CASE REPORT

Acute silicosis with bilateral pneumothorax

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SUMMARY

We present a case of acute silicosis with bilateral pneumothorax of a 28-year-old man working at a stone crusher factory for 1 year. He presented to the emergency department with cough, respiratory distress and diffuse chest pain. The patient was managed with bilateral intercostal tube drainage under water seal, oxygen inhalation and conservative therapy. On follow-up he showed improvement of resting dyspnoea and was doing well. This case is being reported because of the rare complications of acute silicosis as bilateral pneumothorax.

BACKGROUND

Silicosis is an occupational lung disease caused by the inhalation of crystalline silica particles. The clinical presentations are of three types: chronic, accelerated and acute silicosis. The association of pneumothorax with silicosis is infrequent and is usually unilateral.¹ Bilateral pneumothorax with silicosis is rare and has a grave prognosis. Pneumothorax is recognised pleural complication of silicosis. We report the case of a 28 year-old man with acute silicosis and an extremely rare complication of bilateral pneumothorax.

CASE PRESENTATION

A 28 year-old man with no history of smoking, presented to the emergency department with symptoms of cough, which was initially dry with increased intensity for the past 6 months and progressive breathlessness for 8 months, which had increased for 1 week and diffuse chest pain, which was more on the left side. There was no history of fever, haemoptysis, joint pain or skin rashes. He had received antituberculosis treatment 1 year ago for 6 months, which was started based on radiological findings. He had worked in a stone crushing factory 2 years ago for 1 year; 7–8 h/day.

On clinical examination, the patient was malnourished, with Modified Medical Research Council (MMRC) dyspnoea scale of 4, oxygen saturation of 82%. On examination of the chest, there was hyper-resonant note on percussion with diminished vesicular breath sounds in both lung fields with scattered fine crackles. The patient was admitted with provisional diagnosis of acute silicosis with bilateral pneumothorax as evidenced by clinical examinations and chest X-ray (figure 1).

INVESTIGATIONS

Complete blood count, renal function and liver function tests showed no abnormality. Sputum for acid-fast bacilli (AFB) was negative. Chest X-ray showed bilateral pneumothorax with bilateral

Figure 1 Chest X-ray after bilateral intercostal tube drainage and pneumothorax.

nodular type r/q opacities and profusions of 3+ in both lung fields, consistent with the diagnosis of acute silicosis as per revised edition of International Labour Office (ILO) classification, 2011 (figure 1).

The patient was also subjected to bronchoscopy and collected bronchoalveolar lavage (BAL) revealed macrophage laden silicotic particles, therefore the patient was diagnosed as a case of acute silicosis based on history, clinical and radiographic findings and confirmed by laboratory reports of BAL findings.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis includes pulmonary tuberculosis, pneumoconiosis, sarcoidosis and other occupational diseases. The absence of AFB in the sputum, characteristic chest X-ray and the presence of macrophage laden silicotic particle in BAL favour the diagnosis of acute silicosis.

TREATMENT

The patient was admitted in ward and a bilateral intercostal chest tube was inserted under water seal drainage. Two samples of sputum, one spot and other morning, was negative for AFB. Lung expanded within a week's time. The patient was discharged with improvement in symptoms.

OUTCOME AND FOLLOW-UP

On follow-up after 1 week and after 1 month of discharge, the patient showed improvement in resting dyspnoea. He was also advised to change his work to a non-hazardous one.

DISCUSSION

Acute silicosis develops within few months to about 5 years after inhalation of silica. It usually occurs in

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workers involved in quarrying, stone cutting, mining, tunneling, foundry-work and ceramics. The crystalline silica less than 1 µm is believed to be most pathogenic.^{2 3} Silica causes either direct tissue injury or imbalance of inflammatory response affecting the alveolar walls resulting in the formation of alveolar blebs and subsequent pneumothorax.⁴ Dyspnoea, weakness and weight loss are often the presenting symptoms. The usual clinical course is rapid progression to severe hypoxemic ventilatory failure leading to death. Tuberculosis may complicate all forms of silicosis but acute and accelerated disease may be at a higher risk.⁵ Pneumothorax is rare in acute and accelerated silicosis and is the only recognised pleural complication.

Our patient had acute silicosis with bilateral pneumothorax and had history of not using protective measures. He used to tie a bandana to cover the nose and mouth with spiritual belief of

protection from the harmful effect of dust. None of the workers in that place were aware about silicosis, until recently, when one of the colleagues suffered from the disease. The patient belonged to a poor socioeconomic background and could not afford CT of the thorax.

Although a definitive diagnosis of silicosis can be made by lung biopsy, the diagnosis of silicosis can be established from a history of exposure, together with clinical, functional and typical radiological manifestation and by excluding other causes of interstitial lung disease. Other diagnostic procedures can be performed in the case of atypical presentations.

Competing interests None.

Patient consent Obtained.

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Learning points

- ▶ Pneumothorax is a pleural complication of acute silicosis.
- ▶ Bilateral pneumothorax with silicosis has a grave prognosis.
- ▶ Acute presentation of a patient with silicosis should be ruled out for pneumothorax.
- ▶ The patient should be advised to change the job.

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