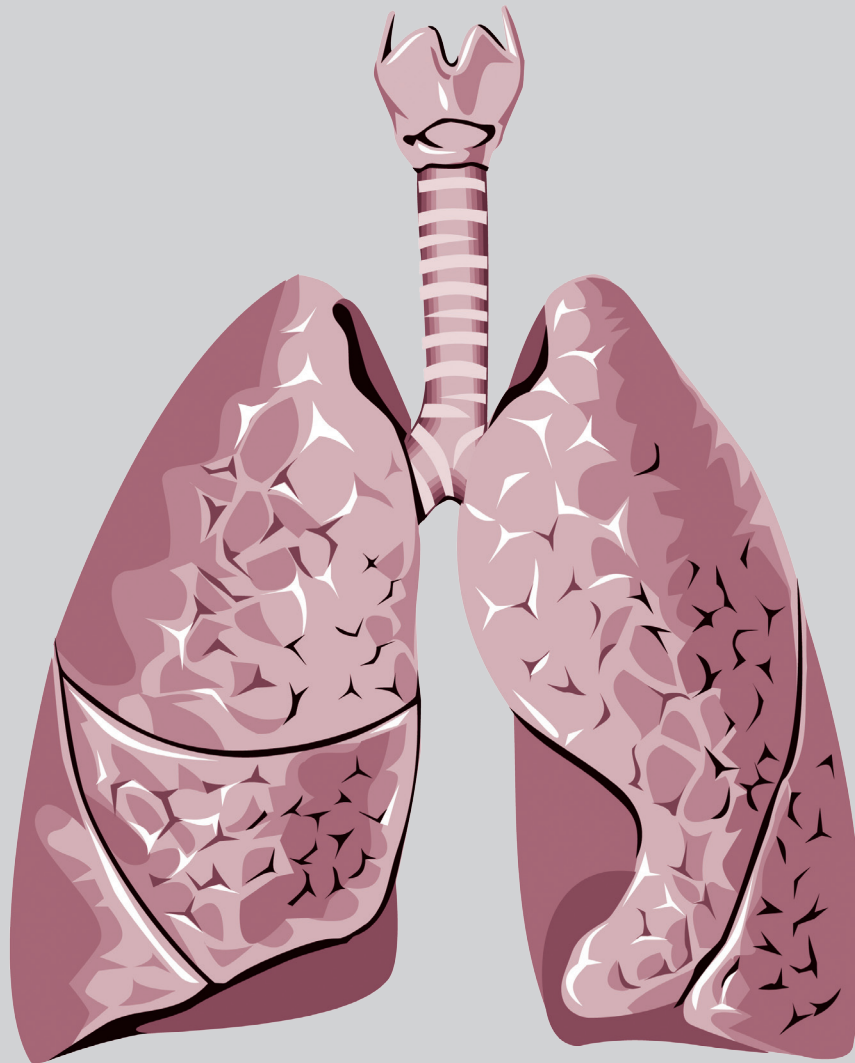


# Thoracic Medicine

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# Impact of DPP-4 Inhibitors on Survival of Patients with Non-Small Cell Lung Cancer – A Propensity Score-Matched Analysis

Pang-Chieh Hung<sup>1</sup>, Kuang-Tai Kuo<sup>1</sup>, Tung-Yu Tjong<sup>1</sup>, Yuan-Hung Wang<sup>2,3</sup>,  
\*Wei-Ciao, Wu<sup>1</sup>

**Introduction:** Diabetes mellitus (DM) and cancer coexist in 8-18% of individuals with DM. Dipeptidyl peptidase-4 inhibitor (DPP4i) is one of the hypoglycemic agents (OHA) that have been found to be beneficial with various cancer patients, either in vitro or in vivo. The aim of this study was to retrospectively examine overall survival (OS) with or without the usage of DPP4i in DM patients with non-small cell lung cancer.

**Methods:** This single-center, propensity score-matched, retrospective comparative study using electronic medical records evaluated DM patients with non-small cell lung adenocarcinoma between January 2011 and December 2019 at Shuang Ho Hospital, Taiwan. Patients were divided into Group 1, in which DPP4i was not taken with other OHA, and Group 2, in which DPP4i was taken combined with other OHA. We compared the OS between the 2 groups and tried to find some covariate that would influence OS in DM lung cancer patients.

