G and GeneXpert Ultra was 18.8% , 100% and 31.1%, 100%。, PPV and NPV was 100%, 68.9% and 100%, 72.9%。2 persons had positive Xpert Ultra with Rifampicin resistance and one of them GeneXpert G was negative.

Conclusions: GeneXpert Ultra was more sensitive than GenXpert G in the early diagnosis of smear-negative TB. We suggested that all presumed pulmonary TB with smear negative should be taken bronchoscope examination with bronchial washing for GeneXpert Ultra study. GeneXpert Ultra may be more sensitive in the diagnosis of rifampicin resistance than GeneXpert G.

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

PC19

降低亞急性呼吸照護病房病患一年死亡率的預測因子

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Predictors of Reduced One-Year Mortality in Prolonged Mechanical Ventilation Patients at a Respiratory Care Center

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Purpose: ICU mortality is higher in patients requiring prolonged mechanical ventilation (PMV) compared to those who can be weaned easily. In a Taiwanese retrospective study of 296 cases, factors such as successful weaning, tracheostomy, age under 75, and no comorbidities were linked to improved long-term survival. However, nutritional support, a key factor for PMV outcomes, was not considered. This study incorporates nutritional factors to analyze their impact on one-year mortality in PMV patients.
Materials and Methods: This retrospective study enrolled patients from Taichung Veterans General Hospital's Respiratory Care Center(RCC) between July 1, 2015, and December 31, 2020. Inclusion criteria encompassed patients aged 18 or older who required mechanical ventilation for over 21 days. Exclusion criteria applied to patients with an RCC stay of less than 3 days or multiple admissions. Data included patient characteristics, NUTRIC score and the first 7-day caloric intake. One-year mortality data from the National Health Insurance Database in Taiwan.
Results: The study included 1,038 patients with an average APACHE II score of 18 and a day 1 SOFA score of 4.9. The one-year mortality rate was 47%.
Multivariate logistic regression analysis found that a higher Charlson Comorbidity Index (CCI), lower albumin and hemoglobin levels, shock presence, lower caloric intake, and failed weaning were linked to higher one-year mortality. Sensitivity analysis consistently identified successful ventilator weaning during RCC stay as predictive of better one-year survival.
Conclusion: Successful ventilator weaning and higher caloric supplementation during RCC stay are critical for reducing one-year mortality in PMV patients.

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

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

PC20

一罕見病例：「登革熱伴隨肺水腫併發症」

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An Unusual case: Dengue fever with lung edema

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Abstract:

Dengue is an arthropod bome viral disease transmitted the humans through the bites of infection female mosquitoes of the Aedes genus. The most common symptoms were muscle pain and skin rash. Pulmonary complications are less common and can present as pleural effusion, pneumonitis, noncardiogenic pulmonary edema, acute respiratory distress syndrome, and pulmonary hemorrhage. The mortality rate can be as high as more than 20%.

Here, we describe the case of a 79-year-old woman diagnosed with dengue fever
who exhibited symptoms of fever, muscle pain, poor appetite and epigastralgia. Pinhead like rash of bilateral lower leg was also found. The development of lung edema leading to acute respiratory distress syndrome is a rare presentation in this patient.

Case presentation: The 79-year-old woman, who denied TOCC history, arrived at the emergency department in June 2023, presenting symptoms such as fever, muscle pain, poor appetite and epigastralgia. Pinhead like rash of bilateral lower leg was also found. Laboratory tests indicated leukocytosis and thrombocytopenia. A chest X-ray showed infiltration of bilateral lower lung. Dengue NS-1 Ag was positive. Endotracheal tube was inserted after the rapid development of respiration failure. Thrombocytopenia was corrected after blood component therapy. Extubation was done on day 5 after admission. However, acute respiratory distress developed and re-intubation was performed on day 7. Sputum culture showed aspergillus. Chest computed tomography showed bilateral lung edema, suspect Dengue related. Conservative fluid management and ventilator weaning trial were performed. The patient was successfully treated for respiratory failure with lung edema and hospital discharged on day 49.

Discussion/conclusion: Lung abnormalities are uncommon in dengue. Dengue should be considered in the differential diagnosis of patients with fever, hemoptysis, and diffuse pulmonary infiltration. The typical imaging frequently seen in dengue involving the lung is bilateral ground-glass opacity or consolidation and pleural effusions. Identifying these patterns can assist healthcare providers in promptly initiating treatment, potentially reducing the risk of mortality.

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

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

PC21

非典型分枝桿菌肺感染併發氣胸

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Pulmonary NTM complicated with pneumothorax: the characteristics of patient

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Purpose: Secondary spontaneous pneumothorax occurs as a complication of an underlying pulmonary disease. The NTM of lung pattern on CXR was classified into four forms: nodular bronchiectasis , fibro-cavity. Patients with pneumothorax associated with had extended lesions, indicating a more advanced stage of the disease..

Materials and Methods: case presentation

This 68 years old male patient has a history of 1NTM of lung (M. abscessus).2 bronchiectasis ,3.Gaint cell tumor over right knee s/p excision with regular medication and OPD follow up. According to the statement of patient, sudden onset of short of breath was noted. So he was brought to our ER. Upon arrival to our hospital initial physical examination disclosed Chest: bilateral coarse breathing sound, RHB, no murmur Abdomen: soft, no tenderness, no muscle guarding or rebound pain. Chest x-ray revealed bilateral upper lung infiltration and minor pneumothorax of right. EKG show SR. Laboratory data showed: WBC:6900 , seg:81.3%, Lym:10.6, BUN:21,Na:132. Under the impression of minor Rt pneumothorax with multiple fibro-nodular cavity lung Due to above condition, he was admitted to our ward for further evaluation and treatment. Past history systemic disease: Bronchiectasis operation history: Giant cell tumor over right knee s/p excision Allergy history: drug: denied food: denied After admission, Doxycycline + KALRICID was treated and O2 support for Right minimal pneumothorax and severely restrictive lung. Echo showed very few pleural effusion bil. After treatment, his condition was stable, so arrange to discharge and OPD f/u

Result: Recheck laboratory data was also improved. After treatment, his condition was stable and lung full expansion ,so arrange to discharge and OPD f/ no recurrence in recent 6 months.

Discussion: The rate of pneumothorax complications in patients with pulmonary NTM was higher compared to other reports. The response to treatment was poor, and the prognosis was also poor due to other complications pneumothorax in patients with pulmonary TB is a well-known complication, pneumothorax secondary to pulmonary NTM disease is rare. Few studies have reported the clinical features of pneumothorax in patients with pulmonary NTM disease, and those have focused primarily on pulmonary M. ABSSCESSUS. We report a case of pulmonary M. abscessus that successfully treated through medical management about weeks. Few reports describing pneumothorax in patients with pulmonary NTM disease. Cavities, consolidation, pleural thickening, and interlobular septal thickening were more common in past study, except nodules and bronchiectasis. Cavities and consolidation indicated as predictors of 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)

PC22

絲孢酵母菌菌血症

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Trichosporon asahii fungemia in non-neutropenic patient without malignancy

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Purpose: *Trichosporon* is yeast-like microgerm for dermatological, GU, lung or bloodstream infections. Usual occurred in immunocompromised patients, such infections are of worser survival. No consensual guidelines are available.

Here, we report a case of a *T. asahii* infection which was treated with voriconazole in a patient suffering from BSI .Trichosporon fungemia is usually seen in neutropenic patients with underlying hematological malignancies. In this report we describe a case with Trichosporon asahii fungemia in non-neutropenic without malignancy

Materials and Methods: This 88 years old man had past history of (1)HTN (2)Old CVA (3)Dementia (4)CKD(5)BPH. This time, the patient suffered from much sputum was found. There were no vomiting, cough, rhinorrhea, short of breath, diarrhea, bowel habit change. No poor digestion or conscious change. Due to above condition, he then came to our chest OPD for help. At ward, vital sign :TPR:36.4 /115/20,BP:151/94mmHg Lab data included WBC:11800,ESR:75mm/hr. CXR showed s/p NG, aorta calcification ,LLL pleural effusion lesion .Under the impression of aspiration pneumonia with CKD , the patient was admitted for further management. Past history : systemic disease:(1)HTN (2)Old CVA (3)Dementia (4)CKD(5)BPH operation history: nil Allergy history :drug: denied food: denied Social and personal history Smoking: denied Weeks later sudden high fever 38.2 occurred to him .serum biochemistry revealed acute on choinc renal failure , family refused dialysis. CXR: infiltration bil

Result: Bacteremia (B/C: Yeast->Trichosporon asahii) on Itraconzole fever again but afebrile after applied Voriconazle and general condition improved ever lab results.

Discussion: *Trichosporon* fungemia is frequently difficult to diagnose, refractory to treatment, and associated with high mortality,Especially in hospitalized patients treated with broad-spectrum antimicrobials. Voriconazole are expected to improve prognosis in antifungal strategies. Anyway, the removal of unnecessary tubing is associated with better outcome. Clinicians aware that T. asahii fungemia may develop in clinically deteriorated patients even they do not have a hematological malignancy

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

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

PC23

低劑量類固醇於結核病合併壞死性肺炎變化改善反應分析

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Necrotizing Pneumonia by Mycobacterium tuberculosis ameliorating With low dose steroid

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Purpose: Necrotizing pneumonia by Mycobacterium tuberculosis is rare , management is disputed. Here, we report a case of M. tuberculosis-associated necrotizing pneumonia treated with anti-TB medicine and low dose steroid.

