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Carcinomatous pleuritis and pericarditis accompanied by pulmonary tuberculosis

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Keywords
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Abstract

Although both lung cancer and pulmonary tuberculosis (TB) commonly occur in clinical practice, little attention has been paid to their coexistence. A 62-year-old female was admitted with acute dyspnoea secondary to cardiac tamponade. During her admission, a mass lesion harbouring air bronchograms in the right upper lobe rapidly increased in size. Surgical lung, pericardial, and pleural specimens yielded TB from a nodule in the right upper lobe and lung adenocarcinoma from the pericardium and pleura. Anti-tuberculous therapy was administered and gefitinib was subsequently started after the positive identification of epidermal growth factor receptor (EGFR) mutation (exon 19 deletion). The patient's general condition gradually improved with the anti-tuberculous and the EGFR-tyrosine kinase inhibitor (EGFR-TKI) treatment. Dual pathology is important to consider in patients with atypical radiological appearances. In those with proven EGFR mutation positive for lung cancer and pulmonary TB, sequential anti-tuberculous medication followed by EGFR-TKI treatment is advised.

Introduction

Several reports affirm that the coexistence of lung cancer and pulmonary tuberculosis (TB) is not a rare clinical manifestation and that the diagnosis of dual pathology is challenging [1,2]. This study reports a case of coexisting lung cancer and pulmonary TB treated with epidermal growth factor receptor (EGFR)-tyrosine kinase inhibitor (TKI) and anti-tuberculous therapy.

Case Report

A 62-year-old female never-smoker who had diabetes mellitus and hypertension presented to our hospital with acute dyspnoea. Physical examination revealed a narrow pulse pressure (102/86) and a resting oxygen saturation of 85%. She had leukocytosis (15.6×10^9/L): a chest radiograph showed cardiomegaly and airspace opacification in the right lower lung field. A thoracic computed tomography (CT) showed pericardial effusion, bilateral pleural effusions, and a 1.5 cm × 1.2 cm-nodule in the left lower lobe (Fig. 1A). Pericardiocentesis was performed with significant symptomatic benefit. Pericardial fluid was lymphocytic with negative acid-fast bacteria (AFB) staining and polymerase chain reaction (PCR) analysis. Subsequent imaging revealed a new right upper lobe mass (Fig. 1B), and 18F-fluorodeoxyglucose (FDG)-positron emission tomography/CT (PET/CT) was arranged (Fig. 1C). Thoracoscopic surgical biopsies of the right upper lobe mass revealed epithelioid cell granuloma with caseous necrosis (Fig. 2A). Ziehl–Neelsen staining showed AFB (Fig. 2B). However, immunohistochemical staining of pleural and pericardial specimens showed carcinomatous cells positive for AE1/AE3, thyroid transcription factor-1 (TTF-1), P-53, and Napsin A (Fig. 2C, D). Thus, the case was diagnosed as pulmonary TB with coexisting carcinomatous pleuritis and pericarditis. Quadruple anti-tuberculous therapy with isoniazid, rifampicin,

