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Tension pneumothorax with a patent thoracostomy tube

Dear Sir,
A pneumothorax is usually easy to treat. However, even with a patent thoracostomy tube, the problem might not be resolved as the following case shows.

CASE REPORT

A 64-year-old previously healthy male was admitted to the emergency department with sudden acute dyspnoea. No trauma had occurred. He had a history of heavy smoking for over 20 years. On presentation to the emergency room the patient was deeply cyanotic, dyspnoeic and extremely agitated. There was no clubbing or peripheral cyanosis. The vital signs were as follows: blood pressure 90/52 mmHg, pulse 112 beats/min, respiratory rate 36 breaths/min and temperature 38.2°C. Oxygen saturation was 76% on room air. On auscultation severe wheezing and decreased breath sounds were heard on the right side. Cardiac examination was normal.

Chest X-ray showed a large right-sided pneumothorax (figure 1). Lateral thoracostomy was immediately performed and control chest X-ray showed an adequate positioning and resolution of the pneumothorax (figure 2). After further clinical improvement the patient suddenly developed renewed respiratory distress and hypotension. Under the clinical suspicion of recurrent pneumothorax, despite a thoracostomy tube already in place, a new chest X-ray was performed and our suspicion was confirmed (figure 3).
Computed tomography (CT) scan of the chest, after insertion of a second thoracostomy tube ventrally, showed giant emphysematous bullae of the lungs with a remaining right-sided anterior pneumothorax (figure 4).
The patient had to be intubated and mechanically ventilated due to progressive respiratory failure.
The thoracic surgeons were consulted because of massive air leakage through both tubes. Video-assisted thoracic surgery (VATS) with bullectomy and pleurodesis was performed.
Postoperatively the patient improved and the air leakage diminished gradually. The patient could be weaned successfully from mechanical ventilation in three days.

Figure 1. *CXR with initial right-sided pneumothorax*

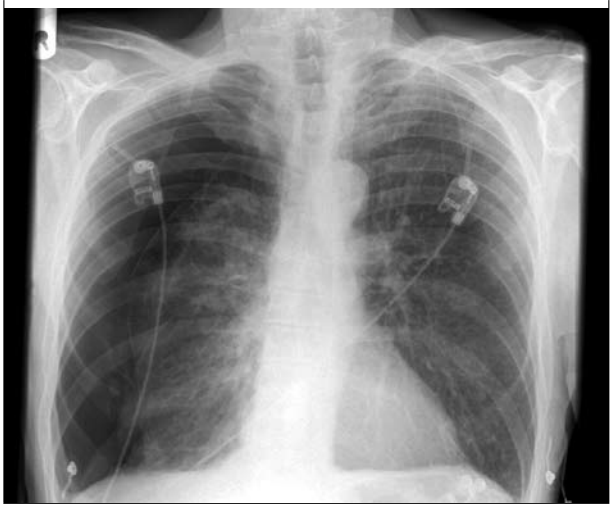

Figure 2. *CXR after thoracostomy tube insertion with resolution of the right-sided pneumothorax*

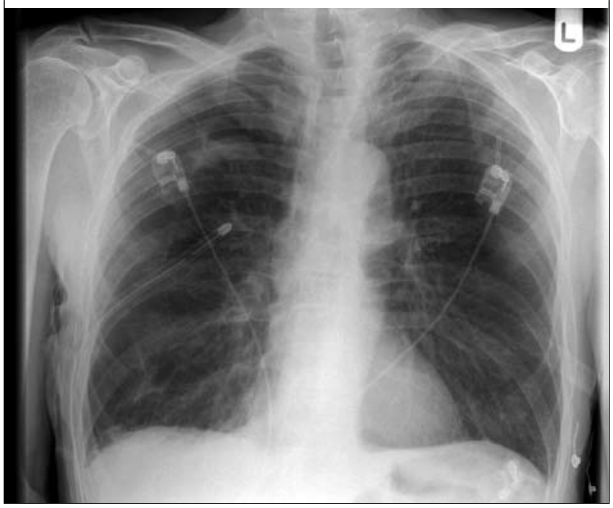

Figure 3. *CXR with recurrent right-sided pneumothorax, despite thoracostomy tube in place*

Figure 4. *CT scan with giant bullae and anterior pneumothorax after insertion of a second thoracostomy tube*

CONCLUSIONS

Pneumothorax is classified as either spontaneous, iatrogenic or traumatic.[1]
Primary spontaneous pneumothorax occurs in persons without clinically apparent lung disease with an incidence of 1.2 to 6 cases per 100,000 among women and between 7.4 to 18 cases per 100,000 population in men.[2] Smoking cigarettes increases the risk of primary spontaneous pneumothorax.[3] The term 'secondary spontaneous' means that the pneumothorax is a complication of pre-existing lung disease. Although patients with primary spontaneous pneumothorax do not have clinically apparent lung disease, bullae are often found during VATS or thoracotomy as in our present case.[4] CT studies of the chest have shown that ipsilateral bullae are common findings in smoking patients with spontaneous pneumothorax. Cases of spontaneous pneumothorax due to giant bullae have been previously reported and can be very difficult to treat.[5] Radiological diagnosis of bullous disease in a previously healthy patient can be difficult and may easily be missed.[6]
In our case, the patient developed a tension pneumothorax even with a thoracostomy in place. The patency of the thoracostomy was double-checked and found to be draining. The tension pneumothorax was most likely caused by a loculated ventral bullous pneumothorax, which did not drain through the primary thoracostomy as was shown on CT scan. Aggressive management to prevent circulatory collapse and respiratory failure and early surgical consultation are warranted if recurrent pneumothorax occurs after primary thoracostomy. If this uncommon situation is recognised, an adverse outcome can be prevented.

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