Materials and Methods: Case Report

This 50 year-old man had past history of (1) Pneumoconiosis (2)COPD (3)Pulmonary fibrosis (4)allergic rhinitis (5)gouty arthritis. He regular follows up in our CM OPD. This time, he suffered from dyspnea on exacerbation and dyspnea for long time , worse since one week ago. Productive cough with whitish sputum was also noted. He denied fever, foot edema, decreased urine output, headache and vomitting, diarrhea, bowel habit change, urine frequency, urgency, burning sensation or dysuria. No appetite decreased, body weight loss or general malaise were complaint., Chronic obstructive pulmonary disease with acute lower, he was admitted for further evaluation and management. Past history : systemic disease:(1)Pneumococcus (2)COPD (3)Pulmonary fibrosis (4)allergic rhinitis (5)gouty arthritis (6)left ureteral stone U/3 about 1-2 years ago without ESWL operation history: (1)/p Appendectomy for 30 years (2)right wrist /p OP for 20+ years Oral medication were prescribed as Anti-TB and prednisolone 5 mg/day .Serial CXR reviewed from April 2022 to May 2022. His LLL mass lesion size decreased and LLL gradually cleared.

Result: Focal necrosis and hemorrhage and fibrosis ,a s RUL biopsy caseous necrosis with AFS+ over RUL (4 monthes later)

Discussion: The destruction of lung parenchyma induced by M. tuberculosis usually develops for monthes. The adjunctive role of corticosteroid improved patients with advanced illness. Therefore, the corticosteroid treatment could be useful in management of M. tuberculosis-associated necrotizing pneumonia.The clinical and CXR showed significant improvement in this case. Steroids have been used as adjunctive therapy in TB meningitis, pericarditis also beneficial effect on pulmonary repair.

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

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

PC24

間質性肺病使用類固醇併發肺麴菌症

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A case of pulmonary aspergillosis during treatment for acute exacerbation of interstitial lung disease

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Purpose: Pulmonary aspergillosis is an opportunistic infection. Immunosuppressive therapy is recognized as a risk factor of PA. Herein, we present a case of PA that was diagnosed after the initiation of corticosteroid for controlling interstitial lung disease.

Case Report

This 67 y/o man had past history of (1)lung fibrosis s/p Tr with recent trachostomy change on 7/12 and (2)Syncope s/p intubation and ECMO on CMUH in March. According to the patient, cough with sputum for days. The patient ever visited an CMUH but the symptoms sustained Here he was prescribed with methylpredinsole 8mg per day weeks. This patient denied headache and vomiting, rhinorrhea, short of breath, diarrhea, bowel habit change, urine frequency, urgency, burning sensation or dysuria. No appetite decreased, bodyweight loss or general malaise were complaint. No animal contact or cluster contact were noted. Due to above condition, he then came to our chest OPD today. Under the impression of idiopathic pulmonary fibrosis with 2nd infection, the patient was admitted for further management. After admitted, we gave empiric antibiotics for treat and keep OPD medical treatment, keep oxygen of 2L/min support, however he complain night cough and sore throat arrange Bronchoscopy for suspicion fungus infection at. pending culture, then he vital sign stable and Symptoms improved, so we arrange MBD and OPD follow up

Result:

BAL fungus culture

Aspergillus fumigatusFew

Discussion: The present case showed that even short-course immunosuppressive therapy can cause PA. Similarly, immunosuppressive therapy for lung disease is a known risk factor of PA. Host recognition of invading pathogen is an important first process against invasive infection. Association ofs hort-term immunosuppressive therapy for an acute exacerbation of interstitial lung disease.Rapiddiagnosis, appropriate choice of antifungal agent, and careful management are essential for the treatment of PA.

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

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

PC25

結核病治療中之逆向反應分析

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Paradoxical reaction mimic lung tumor during Anti-TB treatment

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Purpose: A new lung nodule appears during the treatment of anti-tuberculosis, different diagnoses should be taken into secondary infection, lung tumor or paradoxical reaction.

Materials and Methods: case presentation

This 85-year-old male with past history of (1)hypertension and (2)tuberculosis of lung. He regular follows up at our Chest OPD. TB was surveyed that acid fast stain showed positive. Sputum culture showed M. Tuberculosis, Hence, he receivedTRAC-4 3# PO QD(111/09-11/08) and AKURIT-3 4# QD(111/11/08-) for TB therapy. MSCT on 112/02 showed RLL mass and nodular lesions and infiltration at bilateral lungs, malignancy can't be excluded. Advise contrast-enhanced study or bronchoscopy for further evaluation if feasible. CXR on 112/02 showed RLL mass and nodular lesions and infiltration at bilateral lungs, malignancy can't be excluded. Under the impression of (1)RLL mass and nodular lesions, malignancy can't be excluded, (2)Tuberculosis of lung under TB therapy and (3)Bronchiectasis the patient was admitted via OPD for further evaluation and management After admission, we arranged chest CT-guide biopsy on 112/03/17 for RLL mass, malignancy can't be excluded.

Result:

Lung, right, aspiration cytology showed atypical cell.

Granulomatus inflammation with scattered multinuclear giant cells, TB related granulomatous inflammation

The patient was diagnosed as PR paradoxical and was continued on the original anti-TB therapy. CXR showed that the pulmonary mass was diminished months later.

Conculsion: In the elderly population, several factors coexist to make TB a specific issue. Aging as adding immune-depression conditions related to other comorbidities. The elder patients present with features as middle or lower lobe infiltrates or nodules like cancers. Lesions are frequently misdiagnosed as lung cancer in the elderly. Paradoxical reaction during anti-TB management when new pulmonary nodule like appeared. Adjunctive transient corticosteroid therapy may be used to treat paradoxical upgrading reactions

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

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

PC26

低劑量皮質類固醇降低高氧對經脂多醣 (LPS) 刺激之氣道上皮細胞釋放轉化生長因子-B1 (TGF-B1) 的影響

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Low-dose dexamethasone decreases the effect of hyperoxia on transforming growth factor-beta 1 (TGF-β1) release from lipopolysaccharide (LPS)-stimulated airway epithelial cells

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Purpose: Hyperoxia results in the increase of reactive oxygen intermediates, thus leading to severe lung injury and promoting subsequently fibrotic process. The exact pathogenesis of hyperoxia-induced pulmonary fibrosis has not yet been clearly investigated. TGF-β1 is a critical fibrogenic factor in the development of pulmonary fibrosis. We aim to investigate whether hyperoxia might contribute to pulmonary fibrosis through the enhancement of TGF-β1 synthesis in epithelial cells.

Materials and Methods: A549 epithelial cells were incubated with hyperoxia (95% O2) for 2 hours, 4 hours and 6 hours, in the presence of absence of LPS (10 ng/ml and 100 ng/ml). The supernatant was collected for TGF-β1 measurement by ELISA method. The activities of AP-1 and NF-kB were detected by western blot analysis.

Results: Hyperoxia alone significantly induced TGF-β1 release from A549 epithelial cells at 2h (209.3±4.2 pg/ml), 4h (351.8±6.1 pg/ml) and 6h (520.8±4.9 pg/ml) incubation, compared with time-control group (100.8±3.3, 271.6±3.1 and 438.6±6.9 pg/ml, n=8, $p<0.001$ respectively). Hyperoxia also significantly enhanced the TGF-β1 release from LPS (100 ng/ml)-stimulated A549 epithelial cells, especially at 6h (637.7±9.5 pg/ml, n=5), compared with hyperoxia+LPS (10 ng/ml) (582.1±17.0 pg/ml, n=5, $p<0.05$), hyperoxia alone ($p<0.001$) and time-control group ($p<0.001$). The AP-1, but not NF-kB, was upregulated by hyperoxia +LPS, compared with hyperoxia alone and time-control group. Pretreatment with low-dose dexamethasone significantly decreased the hyperoxia-induced TGF-β1 release from A549 cells. Conversely, high-dose dexamethasone significantly increased the hyperoxia-induced TGF-β1 release.

Conclusions: Our results indicate hyperoxia activates AP-1 to enhance TGF-β1 synthesis from LPS-stimulated airway epithelial cells and low-dose dexamethasone alleviates the fibrogenic effect.

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

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

PC27

新冠肺炎感染後併發厭氧性細菌膿胸一位病例報告

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Super-infection with anaerobic empyema in COVID infection A case report

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Introduction: COVID infection, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was found initially in Wuhan at the end of 2019, and it rapidly spread, resulting in an epidemic throughout China, then throughout the world. The severity of symptomatic COVID infection ranges from mild to critical; most infections are not severe, presenting mainly as fever, **smell and taste abnormalities** (eg, anosmia and dysgeusia) **, Gastro-intestinal symptoms (eg. nausea and diarrhea), dermatologic abnormalities (eg.** maculopapular/morbilliform, urticarial, and vesicular eruptions and transient livedo reticularis) ; some may developed critical complications such as Acute respiratory distress syndrome (ARDS), **cardiovascular complications (eg.** arrhythmias, myocardial injury, heart failure, and shock), **thromboembolic complications**(eg.Venous thromboembolism), **Neurologic complications** (eg. Encephalopathy) ; Secondary infections occur in the minority of patients with COVID-19 , the rate of bacterial co-infections (identified at the time of COVID-19 diagnosis) was around 8 % and the rate of bacterial super-infections (identified during care for COVID-19) was around 20 % reports by reports of some studies. *Klebsiella pneumoniae, Streptococcus pneumoniae, a*nd *Staphylococcus aureus we*re the most common coinfecting pathogens, and *Acinetobacter sp*p were the most common superinfecting pathogens, other bacterial, fungal, and viral superinfections were noted also , eg. Epstein-Barr virus , *Pseudomonas aeruginosa, Escherichia coli, Acinetobacter baumannii, Hemophilus influenza*, and invasive pulmonary aspergillosis.