**Results:** We enrolled 193 patients (150 in the non-DDP4i group (Group 1), and 43 in the DDP4i group (Group 2)); 86 patients in Group 1 and 43 patients in Group 2 were matched using propensity scores. In the matched cohorts, patients in the non-DDP4i group had poorer OS than those in the non-DPP4i group, although without statistical significance; for 1-year, 2-year and 5-year OS, the hazard ratios were 1.37 ( $P = 0.304$ ; 95% CI 0.753-2.479), 1.37 ( $P = 0.2$ ; 95% CI 0.848-2.207) and 1.32 ( $P = 0.17$ ; 95% CI: 0.890-1.946), respectively.

**Conclusion:** Dipeptidyl peptidase IV inhibitor (DPP4i) may have a benefit for OS in NSCLC patients with comorbidity of DM, although there was no significant difference due to the sample size. Among the DM lung cancer patients, female sex would be a better prognostic factor for OS. (*Thorac Med* 2024; 39: 198-207)

Key words: DPP4i, diabetes mellitus, non-small cell lung cancer

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## Lower Dose of First-Line Afatinib Treatment in Patients with EGFR Mutation-Positive Advanced Lung Adenocarcinoma: Real-World Data from a Tertiary Hospital in Taiwan

Wei-Cheng Hong<sup>1</sup>, Min-Hsi Lin<sup>1</sup>, Chiu-Fan Chen<sup>1</sup>, Kuo-An Chu<sup>1</sup>, Chun-Hsiang Hsu<sup>1</sup>

**Introduction:** Afatinib has favorable response rates and progression-free survival in lung cancer patients with epidermal growth factor receptor (EGFR) mutations. However, dose reduction is common due to severe side effects.

**Methods:** We enrolled patients with EGFR mutation-positive advanced lung adenocarcinoma from 1 January 2015 to 31 December 2019, and retrospectively analyzed the efficacy of low-dose (LD) and standard-dose (SD) afatinib treatment. Patients initially started with either 30 mg or 40 mg; those that used 40 mg daily as a final dose were included in the SD group, while those using less than 40 mg daily were in the LD group. The patients received first-line afatinib until the occurrence of disease progression, death, or intolerable adverse events. The primary outcome was time-on-treatment (ToT) and overall survival (OS).

**Results:** A total of 129 lung cancer patients were enrolled and received afatinib treatment. Of these, 82 (63.6%) were on LD afatinib, and 47 (36.4%) were on SD afatinib. Patients who received LD afatinib treatment tended to be older (48% vs. 28%), were more likely to be female (61% vs. 26%), and had a low BMI (26% vs. 6.4%). The median ToT was 17.9 months in the LD group and 12.7 months in the SD group (HR: 1.28; 95% confidence interval (CI): 0.86-1.91,  $p = 0.218$ ). Median OS was 29.5 months in the LD group and 24.6 months in the SD group (HR: 1.21; 95% CI: 0.79-1.85,  $p = 0.372$ ).

**Conclusion:** The ToT and OS of LD afatinib patients was similar to that of SD afatinib patients. (*Thorac Med* 2024; 39: 208-218)

Key words: Lower-dose afatinib, lung adenocarcinoma, time-on-treatment, overall survival

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## Successful Treatment with Entrectinib after Crizotinib-Induced Hepatitis in a ROS1-Positive Advanced Lung Cancer Patient: A Case Report

You-Cyuan Liang<sup>1</sup>, Shian-Chin Ko<sup>2</sup>

Lung cancer, a commonly occurring cancer, is responsible for the highest number of deaths in Taiwan, regardless of gender. Targeted therapy is more effective than chemotherapy in treating advanced pulmonary adenocarcinoma harboring mutant driver genes. Crizotinib is an oral small-molecule tyrosine kinase inhibitor that targets anaplastic lymphoma kinase, mesenchymal-epithelial transition factor, and c-Ros oncogene 1 receptor (ROS1) tyrosine kinase. The most common adverse effects with crizotinib use are visual disorders, gastrointestinal upset and dysgeusia. However, impaired liver function and elevated aminotransferase levels are not rare. We presented the case of a 73-year-old male who was diagnosed with ROS1-positive metastatic lung adenocarcinoma under crizotinib treatment, who suffered from poor appetite, gastric pain and fullness. Elevated serum aminotransferase and bilirubin levels were found. After excluding other causes of hepatitis, the diagnosis of crizotinib-induced liver toxicity was made. The offending drug was withdrawn and oral silymarin and intravenous glycyrrhizin were given. His liver function recovered after 6 weeks, and another targeting ROS1 drug, entrectinib, was prescribed uneventfully. Due to the potential for elevated aminotransferase levels and the development of hepatitis during crizotinib treatment, we recommend close monitoring of liver function while using crizotinib. (*Thorac Med* 2024; 39: 219-227)

Key words: entrectinib, crizotinib, hepatitis, ROS1, lung cancer.

