

## Pulmonary puzzle

### Pulmonary cystic lesion in a trauma patient

#### CASE PRESENTATION

A 69-year-old man was admitted to our emergency department shortly after falling from a ladder from a height of about 2 m while attempting to prune a dead branch in his garden. He showed bruising on the back and had severe back pain. He had been in his usual state of health prior to the accident and had been receiving outpatient treatment for chronic obstructive pulmonary disease at our hospital. He had smoked two packs of cigarettes per day for 42 years, but had stopped 6 years earlier. He drank occasionally, but did not use illicit drugs. He had a history of colon cancer. Medications included ipratropium bromide, salmeterol and theophylline. He had no known allergies.

In the emergency room, he appeared uncomfortable. His blood pressure was 145/110 mm Hg, pulse was 112 beats per minute and temperature was 36.7°C; his respiratory rate was 34 breaths per minute and oxygen saturation was 85% while breathing ambient air. No jugular venous distention or bruits in the neck were noted. Examination of the heart revealed a rapid rhythm. Respiratory sounds were diminished bilaterally with a prolonged expiratory phase. Drawing up his knees resulted in increased back pain. No abnormal sensations such as numbness, tingling or pain were observed in the lower extremities and no problems were identified in joint motions of the lower extremities. No other abnormalities were noted in the remainder of the physical examination. Posteroanterior chest radiography in a supine position showed a consolidation and cavity in the left lung, which had not been evident on a previous film (figure 1). After a brief interval, the level of consciousness deteriorated, and both blood pressure and oxygen saturation suddenly decreased. Contrast-enhanced CT was performed for suspected traumatic haemorrhagic shock.



**Figure 1** Chest radiograph showing a cavity lesion in the left lung field.

#### QUESTION

What does this image show?

What would you do?

*See page 838 for the answer*

**Kei Kunimasa, Toru Hashimoto, Yasushi Fukuda, Tadashi Ishida**

Department of Respiratory Medicine, Kurashiki Central Hospital, Kurashiki, Japan

**Correspondence to** Kei Kunimasa, Department of Respiratory Medicine, Kurashiki Central Hospital, Kurashiki, Japan; [kk11900@kch.net.or.jp](mailto:kk11900@kch.net.or.jp)

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## ANSWER

From the question on the page 830

Systemic CT on arrival revealed fractures of the spinous processes of the Th12 and L1 vertebrae, burst fracture of the L1 vertebra, fractures of the left transverse processes of the L2–4 vertebrae and fractures of the left superior and inferior pubic rami. In the lung fields, a left-sided cystic lesion with an air–fluid level was displayed (figure 2A), which was initially suspected to represent a bulla with infection. Approximately 2.5 h after arrival, the patient's level of consciousness suddenly deteriorated, blood pressure decreased to 81/46 mm Hg and oxygen saturation fell to 89% while he was receiving 15 l of oxygen by means of a non-rebreather mask. Contrast-enhanced CT performed on suspicion of traumatic haemorrhagic shock showed a fluid-filled cyst (figure 2B). After sedation and intubation, a bloody discharge erupted into the intubation tube. Bronchofiberscopy revealed sustained bleeding from the left main bronchus. On the way to the operation room, the patient had cardiopulmonary arrest. Cardiopulmonary resuscitative measures were initiated immediately, but he died 6 h after admission.

Traumatic pulmonary pseudocyst (TPP) is mainly observed in patients less than 30 years old because of the greater compliance of the osteochondral thoracic cage in younger individuals.<sup>1 2</sup> However, the cystic lesion in the present case was considered to be TPP based on the clinical course and findings from chest CT such as a thin-walled cavity within the pulmonary parenchyma,

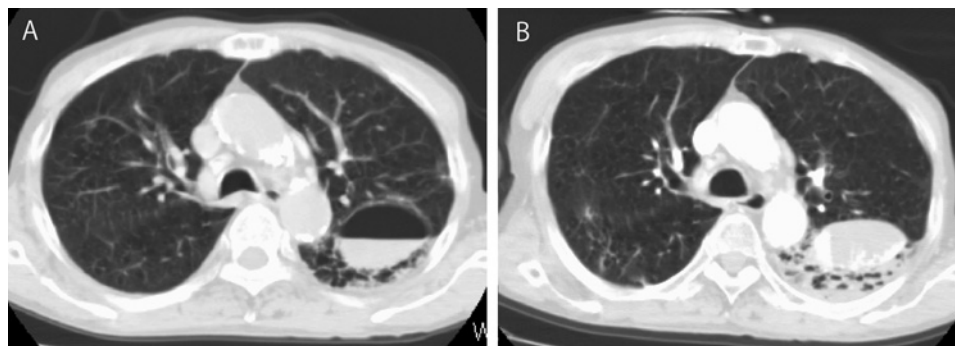
showing an air–fluid level and located in the lower lobe. Pulmonary bullae were probably attributable to a non-trauma-related aetiology. In the present case, the cyst rapidly filled with fluid with an abrupt drop in blood pressure, probably due to significant haemorrhage in the cyst. TPP usually resolves spontaneously, but may become complicated and require surgery.<sup>3</sup> In the present case, we should have considered urgent surgical management more promptly. Although the patient's family did not agree to an autopsy and we could not ascertain the cause of death, he appeared to have died from severe blood loss resulting from TPP. This is a very rare case of TPP resulting in a miserable outcome.

In patients with a history of blunt thoracic trauma, physicians must keep TPP in mind when confronted with a fresh cystic lesion in the lung field and should be aware that TPP can be life-threatening and may require urgent treatment.<sup>4</sup>

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**Figure 2** (A) A lung window setting demonstrating emphysema and a cavity, 61 mm in greatest dimension, containing air and fluid in the left lower lobe. (B) A second chest CT after about 2.5 h in the emergency room revealing the cyst filled with fluid.