Case: In this case, we will present a super-infection with anaerobic empyema in COVID infection. This 63 years-old man, denied any other systemic disease before, was infected with COVID -19 infection on June.28.2023, he came to our hospital on July.10.2023 due to persisted airway symptoms with cough with and scanty sputum since then, no fever was noted at our OPD clinic, initial CXR showed a huge mass (around 8.5cm size) in LLL field with significant leukocytosis (WBC: 21440 ul) and high CRP level (19.78 mg/dl), CT scan showed focal consolidation in LLL field with air and fluid collection inside, bilateral pulmonary infiltration was seen also, empyema was suspected, he was transferred to medical center for further treatment. In medical center, chest tube was inserted initially, pleural effusion culture data showed anaerobic pathogen (Fusobacterium nucleatum), pleural effusion aerobic culture with AFS all showed negative, pleural surgical decortications was consulted due to persisted fever under chest tube drainage and antibiotic Piperacillin/Tazobactam (Tazocin) use , surgery was not performed due to fever subsided later and no ICU bed at that time, so Urokinase via intrapleural space was given for left empyema, follow up CXR showed improvement, so chest tube was removed later and antibiotic was shifted to Amoxicillin /clavulanic acid (Augmentin) use, he was discharged later with stable condition.

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

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

PC28

研究 Xpert MTB/RIF Ultra 微量陽性於診斷肺結核的臨床意義

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Study on the clinical significance of trace positivity of GeneXpert ultra in the diagnosis of pulmonary tuberculosis

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Purpose: At very low bacterial loads, Xpert Ultra can give a “trace” result, which is not based on amplification of the rpoB target [1]. We aim to further analyze the clinical significance and impact of trace-positive results obtained with Xpert MTB/RIF Ultra as a testing tool in clinical practice.

Materials and Methods: We retrospectively analyzed all reports using Xpert MTB/RIF Ultra testing in the database of our hospital (Chest Hospital) from November 2022 to October 2023. We screened out reports that were trace-positive, followed their subsequent culture and identification to further classify the results, and performed proportional analysis.

Results: The original database contains 1138 test results. After preliminary screening, trace-positive results were obtained on 24 cases, 5 cases after August 2023 were excluded (4 cases with unknown culture results, 1 case with NTM), and 19 cases were finally included for analysis. After analysis, most of the cultures were negative, accounting for 13 cases (after repeated testing, 2 cases were NTM, 1 case was M.TB, and 1 case was mixed infection). A smaller number of cultures were positive, accounting for 6 cases. Among them, 5 cases were NTM and only 1 case was M.TB. Overall, tuberculosis accounts for only 15.8%. Additionally, a higher proportion of bronchial washes was found in culture-negative patients compared with culture-positive patients, which is thought to be a possible selection bias.

Conclusions: Although Xpert MTB/RIF Ultra has higher sensitivity than Xpert MTB/RIF, it is less predictive when its results are slightly positive. Therefore, while waiting for the final culture identification results, it is still necessary to repeatedly collect specimens for re-examination.

References

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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)

PC29

增加亞急性呼吸照護病房病患熱量攝取是脫離呼吸器成功的預測因子

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Higher Caloric Intake Predicts Successful Weaning in Prolonged Mechanical Ventilation Patients at a Respiratory Care Center

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Purpose: Successfully weaning patients with prolonged mechanical ventilation (PMV) from ventilators is challenging, with proper nutrition being crucial for this process. Previous studies have highlighted the significance of higher albumin levels and increased daily protein intake in predicting successful weaning among PMV patients. However, the importance of caloric intake in PMV patients has remained unclear due to limited prior research.

Materials and Methods: This retrospective study, conducted at Taichung Veterans General Hospital between July 2015 and December 2020, included patients aged 18 or older who underwent endotracheal intubation or tracheostomy and required mechanical ventilation for over 21 days. Excluded were patients with an RCC stay of fewer than 3 days or those with multiple admissions. Data encompassed patient characteristics and nutritional factors, including the NUTRIC score and the first 7-day caloric intake at the center.

Results: The study involved 1,038 patients with an average APACHE II score of 18 and a day 1 SOFA score of 4.9. The successful weaning rate was 70%. Multivariate logistic regression analysis revealed that higher albumin and hemoglobin levels, lower cortisol levels, the absence of shock, less positive fluid status, and higher caloric intake were associated with a higher successful weaning rate. Sensitivity analysis demonstrated that an average caloric intake higher than 25/kg/day during RCC stay predicted better successful ventilator weaning.

Conclusion: Higher daily caloric intake at the RCC is associated with more successful ventilator weaning, with an average intake exceeding 25/kg/day recommended for optimizing the 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)

PC30

膿腫分枝桿菌肺病及肺外感染之臨床特色、菌株分型及藥物敏感性之分析

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Characterization of *Mycobacterium abscessus* (Mabs) Isolates in Patients with Pulmonary and Extrapulmonary Mabs Disease: Clinical Features, Genotype, and Drug Susceptibility Profiles

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Purpose: Guidelines recommend *Mycobacterium abscessus* (Mabs) treatment based on drug susceptibility tests. Mutations in *rrl* and functional *erm*(41) gene of Mabs were associated with constitutional and inducible macrolide resistance and *rrs* gene correlated with amikacin resistance. We investigated genotypic and phenotypic antimicrobial susceptibility of Mabs subspecies in patients with Mabs pulmonary disease (Mabs-PD) and extrapulmonary disease (Mabs-ED).

Materials and Methods: Patients with Mabs infections were identified in Taipei Veterans General Hospital. DNA from Mabs isolates were sequenced for *erm*(41), *rrl* and *rrs* genes. Antimicrobial susceptibilities were determined using broth microdilution method (Sensititre® RAPMYCO panel). Chi-square tests and t-tests were used to compare variables between groups.

Results: From 2016 to 2018, 66 patients with Mabs-PD and 20 with Mabs-ED were included. In patients with Mabs-PD, 39 (60%) were smear-positive, 7 (10%) had cavitary disease, and 4 (10%) showed radiographic progression within 6 months. Patients with Mabs-PD were older than those with Mabs-ED (68.5 ± 15.9 vs 56.4 ± 20.1 years, p=0.006) and were more likely to have a BMI ≤22 (63% vs 31%, p=0.024). Overall, 41 (48%) patients were infected by *M. abscessus* subspecies *abscessus* (Mabs-a), 44 (51%) by *M. abscessus* subsp. *massiliense* (Mabs-m), and 1 (1%) by *M. abscessus* subsp. *bolletii* (Mabs-b). In patients with Mabs-PD, the smear-positivity rate, radiographic scores and radiographic progression were similar between Mabs-a (n=33) and Mabs-m (n=22). Compared to patients with Mabs-PD, those with Mabs-ED were more likely to have Mabs-m infection (n/N=12/20, 60% vs 32/66, 49%, p=0.60), all of which had a truncated *erm*(41) gene (dysfunctional). The percentage of *rrl* mutations did not differ between Mabs-PD and Mabs-ED or between Mabs-a and Mabs-m. Constitutional macrolide resistance rates were similar, but inducible resistance rate was higher in Mabs-a than in Mabs-m (66.7% vs 7.1%, p=0.001). Surprisingly, the percentage of *rrs* mutations was higher in Mabs-PD than in Mabs-ED (29.5% vs 0%, p= 0.004) and higher in Mabs-a than in Mabs-m (33.3% vs 12.2%, p= 0.024). However, only two isolates (2/23) were phenotypically amikacin-resistant (1 in Mabs-a and 1 in Mabs-m). The MIC for Tigecycline was low in both Mabs-PD and Mabs-ED. In Mabs-ED, 14 patients (82%) completed treatment within 6 months and more patients had poor outcome in Mabs-a than in Mabs-m (n/N= 3/8, 50% vs 2/12, 20%, p=0.299).

Conclusions: Mabs-PD patients were older, thinner, and more likely to have Mabs-a infection than Mabs-ED. Mabs-m was associated with a low risk of inducible macrolide resistance due to truncated erm(41) gene. The association between specific Mabs genes and outcomes warrants further investigation.

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

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

PC31

使用機械通氣之嚴重新冠病毒肺炎患者的動態微生物學分佈：多中心流行病學研究

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The Dynamic Microbiological Profiles in Critically Ill COVID-19 Patients on Mechanical Ventilation: A multicenter epidemiologic study.

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Purpose: This study aims to investigate the dynamic distribution of microbiological pathogens in critical COVID-19 patients on mechanical ventilation and to analyze the clinical characteristics in critical COVID-19 patients developing secondary infections.

Materials and Methods: This multicenter study enrolled critical COVID-19 patients who were intubated for acute respiratory failure during March 2021 to November 2021 in Taiwan. Clinical characteristics, treatment outcomes and microbiology results were recorded retrospectively. Additionally, we conducted a subgroup analysis to compare isolates occurring within the initial phase (initial 14 days) since COVID-19 symptoms and those appearing thereafter (delayed phase).

Results: A total of 609 critical COVID-19 patients were included in this study. During their hospital course for COVID-19 pneumonia, patients received various treatments, including Remdesivir (72.2%), Tocilizumab (70.8%) and antibiotics (97.8%). Notably, over 68% of patients received a cumulative steroid dose higher than 60 mg equivalent dose of dexamethasone. Microbiological pathogens were isolated in 67.2% patients within the hospitalization. In terms of microbiology distribution, the most common isolates were found in sputum (55.2%), followed by endotracheal aspirate (22.0%), and blood (19.0%). For bacterial isolates within the initial phase, the most common pathogen of respiratory specimen was Klebsiella spp. (30/176, 17.0%), followed by Pseudomonas spp. (16.4%), among others. In contrast, the most frequent isolates in the delayed phase were Stenotrophomonas maltophilia (263/1007, 26.1%), followed by Acinetobacter spp. (22.7%). The proportion of pathogens with multi-drug resistance (MDR) in the two groups was 9.86% and 17.64%, respectively.

Conclusions: This epidemiological analysis may highlight the notion that the pathogens responsible for concurrent or secondary infections in critically ill COVID-19 patients may exhibit dynamic changes.