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# Tocilizumab and Systemic Steroids in Severe COVID-19 with Acute Exacerbation of Idiopathic Pulmonary Fibrosis: A Case Report and Literature Review

Chung-Wen Huang<sup>1</sup>, Chia-Min Chen<sup>1</sup>, Ming-Ju Tsai<sup>1,3</sup>, Tung-Chi Yeh<sup>1</sup>  
Wei-An Chang<sup>1,3</sup>, Cheng-Hao Chuang<sup>1,2</sup>, Chau-Chyun Sheu<sup>1,3</sup>

Tocilizumab, a potent interleukin-6 (IL-6) receptor antagonist, has demonstrated a survival benefit against severe COVID-19 in clinical trials. However, the safety and efficacy of its use in populations with multiple comorbidities are unknown. Here, we report a challenging case with acute exacerbation of idiopathic pulmonary fibrosis (AE-IPF) triggered by SARS-CoV-2 infection, which is the first ever presented. AE-IPF is commonly triggered by pulmonary infection, and results in a poor prognosis with limited treatment options. Superimposed SARS-CoV-2 infection may further complicate the management and outcome. Hesitation about the prescription of tocilizumab was resolved through comprehensive multidisciplinary discussions in our interstitial lung disease board. The rationale of tocilizumab prescription is based on flourishing data on the role of IL-6 in AE-IPF, and the potential benefit of fibroblast suppression in both in vivo and in vitro studies. Successful management with much improved oxygenation and pulmonary infiltration is documented and further supports the use of tocilizumab in such a complex situation. Since there is a scarcity of effective treatments for AE-IPF, investigations on the role of IL-6 antagonist in the management of AE-IPF are needed. (*Thorac Med* 2024; 39: 228-233)

Key words: AE-IPF, COVID-19, tocilizumab, IL-6, case report.

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## Effective Management of *EGFR* L718Q Mutation Revealed by Liquid Biopsy Using 30 mg Afatinib after Osimertinib Treatment Failure

Sheng-Bin Fan<sup>1</sup>, Chih-Jen Yang<sup>1,2</sup>

Developing resistance to tyrosine kinase inhibitors poses a significant challenge in treating *EGFR*-mutated non-small cell lung cancer. One known cause of resistance to osimertinib is the *EGFR* L718Q mutation, which interferes with the drug's binding efficacy and consequently leads to resistance. We reported an 81-year-old female patient who was diagnosed with adenocarcinoma in the left lower lung, exhibiting distant metastasis and an *EGFR* L858R mutation. Treatment with osimertinib led to a 25-month progression-free period before the disease progressed with an enlarged liver metastatic tumor. Although the tissue biopsy yielded inadequate samples, a liquid biopsy identified an *EGFR* L718Q mutation. This discovery led to the patient being switched to 30 mg of afatinib. Remarkable shrinkage in liver metastases was observed after 5 months of afatinib treatment, without notable adverse reactions. Presently, the patient continues to exhibit stable disease status during ongoing follow-up. (*Thorac Med* 2024; 39: 234-240)

Key words: afatinib, osimertinib, *EGFR* L718Q mutation, non-small cell lung cancer

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# ***Nocardia farcinica* Brain Abscess Preceded by Non-Resolving Pneumonia: A Case Report and literature Review**

I-Yuan Chen<sup>1</sup>, Chien-Wei Hsu<sup>1,2\*</sup>, Wei-Cheng Hong<sup>1</sup>, David-Lin Lee<sup>1,2</sup>