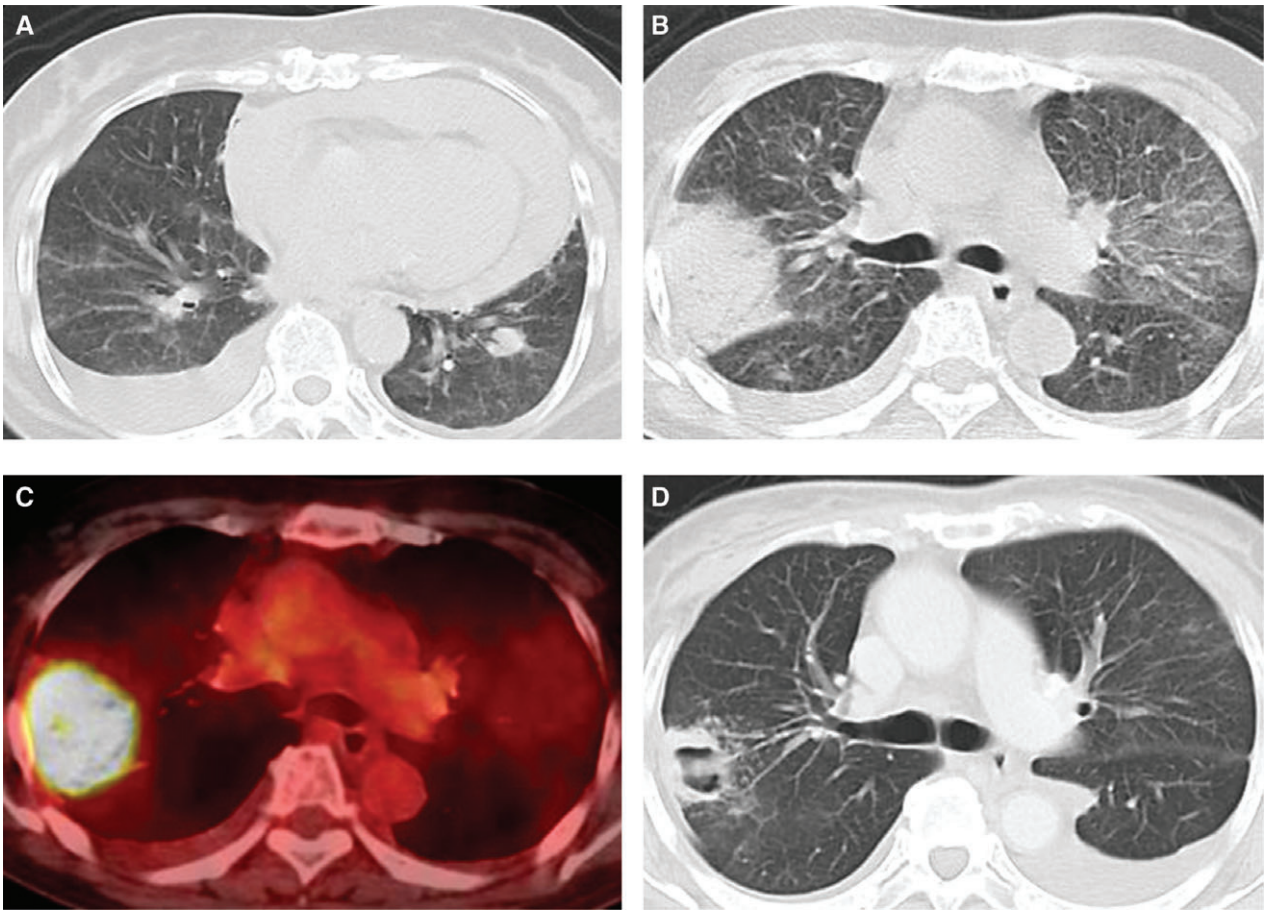

Figure 1. (A) Thoracic computed tomography (CT) showing pericardial fluid, tiny left effusion as well as right-sided fluid, with a 1.5 cm × 1.2 cm nodule in the left lower lobe. (B) Thoracic CT 2 weeks after the first CT, showing a new mass lesion in the right upper lobe and widespread ground-glass opacification in both lung fields that had rapidly increased. (C) Positron emission tomography-CT 2 weeks after the second thoracic CT, showing 18F-fluorodeoxyglucose avid mass in the right upper lobe. (D) Radiological response was noted post initiation of treatment.

pyrazinamide, and ethambutol was started. One month after beginning the treatment, EGFR mutation (exon 19 deletion) was established as positive. Therefore, EGFR-TKI (gefitinib) was initiated to treat the lung cancer. The general condition of the patient and radiological findings gradually improved after beginning treatment with gefitinib and anti-tuberculous drugs (Fig. 1D).

Discussion

Although pulmonary TB and lung cancer are both clinically common diseases, little attention has been paid to their coexistence [1]. One-third of related case reports showed that TB and malignancy may be mistaken for the other at the first clinical presentation [1]. In their retrospective series, Kim et al. showed an average delay in lung cancer diagnosis of 11.7 months when lung cancer and TB coexisted [2]. The prognosis of patients with lung cancer and TB is considered poor because more than half of them have advanced malignant disease at presentation [1,2]. Previous reports suggest that rapid development of new lesions, segmental or lobar atelectasis, unilateral hilar enlargement, thick-walled cavities, and a localised pneumonic process indicate coexistent lung cancer and TB [3].

There are different types of hypothesised association between lung cancer and pulmonary TB [1]. First, that post-tuberculous scarring increases the risk of lung cancer development at that site; second, reactivation of previous TB foci occurs due to immunosuppressive treatment for lung cancer; or third, due to patient debility as an effect of progressive malignancy [4,5]. If an exact diagnosis cannot be made in such cases, administering anticancer agents may lead to dissemination of the TB.

One retrospective case series of 275 patients with lung adenocarcinoma and radiographic evidence of previous pulmonary TB reported a higher probability of an EGFR mutation [6]. However, there are no data on the efficacy or safety of synchronous EGFR-TKI and anti-tuberculous therapy,