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

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

PC32

病例報告: 肺諾卡氏菌症之罕見肺影像表現

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Pulmoanary nocardiosis with rare computed tomography findings: A case report

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Background: Nocardiosis is an opportunistic infection that typically affects the pulmonary system. The computed tomography (CT) findings of nocardiosis can vary, posing a challenge for differential diagnosis. In this report, we present an unusual case of nocardiosis in which the chest CT findings deviate from the usual pattern.

Case summary: A 43-year-old man presented to our hospital with a persistent cough and fever lasting for 4 days. He had recently developed new pustules on his skin and muscle pain. The ordered blood test revealed leukocytosis and elevated creatinine level. A chest X-ray showed bilateral diffuse fine nodular infiltrates. The COVID-19 rapid test returned a negative result. Consequently, a chest CT was performed, revealing a dominant diffuse ground-glass opacity (GGO) pattern, primarily affecting the basal lungs. Simultaneously, samples were collected from the skin pustules and blood cultures were taken. Empirically, carbapenem antibiotics were administered, but the therapeutic response was unsatisfactory. The patient's condition rapidly deteriorated, necessitating intubation and mechanical ventilator support due to severe respiratory failure. Pustule smears and blood culture results both indicated a gram-positive bacillus infection, raising suspicion of nocardiosis. Consequently, antibiotic treatment was modified to trimethoprim/sulfamethoxazole and imipenem. Subsequent cultures confirmed the presence of Nocardia species, thus confirming the diagnosis of nocardiosis. Unfortunately, the patient developed multi-organ failure, including renal and hepatic failure, during the treatment course. After 12 days of treatment, the patient passed away.

Discussions: In comparison to findings in other cases, the CT scans of nocardiosis frequently reveal multiple nodules distributed from the central to the peripheral areas. A pure diffuse ground-glass opacity (GGO) pattern is rarely reported. Ultimately, the diagnosis of nocardiosis relies on culture data, and early identification remains a challenging aspect.

Conclusions: The pulmonary manifestations of nocardiosis on chest CT scans exhibit considerable variation. Notably, the pure diffuse GGO pattern can also be indicative of nocardiosis. Therefore, recognizing this diverse presentation is essential in the diagnosis of this 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)

PC33

肺結核患者基因型檢測 GeneXpert MTB/RIF 與表現型藥敏試驗的利福平抗藥性結果不一致 - 病例報告

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Discordant result of rifampicin resistance between GeneXpert MTB/RIF and phenotypic drug susceptibility testing in a pulmonary tuberculosis patient: case report

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Introduction: According to the World Health Organization (WHO), globally, in 2019, an estimated 3.3% of new tuberculosis (TB) cases and 18% of previously treated patients had rifampin-resistant or multidrug-resistant TB (RR/MDR-TB). The early and accurate diagnosis of RIF resistance is necessary to deliver timely and appropriate treatment for TB patients. RIF resistance can be determined through several techniques, both molecular and phenotypical method. We here describe a case of pulmonary TB whose sputum GeneXpert MTB/RIF show MTB with RIF resistance. Sputum mycobacterial culture reveal MTB and drug susceptibility testing (DST) disclose sensitive to all first line anti-TB drugs. Gene sequencing shows silent mutation (L521L).

Discussions: When testing for drug resistance in TB, the most frequent scenarios for discordance between genotypic method (GeneXpert MTB/RIF) and phenotypic method (Löwenstein–Jensen medium proportion drug susceptibility testing) are the presence of silent mutation, disputed mutation and heteroresistance. Silent mutation means mutation in gene but will not change in amino acid and protein structure that may be called false-positive RIF resistance on GeneXpert MTB/RIF. First line anti-TB drugs can be given without adjustment. Disputed rpoB mutation often cause “borderline” or subcritical level of RIF resistance which maybe low-level RIF resistance. Another molecular method such as GenoType MTBDRplus is suggested to be performed for detecting isoniazid and RIF resistance. Minimum inhibitory concentration (MIC) testing can be assessed. Anti-TB drugs with covering RIF resistance must be given if low-level Rif resistance is suspected. Heteroresistance refers to RIF-resistant and -susceptible MTB coexist that may result in failed standard TB treatment. Whole-genome sequencing (WGS) is considered that enables the identification of single-nucleotide polymorphisms (SNPs) and insertions and deletions (indels) in loci associated with drug resistance and are proven to have higher accuracy than phenotypic DST.

Conclusions: When discordance of RIF resistance between genotypic method (GeneXpert MTB/RIF) and phenotypic DST occur, another molecular method can be performed. WGS is suggested for further evaluation if no definite result. Appropriate anti-TB regimen can be prescribed under proper and complete assessment for drug resistance strain.

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

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

PC34

病例報告：台灣罕見的肺部黴菌感染，肺部組織胞漿菌感染

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Pulmonary Histoplasmosis, a case-report of rare pulmonary fungal infection in Taiwan

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Purpose: Histoplasmosis is a rare fungal infection in Taiwan. We will introduce a case of pulmonary histoplasmosis, diagnosed by endobronchial ultrasound guided biopsy.

Case Report: The 56 y/o male patient came from Thailand and had stayed in Taiwan for 2 years. He had no unknown underlying disease, He suffered cough with yellowish sputum for 1 month. The initial CXR showed bilateral lower lung consolidation; however, after 2 weeks oral antibiotics treatment, the consolidation progressed gradually. Chest CT was performed and the result showed consolidation at right middle, right lower and left lower lobes with bilateral pleural effusion. We arranged endobronchial ultrasound guided transbronchial biopsy. The histopathology report disclosed chronic inflammation and presences of fungal-like microorganisms. Numerous small size (2-4um) and yeast-like shape, of no distinct septa/ thick capsule fungus-like substance was between epithelioid epithelioid histiocytes. Histoplasmosis was favored, but cryptococcus and penicilliosis could not be excluded. *Histoplama capsulatum* was identified at the final result of tissue culture and Itraconazole was administrated. We surveyed the possible causes of immunocompromization. Newly diagnosed diabetes mellitus (HbA1c 9.7%) was the only finding, Oral hypoglycemic agent was given. Under Itraconazole treatment and diabetes control, the clinical condition improved gradually and the bilateral consolidation subsided gradually, too.

Discussion: Histoplasmosis is a rare pathogen for pulmonary infection in Taiwan. However, it is endemic in regions of North/ Central/ South America, and parts in Asia and Africa. The endemic areas in Asia include India, southeast Asia and China. The clinical presentation is variable, might mimic bacterial pneumonia, tuberculosis, sarcoidosis or malignancy. The most common risk factor in non-HIV patient was diabetes. The gold-standard of diagnosis based on culture and histopathology. However, the sensitivity of culture and histopathology both showed high variability (culture: 10-49%; histopathology: 20-75%). The choice of treatment is Liposomal amphotericin B; itraconazole is adequate for milder cases and “step-down” therapy following response to amphotericin B.

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

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

PC35

萬芳醫院運用視訊手機執行多重抗藥性結核進階都治的經驗

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The experiences of the mobile videophone application in the DOTS-Plus program for multidrug-resistant tuberculosis treatment at Wanfang Hospital

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Background: Multidrug-resistant tuberculosis (MDR-TB) is caused by *Mycobacterium tuberculosis* which does not respond to the most effective first-line TB drugs, isoniazid and rifampicin. MDR-TB does not respond to the standard six-month treatment and can take 18-24 months to treat with less effective and more harmful drugs. The DOTS (directly observed treatment, short-course)-Plus program with the supporter to observe the patients taking the medication is recommended to enhance the patient's adherence to the MDR-TB treatment. To reduce the distance between the patients and the healthcare workers during the lengthy treatment time, we used the mobile videophone to observe selected MDR-TB patients taking their prescribed medications at Wanfang Hospital. This study aimed to evaluate the effectiveness of the videophone application in the DOTS-plus program.

Methods: From January 2009 through December 2021, all the MDR-TB patients, except 15 patients (8 patients who deceased during hospitalization and 7 patients who were transferred to other hospitals), treated at Wanfang Hospital were enrolled in this study. These patients were allotted to the Supporter (S-DOT) group and the videophone (V-DOT) group based on the patient's age, history of previous anti-TB treatment, awareness of the disease, disease severity, sputum status, family support, and willingness. In the S-DOT group, supporters visited the patients at prearranged times. In the V-DOT group, the patient could call the nurses at a scheduled time. The prescribed pills would be taken under the observation of the nurses via the mobile videophone. The treatment success rate at 24 months was evaluated.

Results: Among the 198 patients enrolled in this study, the mean age was 53.7 (15 to 96) years, with a male-to-female ratio of 2.0. One hundred and forty-four patients (72.7%) with a mean age of 59.3 years were allotted to the S-DOT group, 52 patients (26.3%) with a mean age of 39.1 years were in the V-DOT group, and 2 patients (1.0%) with a mean age of 37.5 years were in the mixed V-DOT/S-DOT group. The V-DOT group was significantly younger, more newly diagnosed TB, and less diabetic than the S-DOT group. The treatment success rates of the V-DOT group (96.2%) and the mixed V-DOT/S-DOT group (100%) were higher than the S-DOT group (80.6%).

Conclusions: Mobile videophones could be an effective modality to observe patients taking TB medication in selected cooperative MDR-TB 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)

PC36

不同肺部狀況對 Flow Index 之影響：使用 ASL 5000 模擬

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***Flow Index* as an indicator of respiratory effort in different respiratory mechanics: a simulation study**

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INTRODUCTION: *Flow index* is a parameter derived from fitting selected flow curve with a non-linear model, $\mathbf{flow = a + b \cdot time^{c}}$, **c** is the *Flow index*. It was used to monitor respiratory effort by Albani et al. A *Flow index* greater than 4.5 identified breaths with high inspiratory effort, while a *Flow index* lower than 2.6 identified breaths with low inspiratory effort. In addition to breathing effort, we speculate that respiratory mechanics also influence the *Flow index*, and we conducted a simulation study using the ASL 5000 lung simulator.