*Nocardia* spp. are considered to be opportunistic pathogens. Pulmonary nocardiosis is the most common clinical presentation of infection, and primary infection can lead to hematogenous spread to multiple organs. The relatively slow growth on culture media and the difficulties in recognizing colony morphology result in difficulties in laboratory diagnosis, leading to delayed diagnosis. Currently, there is no universal consensus regarding the initial choice of antibiotics for nocardiosis, although trimethoprim-sulfamethoxazole remains the mainstay of a primary treatment regimen. Treatment for pulmonary nocardiosis requires at least 6 months, while central nervous system (CNS) involvement necessitates treatment for at least for 12 months. If CNS nocardiosis fails to respond to medical therapy, surgical intervention is required. Here, we report a case of brain abscess caused by *Nocardia farcinica*, which was preceded by non-resolving pneumonia for almost 5 months. Significant regression of the pneumonia patch was observed after initiating antibiotic treatment for nocardiosis. (***Thorac Med* 2024; 39: 241-248**)

Key words: *Nocardia farcinica*, nocardiosis, brain abscess

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# Delayed Acquired Diaphragmatic Hernia after Penetrating Trauma, A Case Report and Review of the Literature

Hung-Hsiang Chao<sup>1</sup>, Wei-Chang Huang<sup>2,3,4</sup>, Chih-Hung Lin<sup>5</sup>, Yi-Chun Hsiao<sup>2</sup>

Acquired diaphragmatic hernia is a rare complication following major traumas. The insidious nature and symptoms of the disease make it difficult to diagnose. We present the case of a patient with traumatic diaphragmatic hernia that was diagnosed 16 months after a knife stabbing. The patient underwent video-assisted thoracoscopic surgery, and there was no recurrence during the follow-up period. Our case may highlight the possibility of managing a delayed diaphragmatic hernia via minimally-invasive thoracoscopic surgery in selected patients. We also reviewed recent literature on traumatic diaphragmatic hernia. (*Thorac Med* 2024; 39: 249-255)

Key words: traumatic diaphragmatic hernia, video-assisted thoracic surgery

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# Osmotic Demyelination Syndrome Following Oral Sodium Phosphate Solution Administration for Colon Preparation: A Case Report and Literature Review

Hsiu-Li Wu<sup>1</sup>, Chen-Chun Lin<sup>2</sup>

Osmotic demyelination syndrome (ODS) is a rare neurological disorder characterized by non-inflammatory demyelination of the pons. Etiological factors for ODS include rapid correction of hyponatremia, alcoholism, hypertonic or hypotonic syndrome, acquired immunodeficiency syndrome, liver transplantation, refeeding syndrome, and electrolyte imbalances. In this report, we present the case of an elderly individual who fell into a coma following ingestion of 90 ml of oral sodium phosphate solution for colon preparation prior to colonoscopy. Brain magnetic resonance imaging and laboratory data analysis confirmed the diagnosis of ODS, with hyperphosphatemia identified as a contributing factor. A comprehensive literature review was conducted to explore the underlying mechanisms and risk factors for ODS. (*Thorac Med* 2024; 39: 256-261)

Key words: central pontine myelinolysis, osmotic demyelination syndrome, hyperphosphatemia

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# Post-COVID-19 Pulmonary Fibrosis: A Case Report and Literature Review

Yung-Hsuan Wang<sup>1</sup>, Chih-Bin Lin<sup>1,2</sup>

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) became a global pandemic in December 2019. Pulmonary fibrosis is one of the major long-term complications in patients with coronavirus-induced disease 2019 (COVID-19). There have been some ongoing clinical trials of therapies for post-COVID-19 pulmonary fibrosis. Anti-fibrotic agents such as pirfenidone and nintedanib might be potential treatment options. We reported the case of a patient with COVID-19 that developed severe pulmonary fibrosis and restrictive lung disease. Improvement of pulmonary fibrosis and lung function were noted after pirfenidone was prescribed. (*Thorac Med* 2024; 39: 262-266)

Key words: SARS-CoV-2, COVID-19, pulmonary fibrosis, pirfenidone

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# Diagnostic Lobectomy for Life-threatening Hemoptysis: A Rare Presentation of Pulmonary Arteriovenous Malformation

Ruei-Lin Sun<sup>1,2</sup>, Yi-Chen Yeh<sup>2,3</sup>, Chung-Wei Chou<sup>1,2\*</sup>