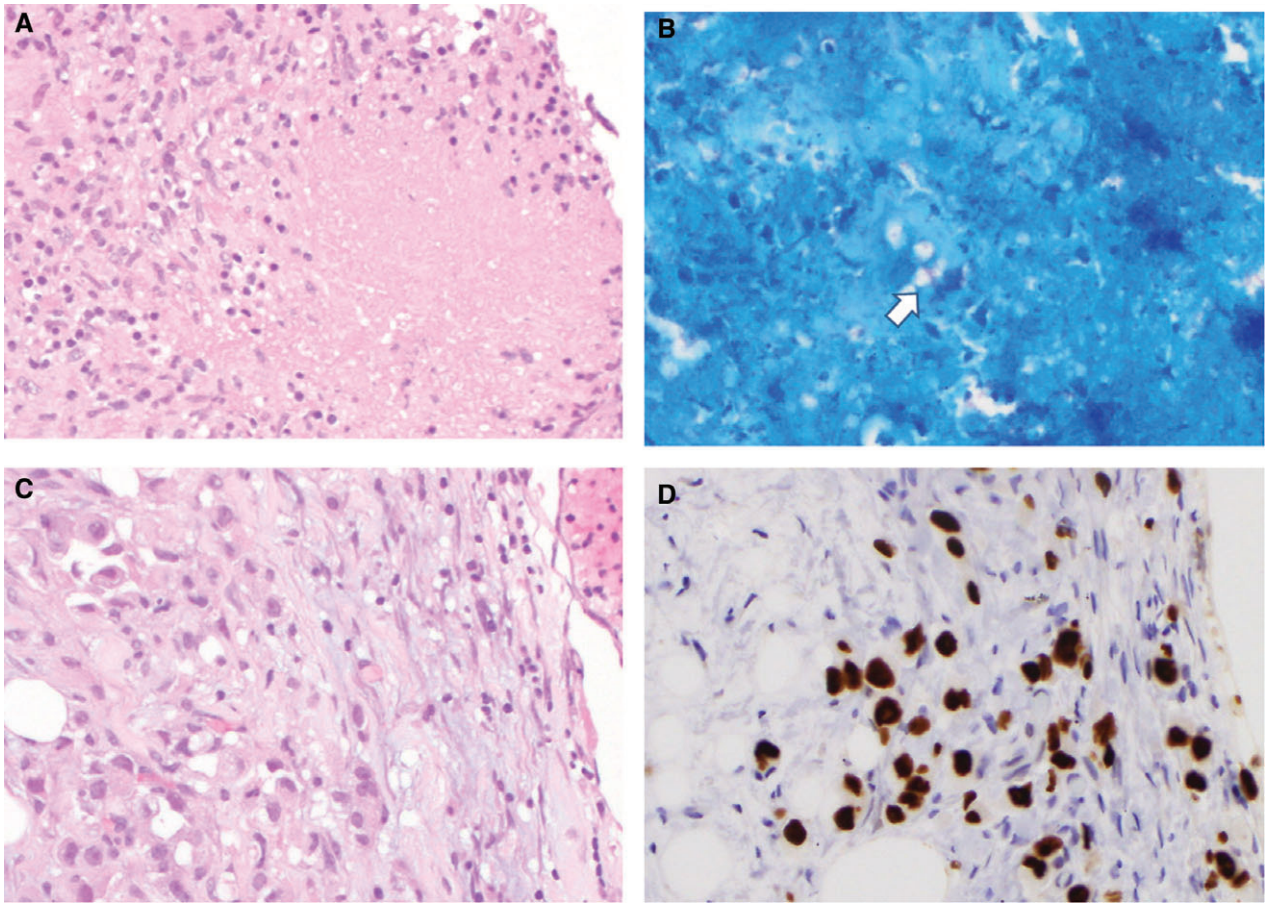

Figure 2. (A) Histopathology of the tumour in the right upper lobe showing an epithelioid cell granuloma with necrosis (haematoxylin and eosin stain ×400). (B) White arrows showing acid-fast bacteria (Ziehl–Neelsen stain ×400). (C) Histopathology of the epicardium showing the carcinomatous cells (haematoxylin and eosin stain ×400). (D) Immunohistochemical staining of carcinomatous epicardial cells showing positivity for thyroid transcription factor-1 (TTF-1) (×400).

and whether they should be started consecutively or synchronously remains a contentious issue. If adverse events occur after synchronous indication of both anti-tuberculous therapy and EGFR-TKI, it is difficult to identify which medication is the cause. Therefore, to reduce the potential risk of TB dissemination, we recommend sequential introduction with anti-tuberculous therapy prior to starting EGFR-TKI.

In conclusion, this study reports a case of carcinomatous pleuritis and pericarditis accompanied by pulmonary TB treated with EGFR-TKI and anti-tuberculous therapy. The coexistence of pulmonary TB and lung cancer should be considered if no simple explanation for a clinical or radiological course is evident.

Disclosure Statements

No conflict of interest declared.
Appropriate written informed consent was obtained for publication of this case report and accompanying images.

References

1. Falagas ME, Kouranos VD, Athanassa Z, et al. 2010. Tuberculosis and malignancy. Qjm 103:461–487.
2. Kim YI, Goo JM, Kim HY, et al. 2001. Coexisting bronchogenic carcinoma and pulmonary tuberculosis in the same lobe: radiologic findings and clinical significance. Korean J. Radiol. 2:138–144.
3. Berroya RB, Polk JW, Raju P, et al. 1971. Concurrent pulmonary tuberculosis and primary carcinoma. Thorax 26:384–387.
4. Brenner AV, Wang Z, Kleinerman RA, et al. 2001. Previous pulmonary diseases and risk of lung cancer in Gansu Province, China. Int. J. Epidemiol. 30:118–124.
5. Fontenelle LJ, and Campbell D 1970. Coexisting bronchogenic carcinoma and pulmonary tuberculosis. Ann. Thorac. Surg. 9:431–435.
6. Luo YH, Wu CH, Wu WS, et al. 2012. Association between tumor epidermal growth factor receptor mutation and pulmonary tuberculosis in patients with adenocarcinoma of the lungs. J. Thorac. Oncol. 7:299–305.