METHOD: This simulation study used the ASL 5000 computerized lung simulator using a single-compartment, active, linear lung model. Four lung models were programmed: normal (resistance (R) of 5 cm H2O/L/s and compliance (C) of 100 mL/cm H2O), obstructive (R of 20 cm H2O/L/s and C of 100 mL/cm H2O), mixed (R of 10 cm H2O/L/s and C of 50 mL/cm H2O), and restrictive (R of 5 cm H2O/L/s and C of 25 mL/cm H2O). Three inspiratory efforts (low -2, mid -8, and high -15 cm H2O), one pressure support level (5 cm H2O), and one cycle-off criteria level 40% peak inspiratory flow and 2 releasing durations (0.18 or 0.3 s; inspiratory relaxation) were used. PB840 ventilator was used. The inspiratory flow waveform was cut at two points to estimate the parameter *Flow index*. The initial cut point was selected by excluding all the measurements in which the flow increased more than 1% of the preceding measurement, and the final cut point was identified as the point where the measured flow decreased more than 10% of the prior measurement, indicating the beginning of the cycling toward expiration. The *Flow index* was obtained by the Levenberg-Marquardt optimization method.

RESULT: For high, mid, and low breathing effort, *Flow index* were: Normal: 5.6 ± 0.7, 4.5 ± 0.3, 2.6 ± 0.1; Obstructive: 5.9 ± 1.0, 5.6 ± 0.8, 2.5 ± 0.3; Mixed: 4.5 ± 0.2, 5.1 ± 9.2, 2.0 ± 0.1; Restrictive: 1.5 ± 0.1, 1.4 ± 0.0, 1.4 ± 0.1, $P < 0.05$ within each lung model). For breaths with high breathing effort, the *Flow index* was significantly higher in normal, obstructive, and mixed lung models compared to the restrictive lung model (5.6 ± 0.7, 5.9 ± 1.0, and 4.5 ± 0.2 vs 1.5 ± 0.1, $P < 0.05$). The *Flow index* is also significantly higher in breaths with shorter releasing duration.

CONCLUSION: *Flow index* is influenced not only by respiratory effort but also by respiratory mechanics. Interpretation of the *Flow index* should be cautious.

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

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

PC37

空洞性非結核分枝桿菌肺部疾病不良預後的相關因子與影像特徵：一個多中心世代研究

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Factors Associated With Unfavorable Outcomes in Cavitary Non-Tuberculous Mycobacterial Pulmonary Disease with Focus on Imaging Pattern: A Multicenter Cohort Study

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Purpose: Cavitary non-tuberculous mycobacterial pulmonary disease (NTM-PD) is associated with high morbidity and mortality. Identifying key determinants of poor outcomes is crucial for optimizing clinical management.

Materials and Methods: We retrospectively recruited patients who were cavitary NTM-PD due to either *Mycobacterium avium* complex (MAC), *Mycobacterium kansasii* (MK), or *Mycobacterium abscessus* (Mab) in three medical centers in northern Taiwan during 2017 and 2021. Patients were included if they met the diagnostic criteria for NTM-PD and had cavitary lesions confirmed through chest computed tomography (CT). Furthermore, we ensured that these cavitary lesions were a result of NTM-PD and appropriately ruled out other alternative diagnoses.

Results: Among 3854 patients with positive respiratory specimen cultures, 102 patients were diagnosed with cavitary NTM-PD. A total of 16 (15.7%) fatalities developed during two-year follow-up. 13 (12.7%) patients had largest cavity diameter more than 7 cm and 4 (30.8%) died within two years.15 (14.7%) patients had thickest cavity wall more than 7 mm and 5 (33.3%) died within two years. For all-cause mortality, male gender (HR 5.09, 95% CI 1.09-23.8, p=0.0385), a largest cavity diameter ≥7 cm (HR 5.04, 95% CI 1.19-21.3, p=0.0280), *Mycobacterium abscessus* (Mab) infection (HR 4.20, 95% CI 1.23-14.3, p=0.0219), and the presence of active cancer (HR 7.34, 95% CI 1.99-27.0, p=0.0027) were associated with worse survival. Age ≥ 65 years (HR 6.52, 95% CI 2.22-19.14, p=0.0006), male gender (HR 2.11, 95% CI 1.22-3.63, p=0.0074), and a largest cavity diameter ≥7 cm (HR 4.02, 95% CI 1.88-8.60, p=0.0003) were associated with higher risk for death or invasive mechanical ventilation. Additionally, age ≥ 65 years (HR 3.40, 95% CI 1.32-8.77, p=0.0112), a BMI <18.5 kg/m^2 (HR 2.50, 95% CI 1.22-5.11, p=0.0119), and a thickest cavity wall ≥ 7 mm (HR 2.27, 95% CI 1.06-4.83, p=0.0341) were associated with increased risk of hospitalization. Notably, the combination of a largest cavity diameter ≥ 7 cm and a thickest cavity wall ≥ 7 mm showed a substantial association with all-cause mortality (HR 4.55, 95% CI 1.69-12.27, p=0.0028).

Conclusions: Our study has identified several significant risk factors for cavitary NTM-PD. Additionally, the imaging finding of a diameter above 7 cm and a thickness exceeding 7 mm, referred to as the 'Double Seven pattern' as a mnemonic, showed a strong association with adverse outcomes in cavitary NTM-PD. Recognizing the 'Double Seven pattern' may offer a straightforward and practical method for identifying individuals at an increased risk of unfavorable 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)

PC38

控制不佳的糖尿病患者合併慢性麴菌感染：透過體重監測疾病活動度

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Chronic Pulmonary Aspergillosis in a Patient With Poorly-Controlled Diabetes: Monitoring Disease Activity through Body Weight Gain

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Purpose: Aspergillosis encompasses a broad clinical spectrum, including chronic pulmonary aspergillosis (CPA). It typically occurs in patients with structural lung diseases, such as cavitary lesions following pulmonary tuberculosis. In such patients, poorly controlled diabetes is a significant risk factor. However, it remains unclear whether strict glycemic control can improve CPA activity. Furthermore, numerous observational studies have noted the utility of body weight as a monitoring tool for CPA activity. Hence, this paper retrospectively investigates the impact of diabetic control on CPA, and the effectiveness of monitoring treatment response through body weight gain.

Case report: A 64-year-old male with uncontrolled diabetes, a prior history of completely treated pulmonary tuberculosis, and a subsequent diagnosis of CPA, presented with massive pulmonary hemorrhage. After stabilizing vital signs, the patient underwent comprehensive preoperative evaluation, including chest computerized tomography angiography (CTA) and therapeutic angiography, revealing the relatively rare source of bleeding from the left intercostal artery. His symptoms improved after embolization. Over the course of 9 months of antifungal therapy and strict blood glucose control, we succeeded in reducing hemoptysis recurrence. We observed a correlation between body weight and CPA activity. When CPA activity was high, body weight was at its lowest. Conversely, when follow-up CT scans showed improvement in cavitary lesions and the absence of hemoptysis, patients exhibited an upward trend in body weight.

Conclusion: Patients with CPA should rigorously control their blood glucose levels. An optimal antidiabetic strategy can complement antifungal therapy in reducing the recurrence of hemoptysis. Monitoring treatment response in CPA through body weight appears to be a useful and non-invasive indicator. Finally, further research may be needed to explore the appropriate range of body weight gain that can achieve resolution of CPA, so as to promote the quality of care for such 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)

PC39

以一調整過的雞胸肉模組評估針導引器在建立週邊靜脈導管之功效

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Using a needle guiding device in simulating peripheral vein cannulation-the modified chicken breast model

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Purpose: The utilization of real-time ultrasound guidance significantly enhances the efficiency, safety, and patient comfort during the insertion of central venous catheters (CVC). The role of ultrasound guidance is also critical for the placement of a peripherally inserted central catheter (PICC). A needle guide kit is an ultrasound-guided puncture aid that could increase the success rate of vessel puncture. We used a modified chicken breast model to train nurses in the technique of ultrasound-guided puncture and evaluated the efficacy of the needle guide kit in establishing peripheral venous catheters.

Materials and Methods: We invited 67 intensive care unit nurses, all of whom had no prior experience with ultrasound-guided vascular punctures. Each participant was randomly assigned to either perform the punctures using the free-hand technique or using a needle-guided kit. Subsequently, we recorded the number of puncture attempts and the time taken by each individual. For our simulation, we utilized a combination of chicken breast, tourniquet, and a plate filled with water.

Results: Using a needle-guided kit or employing free hands first does not affect the required puncture time. The group that used the needle-guided kit first had a significantly shorter total puncture time (12.75 seconds vs. 20.35 seconds, P=0.01). Results from using the needle-guided kit showed that 62 individuals successfully punctured the blood vessel on the first attempt (92.54%). The average time required for this was 6.70 seconds. For those using the free hands method, the results were as follows: on the first attempt, 33 individuals (49.25%); on the second attempt, 25 individuals (37.31%); on the third attempt, 7 individuals (10.45%); and on the fourth attempt, 2 individuals (2.99%). The average time required for this method was 16.38 seconds. Notably, when using the needle-guided kit, no one required more than two puncture attempts.

Conclusions: The needle-guided kit allows the majority of beginners to approach the vessel successfully on the first attempt, and it can also reduce the time required for the puncture. Therefore, the needle-guided kit is expected to enhance the success rate of ultrasound-guided vascular punctures.

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

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

PC40

全台多中心研究，探討重症插管新冠肺炎合併感染症之微生物學分佈研究

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Cytomegalovirus infection is associated with poor clinical outcomes and steroid usage in patients with COVID-19 infection and respiratory failure.