A 61-year-old man presented with fever, dyspnea, and blood-streaked sputum for 1 day, and his condition rapidly progressed to massive hemoptysis and respiratory failure on the second day of his stay. Chest computed tomography (CT) revealed predominant consolidation of the left lung without evidence of contrast extravasation. Bronchoscopy revealed blood clots extending from the left main bronchus to the left upper lung (LUL), resulting in total occlusion of the LUL without detectable sources of bleeding. Tests for microbial infection and vasculitis antibodies were negative. The patient underwent a lobectomy of the LUL supported by venovenous extracorporeal membrane oxygenation. Histopathological examination of the resected lung tissue confirmed pulmonary arteriovenous malformation (PAVM). This case report highlights a rare instance of near-fatal recurrent hemoptysis due to PAVM without classic CT findings and diagnosed after surgical intervention. (*Thorac Med* 2024; 39: 267-270)

Key words: hemoptysis, pulmonary arteriovenous malformation

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# Spontaneous Hemopneumothorax Following Electronic Cigarette Use: A Case Report and Literature Review

Wei-Hsiang Feng<sup>1</sup>, Yuan-Ming Tsai<sup>1</sup>

Spontaneous pneumothorax, characterized by the accumulation of air in the chest leading to lung collapse, is a known condition. Spontaneous hemopneumothorax (SHP), a less common subtype, historically affects approximately 0.5–11.6% of patients with spontaneous pneumothorax, often involving more than 400 mL of blood within the pleural space. While cigarette smoking is a well-established risk factor for spontaneous pneumothorax, the contribution of electronic cigarettes (e-cigarettes or vaping) use to the development of SHP remains poorly understood. Herein, we present the case of a patient with life-threatening SHP possibly triggered by the inhalation of substances present in e-cigarette aerosol. (*Thorac Med* 2024; 39: 271-274)

Key words: electronic cigarette, vaping, spontaneous hemopneumothorax, foreign body giant cell

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# Carbon Monoxide Poisoning Induces Myocardial Injury With ECG ST Elevation: A Case Report and Literature Review

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In patients with carbon monoxide (CO) poisoning, tailored evaluation is needed due to the high likelihood of symptoms overlapping with myocardial infarction. Here, we reported a 58-year-old man who presented to the emergency room after smoke inhalation. His complaints were shortness of breath, hoarseness, sore throat, dizziness, and general weakness. Laboratory results showed elevated cardiac enzymes, metabolic acidosis and elevated serum carboxyhemoglobin. CO poisoning was diagnosed accordingly. Electrocardiography (ECG) revealed atypical territories involvement with II, III, aVF, and V2-V5 ST elevation. His coronary angiography, however, showed patent coronary arteries. It is difficult to distinguish myocardial injury caused by CO poisoning from true acute myocardial infarction. Ischemic patterns in atypical territories on an ECG can offer a crucial clue in this differentiation. However, angiography and revascularization should still be considered in patients with highly suspected acute myocardial infarction. (*Thorac Med* 2024; 39: 275-280)

Key words: Carbon monoxide poisoning, CO poisoning-related cardiac injury, myocardial injury, myocardial injury with ST elevation

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## Malignant Pleural Mesothelioma in a Young Adult: A Case Report and Literature Review

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Classic malignant pleural mesothelioma (MPM) is typically diagnosed in patients >70 years old. Here, we presented a case of MPM diagnosed at age 30, with asbestos exposure 10 years previous. We also reviewed the published literature on MPM at age <40 (young MPM). Compared with the historical cohort, young MPM has a shorter latency period (15 vs. 32 years), less known asbestos exposure (38% vs. 80%), and more surgical opportunities (31% vs. 18%). Although asbestos has been gradually prohibited in developed countries, clinicians should be aware that MPM can still occur after short-term exposure to asbestos in young adults. (*Thorac Med* 2024; 39: 281-291)

Key words: asbestos exposure, asbestos inhalation, occupational exposure, brake linings, asbestos bans

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# Right Hydropneumothorax with Epigastric Pain: Primary Surgical Repair or Minimally Invasive Endoscope Management: A Case Report

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Spontaneous esophageal perforation, also known as Boerhaave syndrome or effort rupture of the esophagus, is most lethal if treatment is delayed. Different perforation regions contribute to a variety of clinical symptoms and signs. The rarity and variability of the clinical signs of esophageal perforation may lead to a delay in diagnosis. According to a previous literature review, the mortality rate was significantly lower when a primary repair was performed within 24 hours after perforation. Here, we reported on the emergency surgical repair of a 40-year-old man diagnosed with Boerhaave syndrome with right epigastric pain and coffee-ground vomitus after meals. (*Thorac Med* 2024; 39: 292-297)

Key words: Boerhaave syndrome, spontaneous esophageal perforation, hydropneumothorax

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