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Purpose: This study was scheduled to survey the association of mortality and risk factors of cytomegalovirus infection in critical COVID-19 patients.

Materials and Methods: This multicenter study enrolled patients with COVID-19 pneumonia, who were intubated due to respiratory failure during May 2021 to November 2021 in Taiwan. We conducted a retrospective multicenter cohort study involving critical COVID-19 infection patients with respiratory failure and mechanical ventilation use in Taiwan. CMV infection was diagnosed by PCR. We collected clinical characteristics, laboratory findings, treatment approaches and outcomes. We also conduct a subgroup analysis to compare the relationship between fungal co-infection and clinical outcome in patients with CMV infection.

Results: We enrolled 609 patients in this study which were confirmed with COVID-19 infection with RT-PCR. 51 patients (8.3%) developed CMV infection. The average doses of corticosteroid exposure within 14 days were independently associated with CMV infection (aOR=,1.03 95%CI=1.03-1.04). Patients with CMV infection were related to prolonged ICU length of stay, hospitalization period and mortality. Subgroup analysis of patients with CMV infection showed fungal co-infection of leads to worse clinical outcome.

Conclusions: Accumulative doses of corticosteroid exposure within 14 days is an independent factor of CMV infection. CMV infection adversely impacted the outcome, resulting in worse mortality, ICU stay and hospitalization duration. Fungal co-infection is associated worse mortality in CMV infection 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)

PC41

提高潛伏肺結核治療完成率可下降肺結核發生率

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The percentage of treatment adherence for latent tuberculosis infection impacts its effect on preventing tuberculosis reactivation

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Purpose: This study aims to explore the correlation between the role of latent tuberculosis infection (LTBI) treatment adherence and the subsequent development of tuberculosis (TB).

Materials and Methods: This research utilized de-identified clinical data spanning from January 2010 to December 2021, sourced from the National Taiwan University Hospital-integrative Medical Database (NTUH-iMD). We enrolled individuals aged 13 years and older who had been diagnosed with latent tuberculosis infection (LTBI) or had been exposed to other tuberculosis (TB) patients through the NTUH TB management system. Our study aimed to assess the link between LTBI treatment and TB development. The study categorized patients into four groups based on LTBI treatment status as no treatment (N), incomplete treatment (IC), complete treatment (C), and a control group comprising TB contacts without a positive result on interferon-gamma release assay. Patients with a treatment were grouped into LTBI(C) if their treatment adherence rate exceeded 90%, and LTBI(IC) if it was below 90%. The primary analysis focused on comparing among LTBI groups.

Results: During the study period, a total of 1,432 patients were included. The overall TB development rate was 2.3% (34/1,432). It contained 378 patients in LTBI(N), 330 in LTBI(IC), 430 in LTBI(C), and 294 control. LTBI(N) had a higher proportion of elderly patients compared to the other LTBI groups. The TB development rate after index day were 6.1% (23/378), 2.1% (7/330), 0.5% (2/430), and 0.7% (2/294) among the four groups, respectively. After adjusting for age and comorbidities using multiple Cox regression, receiving LTBI treatment was found to be independently associated with a reduced risk of TB development. In model one, comparing IC vs. N, the adjusted hazard ratio (aHR) was 0.29 (95% CI 0.11-0.76, p=0.012) and for C vs. N, the aHR was 0.05 (95% CI 0.01-0.28, p<0.001). In model two, for every 10% increase in treatment adherence rate, the aHR was 0.76 (95% CI 0.66-0.88, p<0.001). Both the log-rank test and Cochran-Armitage trend test demonstrated significant differences among LTBI groups (p <0.001).

Conclusions: This study provides compelling evidence that adherence of LTBI treatment is associated with a significantly reduced risk of TB development. The findings underscore the importance of ensuring high treatment adherence rates to effectively prevent TB in individuals with LTBI.

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

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

PC42

分析加護病房病人置放週邊置入中心靜脈導管之錯位原因

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A modified method for measuring the length of peripherally inserted central catheters to reduce the risk of malposition during catheter insertion.

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Purpose: Malposition may occur during peripherally inserted central catheter insertion. Accurately measuring the length of a peripherally inserted central catheter is crucial to preventing malposition, including “long peripherally inserted central catheter placement,” in which the tip of a peripherally inserted central catheter is deeper than the target position. The traditional method of measuring peripherally inserted central catheter length involves measuring from the insertion site to the parasternal notch and down to the third or fourth intercostal space, which may result in overestimation because of the thickness of the pectoralis major and anterior chest wall. To avoid this overestimation, the authors developed and tested a modified method for reducing long peripherally inserted central catheter placement.

Materials and Methods: This study employed a retrospective design. Chest X-rays were used to examine the peripherally inserted central catheter tip positions in 48 patients in the medical intensive care unit who had undergone peripherally inserted central catheter insertion. The traditional and modified measurement methods were used to measure the peripherally inserted central catheter length in 17 and 31 patients, respectively. Fisher’s exact test was used to examine between-group differences in the incidence of different types of peripherally inserted central catheter malposition.

Results: The peripherally inserted central catheter tip position was near the target position in five patients (29.41%) in the traditional measurement group and 17 patients (54.84%) in the modified measurement group ($p = 0.132$), whereas long peripherally inserted central catheter placement occurred in six patients (35.29%) in the traditional measurement group and one patient (3.23%) in the modified measurement group ($p = 0.006$). However, the incidence of other types of peripherally inserted central catheter malposition did not differ significantly between the groups.

Conclusions: The results of this study that the proposed modified measurement method may be able to reduce the incidence of long peripherally inserted central catheter placement among medical intensive care unit patients. The method must be further evaluated in prospective studies and studies with larger sample sizes 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)

PC43

肺炎鏈球菌尿液抗原用以預測新冠肺炎重症患者的預後價值

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Prognosis predictive value of pneumococcus urine antigen in critical COVID-19 patient

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Introduction: Pneumococcus urine antigen test is recommended in severe community-acquired pneumonia in clinical practice. During COVID-19 pandemic, identifying concomitant bacterial infection is of paramount importance in management of critical COVID-19 but the value of pneumococcus urine antigen test in critical COVID-19 remaining controversial. This study aims in evaluating the prognosis predictive value of pneumococcus urine antigen in critical COVID-19 patient who need intensive care unit admission.

Materials and Methods: We conducted a retrospective study of patients with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in a single tertiary medical center in south of Taiwan, May 2022 to July 2022, during which omicron variant predominant. Electronic medical records were reviewed for the baseline characteristic, disease severity, pneumococcal vaccination status, laboratory test result including pneumococcus urine antigen, treatment modality and clinical outcomes. Fisher's exact test and unpaired student t test were conducted to exam the difference between variables.

Result: Total 101 patients are included for analysis during the time period. The incidence of urine pneumococcal antigen positive is 18% (18/101). Significant elevation of APACHE II score is noted in urine pneumococcus positive group (mean 22:17 vs 17.2, p= 0.02). Higher risks of high flow cannula or mechanical ventilation requirement is noted in the pneumococcus positive group (77.8% vs 49.4%, p= 0.036). Procalcitonin level is significantly higher in pneumococcus positive group (mean 11.8 vs 3.3, p= 0.005). No specific differences are noted in ICU stay, mechanical ventilator duration, hospital stay nor 30-day-mortality whether urine pneumococcal positive or not. The risk of COVID-19- associated aspergillosis (CAPA) is extremely low in both pneumococcus urine antigen positive and negative population in our cohort.

Conclusion: Pneumococcus urine antigen may have prognosis predictive value in critical COVID-19 patient who need intensive care unit admission. Positive urine antigen on admission associated with elevated procalcitonin level, higher APACHE II score and increased risk of advanced oxygen device requirement including HFNC and mechanical 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)

PC44

高壓氧應用在變性血色素血症合併 G6PD 缺乏症的成功案例

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Successful management of acquired methemoglobinemia complicated with glucose-6-phosphate dehydrogenase (G6PD) deficiency by hyperbaric oxygen therapy.

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Abstract

Acquired methemoglobinemia is a rare but medical emergency that require early identification and prompt correction. Physicians should be considered of methemoglobinemia in cases that present with hypoxemia but does not resolve with high flow oxygenation, and they should confirm this suspicion with a positive methemoglobin concentration on arterial blood gas.

We present the case of an elderly male, who was admitted to our emergency department with a 2-day history of jaundiced appearance, shortness of breath, and hematuria. Despite receiving high-flow oxygen therapy, his oxygen saturation remained critically low. Laboratory findings indicated methemoglobinemia and hemolytic anemia, further complicated by glucose-6-phosphate dehydrogenase (G6PD) deficiency. Although initial treatment with ascorbic acid was attempted, it was ineffective. Subsequently, the patient underwent hyperbaric oxygen therapy (HBO), resulting in a rapid reduction in methemoglobin levels and improved clinical outcomes. This case highlights the importance of alternative treatment in patient with acquired methemoglobinemia complicated with G6PD deficiency. The authors hope that this interesting case promotes further research into the utilization of hyperbaric oxygen therapy for managing methemoglobinemia in patients who are unable to receive methylene blue.

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

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

PC45

大腸憩室膿瘍經腹腔鏡清創引流術後併發急性肺損傷及二氧化碳酸血症的案例報告

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Case report: Acute lung injury and hypercapnic acidosis post laparoscopic drainage for cecum diverticulitis with abscess formation

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Case Presentation: A 44 years old male suffered from diffuse abdominal pain and looked for help to our emergent department. Abdominal computed tomography (CT) (Figure 1) revealed appendicitis and abscess formation. He denied systemic disease except depression and chronic hepatitis B virus infection history. Laparoscopic drainage for intra-abdominal abscess was performed after consulting general surgical doctor with his agreement on the same day. Respiratory distress and hypoxemia developed post the procedure and he was sent to intensive care unit (ICU) for further post-operation care.

At ICU, his arterial blood gas (ABG) revealed acute hypercapnic acidosis (pH:7.079, PaCO2:88.3, PaO2:59.4, HCO3:25.5, SaO2:78.3), and chest X ray (CXR) revealed bilateral pulmonary diffuse infiltrates (Figure 2) and elevated bilateral diaphragm. Complete electrocardiography (EKG) showed sinus tachycardia (Figure 3) without elevated cardiac enzyme. The patient was irritable without hypotension. Supportive care as keeping mechanical ventilator support and sedation were employed with parenteral antibiotics. The followed ABG revealed normalized data (pH:7.35, PaCO2:43.6, PaO2:175.8, HCO3:23.5, SaO2:99.1) after 6 hours post the procedure, but his CXR still showed bilateral infiltrates (Figure 4) with stable hemodynamic status. The infiltrates of CXR on the second morning (Figure 5) post laparoscopic procedure was dramatically resolved (in 24 hours). Thereafter, his endotracheal tube was removed smoothly and transferred to general ward.

Discussion: The iatrogenic pneumoperitoneum with CO2 (Figure 6) and the positioning policy during the intra-operation period for the laparoscopic procedure are the possible causes of the transient hypercapnic lung injury post the procedure. The CO2 gas is easily diffused into blood from the peritoneum and causes the transient hypercapnic acidosis. The diaphragm dysfunction due to distended abdomen related to iatrogenic peritoneum, and the abnormal pulmonary vascular distribution (to upper lung field) due to the intra-operation position are the possible causes of acute lung injury on CXR. The above complication, related to the more popular laparoscopic procedures, deserves further care for the intra-operation and post-operation control.

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

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

PC46

危急出血性登革熱病患於地區醫院的救治經驗

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Experience of caring critical hemorrhagic dengue patients in a regional hospital

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Purpose: Critical hemorrhagic dengue, also referred to as severe dengue or dengue hemorrhagic fever, represents an extreme manifestation of dengue virus infection. In certain instances, it can advance to a more critical and potentially life-threatening state. In Taiwan, the epidemic has infected 10,496 cases, and Yun-Lin County is registered as the second-highest incidence area. In this report, we present the care experiences of four patients with critical hemorrhagic dengue in Yun-Lin County, Taiwan.

Case Presentation: We provided care to four patients with critical hemorrhagic dengue fever in Yun-Lin Branch of National Taiwan University Hospital. The average age of the patients was 78 years, and they lived in in Gu-Keng Township, Yun-Lin County. Following diagnosis, all four patients exhibited symptoms of thrombocytopenia and bleeding. Platelet counts reached their lowest point within 6-10 days, and then gradually recovered thereafter. During hospitalization, intravenous fluids were administered to address fluid loss, and blood transfusions were given to manage bleeding and low platelet counts. Additional supportive measures were also implemented.

Three of the four patient experienced severe gastrointestinal bleeding complications. After high-dose PPI and nutritional support, and with the platelet count exceeding 80,000, the patient's symptoms improved. Another patient displayed signs of gastrointestinal bleeding, pulmonary hemorrhage, respiratory failure, and a state of shock. She underwent intubation with mechanical ventilation support, received symptom-specific treatment, and exhibited gradual improvement in lung edema. Finally, she made a full recovery and was successfully extubated. All four patients were ultimately discharged without complications.

Conclusions: In the case of critical hemorrhagic dengue, the primary approach involves supportive therapies such as nutritional supplementation and the correction of hypovolemia and thrombocytopenia. With the provision of optimal supportive care, eventual full recovery can be anticipated.

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

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

PC47

Metformin 與 COVID-19 住院病人的預後相關性

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The outcome association of Metformin on hospitalized COVID-19 patients

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Background: Metformin is a widely used medicine of type 2 diabetes; however, its therapeutic effects beyond glucose control were also reported. Recently, some studies reported it may ameliorate symptoms of long COVID and even shorten the disease duration. Multiple mechanisms of its action, including decreasing viral entry and anti-inflammatory activity were suggested. We therefore conducted this study to find whether metformin use can improve the outcomes in COVID-19 hospitalized patients.

Methods: This is a single-center, retrospective observational study. The adult patients diagnosed with COVID-19 infection from May to June 2021 were recruited. We divided these patients into metformin and non-metformin use groups, and compared the outcomes including the severity of the disease progression and the hospital mortality rate between these two groups.

Results: A total of 285 patients were included. After propensity score matching, there were 82 patients enrolled for analysis, and 41 patients were metformin users (50%). Using the Cox proportional hazards model, the mortality was not related to the metformin use (Adjusted hazards ratio[aHR]: 0.67, 95% confidence interval [CI]: 0.05-9.2, p=0.76) or the metformin using duration (aHR: 0.91, 95% CI: 0.74-1.13, p=0.40). However, patients with longer metformin use appeared to have a higher chance receiving mechanical ventilation support (aHR: 1.08, 95% CI: 1.03-1.13, p=0.003).

Conclusions: In this study, we found the use of metformin was not associated with mortality reduction. However, the duration of metformin use was related to the progression of COVID-19 patients. We noticed that the patients with longer metformin use have higher risk to receive mechanical ventilation. Further studies are warranted to clarify the relevance of metformin use on COVID-19 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)

PC48

運用人工智慧預測重症病人的死亡率

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Using Artificial Intelligence to Predict Mortality of Critical Ill Patients

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Purpose: Currently, Acute Physiology and Chronic Health Evaluation (APACHE) II or III and sequential organ failure assessment (SOFA) score are most commonly used scoring systems to predict intensive care unit (ICU) mortality and in-hospital mortality, respectively. In addition to these traditional scoring systems, a system predicting longer-term survival probability in ICU patients is needed. As more detailed and sophisticated clinical data items are available in modern ICU, developing a more precise prediction model using boosting of ensemble learning became possible. We established artificial intelligence (AI) models to predict 30-day, 60-day, and 90-day mortality of patients admitted in ICU.

Materials and Methods: We retrospectively collected the clinical information of patients admitted in an intensive care unit of a medical center in 2019, such as baseline characteristics, vital signs, and results of blood test. We used the eXtreme Gradient Boosting (XGBoost) to develop the AI models to predict 30-day, 60-day, and 90-day mortality. We evaluated the performance of the model by analyzing the area under the receiver operating characteristic curve (AU-ROC), F1 score, accuracy, and recall. The AU-ROC of the model was also compared to that of APACHE II and SOFA scores.

Results: We collected 12951 and 3238 pieces of data from ICU patients as training and testing data sets, respectively, and the AI models predicting 30-day, 60-day, and 90-day mortality were developed. The AU-ROC of the AI models predicting 30-day, 60-day, and 90-day mortality were 0.85, 0.83, and 0.84, respectively. The F1 score of models predicting 30-day, 60-day, and 90-day mortality were 0.93, 0.88, and 0.87, respectively. The accuracy of models predicting 30-day, 60-day, and 90-day mortality were 0.84, 0.80, and 0.79, respectively. The recall of models predicting 30-day, 60-day, and 90-day mortality were 0.84, 0.80, and 0.79. The AU-ROC of models was better than APACHE II and SOFA score (0.85 vs. 0.80 vs. 0.76 for 30-day mortality; 0.83 vs. 0.78 vs. 0.75 for 60-day mortality; 0.84 vs.0.78 vs. 0.74 for 90-day mortality).

Conclusions: These AI models have better performance for ICU patients to predict 30-day, 60-day, and 90-day mortality compared to APACHE II and SOFA score. With more precise prediction of the longer-term outcomes of critically ill patients using AI models, we may have better utilization of healthcare resources and better communication with the relatives of patients admitted to the ICU.

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

PC49

淋巴球低下和持續發炎狀態與長期使用呼吸器氣切病人預後的相關性

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Lymphopenia and elevated inflammatory status associated with the weaning outcome in tracheostomized patients with prolonged mechanical ventilation

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Background: The weaning outcomes of patients receiving mechanical ventilation (MV) are affected by multiple factors. Lymphocytes are essential in modulating the inflammatory response.
A clinical feature of critically ill patients is the presence of lymphopenia (<1000/μL). The possible mechanism and clinical significance of lymphopenia in patients receiving prolonged MV remains unclear.
Materials and methods: We prospectively enrolled patients who received at least 21 consecutive days of MV in a tertiary medical center in Taiwan, and the patients with respiratory failure due to neuromuscular disease were excluded. We analyzed their demographic, clinical, indirect calorimetry, and laboratory data. The primary outcome was the weaning outcome at discharge.
Results: Between August 2020 and July 2023, 109 patients were included in the analysis, of whom 56 (51.4%) were liberated from MV at discharge. All of them were tracheostomized. Patients with respiratory failure due to pneumonia had a higher weaning failure rate (64% vs. 36%, p = 0.003), and patients with respiratory failure due to neurological disease had a higher weaning success rate (78.3% vs. 21.7%, p = 0.004). There was no difference in energy expenditure (1500 kcal vs. 1389 kcal, p = 0.120) at respiratory care center admission between the weaning success group and the weaning failure group at discharge. After adjustment for important confounders, lymphopenia was still associated with poor weaning outcome (adjusted odds ratio = 3.51, 95% confidence interval = 1.28 – 9.64, p = 0.015). Elevated IL-6 was also associated with a worse outcome trend (adjusted odds ratio = 2.88, 95% confidence interval = 1.00 – 8.29, p = 0.051). Lymphopenia was found to probably correlate with elevated inflammation markers, including procalcitonin (p = 0.001), IL-6 (p = 0.072), and IL-8 (p = 0.020).
Conclusions and Discussion: Increased lymphocyte cell death during inflammation significantly contributes to low lymphocyte count. IL-6 has multiple effects in regulating inflammation, and elevated IL-6 level was linked to impaired cytolytic function. Besides, a previous study found that elevated IL-6 levels and lymphopenia were strongly associated with frailty. Our findings suggest the roles of lymphopenia and high inflammation as the markers of poor weaning outcomes in patients with prolonged MV.

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

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

PC50

利用橫膈膜超音波來預測長期呼吸器依賴病人之呼吸器脫離

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Diaphragm Movement Measured Using Anatomic M-Mode to Predict Weaning in Patients Who Require Prolonged Mechanical Ventilation

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Purpose: Diaphragm ultrasound offers a real-time, continuous, and functional assessment of diaphragm activity that can be performed at the bedside. Multiple studies have shown that the degree of diaphragm displacement can be used to predict successful weaning from mechanical ventilation. Measurement of diaphragm displacement using standard m-mode ultrasonography depends on the optimal alignment of the m-mode cursor with the direction of diaphragm movement, which is often difficult. Anatomic m-mode allows free placement and rotation of the m-mode cursor to more easily align with diaphragm motion. This study evaluates the predictive value of anatomic m-mode measurements on weaning success in patients requiring prolonged mechanical ventilation.
Materials and Methods: Patients who required prolonged mechanical ventilation at a tertiary medical center's respiratory care center (RCC) were enrolled. Each patient had their liver and spleen displacement measured at the organs' caudal border as a surrogate for diaphragm excursion using anatomic m-mode during an unassisted breathing trial. Their diaphragmatic rapid shallow breathing index (D-RSBI) [respiratory rate divided by the sum of spleen and liver displacement multiplied by 100] and excursion velocity [displacement divided by the duration of the excursion] were also calculated. Patients were divided into two groups based on whether they were successfully weaned from mechanical ventilation and could remain ventilator-free at 28 days. The relationships between weaning success and diaphragm displacement, D-RSBI, and excursion velocity were analyzed using single and multivariable analysis and the ROC curve.
Results: From Oct. 2019 to Oct. 2023, 65 patients were enrolled. The mean age of the patients was 72.6 years old. 67.7% were male. The leading causes for prolonged mechanical ventilation were chronic pulmonary disease (41.9% of patients), cerebrovascular disease (39.5%), and cardiovascular disease (14.0%). The mean number of days patients were on mechanical ventilation before the ultrasound assessment was 41.6 days. 44 (71%) patients remained ventilator-free 5 days after initial liberation. However, only 36 (58.1%) patients remained ventilator-free at 28 days. Compared to patients who failed weaning, those who remained ventilator-free at 28 days had a significantly higher combined spleen and liver displacement (26.5 ± 9.6 mm versus 19.7 ± 6.7 mm, p=0.004) and had a significantly lower D-RSBI (103.2 ± 60 versus 151.6 ± 85.4, p=0.004). There was no significant difference between the two groups regarding excursion velocity. A D-RSBI lower than 112 could predict weaning success with a sensitivity of 77% and specificity of 69% (AUROC = 0.718, p=0.021, Youdens Index = 0.46). After adjusting for age, gender, rapid shallow breathing index, and maximal inspiratory pressure, D-RSBI is an independent predictor of weaning success (OR 5.5, 95% CI: 1.5 - 19.4).
Conclusion: Anatomic M-mode ultrasonography offers a more easily reproducible method for measuring patients' spleen, liver, or diaphragm displacement. Spleen/liver displacement measured during a patient's unassisted breathing trial using this ultrasound mode predicts successful weaning from 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)

PC51

重症 COVID-19 病患預後不佳因子：肺炎及呼吸器使用的影響

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Predictors of Poor Outcomes in Critical COVID-19 Patients: The Impact of Pneumonia and Ventilator Requirement

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Purpose: The COVID-19 pandemic has resulted in numerous illnesses and deaths worldwide, leading to a significant increase in the burden on healthcare systems. Since 2022, Taiwan has experienced a surge in the number of COVID-19 infections, allowing us to accumulate substantial experience in providing care for COVID-19 patients. Through this study, we analyze the differences and variations in disease-induced mortality and hospitalization duration among critically ill COVID-19 patients.

Materials and Methods: We conducted a survey of adult patients admitted to the Intensive Care Unit (ICU) at the National Taiwan University Hospital Yun-Lin Branch for the management of severe cases of COVID-19. Our study focused on patient characteristics, admission diagnoses, length of stay (LOS) in the ICU and hospital, as well as survival rates.

Results: In this hospital with 56 ICU beds, there were 363 adult COVID-19 patients admitted to the ICU due to critical illness between May 2022 and September 2023. The mean age of these patients was 70.8 years (standard deviation 14.6). The ICU mortality rate was 19% (69/363), and the in-hospital mortality rate was 30.0% (109/363). Notably, both the ICU mortality rate (25.1% vs. 17.1%, p=0.044) and the hospital mortality rate (34.6% vs. 23.7%, p=0.016) were higher when patients were admitted to the ICU due to pneumonia compared to non-pneumonia-related diseases. Additionally, among patients who were treated and eventually discharged, those with pneumonia had a longer LOS in the ICU compared to non-pneumonia patients (10.6 days vs. 6.8 days). Furthermore, patients requiring ventilator support experienced longer ICU LOS (14.0 days vs. 8.9 days, p<0.001) and longer hospital LOS (29.0 days vs. 20.6 days, p<0.001) compared to those who did not require ventilator support.

Conclusions: When critical COVID-19 patients were admitted to the ICU, the mortality rate was higher, and the ICU LOS was longer when the ICU admission was due to pneumonia as opposed to non-pneumonia diseases. These findings may assist us in risk stratification for 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)

PC52

比較超音波導引法與觸診法執行動脈導管穿刺對過早性導管拔除和導管存活率的影響:新穎的前臂中段途徑

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The Impact on Premature Catheter Removal and Catheter Survival of Arterial Cannulation under Ultrasound Guidance and Palpation Method: a Novel Mid-forearm Approach

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Purpose: Arterial cannulation under ultrasound (US) guidance has demonstrated increased first-attempt success rates and reduced procedure times compared to the traditional palpation method. However, there is limited research on the impact of US-guided arterial cannulation on catheter survival compared to the palpation method. In this study, we aimed to investigate the catheter outcomes of arterial cannulation with US guidance or palpation method, with a novel US-guided mid-forearm radial artery approach.

Materials and Methods: Between July 2021 and September 2023, patients undergoing US-guided arterial cannulation in the medical intensive care unit were included. The arterial cannulations performed under US guidance were assigned to the US group, while corresponding arterial cannulations performed with the palpation method just before or after the index cannulations were classified as the palpation group. We recorded the anatomic location, ultrasound findings, number of catheters used per cannulation, and success rate. The primary outcomes were (1) premature catheter removal rate before day 7 due to catheter failure and (2) catheter survival. Mid-forearm radial artery cannulation was utilized in the US group whenever possible.

Results: A total of 222 patients were included, with 219 catheters in the US group and 164 catheters in the palpation group. All catheters were 20 gauges in size. In the US group, the arterial diameter was 2.28±0.69mm, with a cannulation success rate of 98.6%, and a successful cannulation without posterior wall injury rate of 96.4%. Radial artery cannulation occurred more frequently in the US group than in the palpation group (radial/brachial/dorsalis pedis: 89.6%/8.6%/1.8% vs 29.9%/60.4%/9.8%, $p < 0.001$). Cannulation with more than one catheter occurred more frequently in the palpation group than in the US group (47.5% vs 4.4%, $p < 0.001$). The premature catheter removal rate before day 7 due to catheter failure was significantly higher in the palpation group than in the US group (46.3% vs 18.7%). The median catheter survival was significantly longer in the US group than in the palpation group (not reached vs 9 days, $p < 0.001$).

Conclusions: Compared to the palpation method, US-guided arterial cannulation demonstrated higher first-attempt success rates, lower premature catheter removal, and longer catheter survival. Mid-forearm radial artery cannulation may provide more secure catheter survival.

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

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

PC53

移植人類臍帶間質幹細胞改善急性惡化重症新冠感染的慢性呼吸器依賴患者成功脫離呼吸器

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Successful Weaning Off Ventilator by Transplantation of Human Umbilical Mesenchymal Stem Cells to Acute Severe COVID-19 infection in Chronic Ventilator Dependent Patient

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COVID 19 infection may result in severe even fatal outcome, esp. in old age patient who had underlying impaired heart or lung functions.

Here we presented an 85 y/o woman, who was in chronic ventilator dependent status due to COPD with corpulmonale with home BIPAP dependent for over 3 years. She got spiking fever, acute productive cough, dyspnea and was brought to our emergent department (ED), and acute COVID 19 infection was diagnosed by positive result of COVID-19 Antigen rapid test. Acute hypercapnic, hypoxic respiratory failure was diagnosed and endotracheal tube intubation with invasive ventilator were given at ED. Then the patient was sent to ICU receiving ventilator support and critical care. After combining standard ventilator support, Remdesivir, systemic corticosteroid, and tocilizumab treatment, she was still in severe conditions with dyspnea, productive cough and hemosputum.

We applied two successive doses of parenteral high dose mesenchymal stem cells (MSCs) with 4 days interval, and then the patient got much improving vital sign, blood gas, and clinical conditions. The patient finally successfully weaning off ventilator and was discharged to home without any ventilator support.

Besides the possible anti-inflammation mechanism of mesenchymal stem cells in acute COVID 19 conditions, MSCs possibly have the organ regeneration to repair the previous damage of airway and lung parenchyma in chronic ventilator dependent patients. They may play some important roles both in treatment of acute phase of ARDS and correcting chronic ventilator dependent status in the future. More studies should be arranged to verify its effect and mechanism in future days.

台灣胸腔暨重症加護醫學會

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