

Traumatic lung pseudocyst

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ABSTRACT Traumatic lung pseudocyst is an uncommon lung injury due to closed chest trauma. Four cases are reported; all were male and one was a child. Three cases showed spontaneous resolution of the pseudocyst and in one case, where resolution was slow, lobectomy was carried out at the patient's insistence. Diagnosis poses no serious problems as there is inevitably a history of substantial chest trauma. The chest radiograph shows a characteristic cavitary lesion. The pseudocysts may be multiple. Tomography may be helpful in diagnosis and computed tomography can be particularly useful in the demonstration of paramediastinal traumatic pseudocysts.

Injury to the lung parenchyma caused by non-penetrating chest trauma is frequently accompanied by pulmonary contusion and intrapulmonary haemorrhage, but the development of a traumatic lung pseudocyst is a rare occurrence.¹⁻³ Although the diagnosis of traumatic lung pseudocyst is easy because of the history of chest trauma,¹ erroneous or unnecessary treatment might be offered by clinicians who have no knowledge of the condition. We have encountered four cases of traumatic lung pseudocyst in the past three years, three of them adults and one a child; and we report our findings here.

Case reports

CASE 1

A 53 year old man fell from a height of 3 m during construction work, bruising his right anterior chest wall. The chest radiograph one hour after emergency admission to hospital showed a cavitating lesion in the right lower lung field (figs 1 and 2a). The arterial oxygen tension was 53 mm Hg (7.1 kPa) while he was breathing air. He complained of severe chest pain and had haemoptysis for three days after admission to hospital. No haematological or biochemical abnormalities were revealed and he was treated with oxygen by inhalation (2 litres a minute) for one week. On the seventh hospital day the chest radiograph showed appreciable reduction in size of the cavitating lesion

and resolution of the surrounding consolidation (fig 2b). The shadows had almost disappeared one month after the accident (fig 2c).

CASE 2

A 6 year old boy was run over by a car and transferred to hospital deeply unconscious. A chest radiograph five hours after the accident showed a right sided paramediastinal cystic lesion with a fluid level. The white blood cell count was $23.5 \times 10^9/l$ and there was a mild increase in serum transaminase and lactate dehydrogenase activity. Computed tomography showed multiple cysts (figs 3 and 4). He was treated with oxygen inhalation and one month after admission to hospital complete radiological resolution had occurred (fig 5).

CASE 3

The third patient was a 50 year old man who sustained a bruise to his chest while working on a farm. He developed severe chest pain and visited a clinic where chest radiography showed consolidation in the right lower lung field (fig 6). The abnormal lung shadowing did not reduce in size and he was accordingly transferred to our hospital for further investigation. Standard tomography and computed tomography showed that the lesion was cavitated and accompanied by collapse of the middle lobe. A diagnosis of traumatic lung pseudocyst was made. Three months after the trauma the lesion was still present. Because of the patient's insistence that the lesion should be removed surgically he underwent middle lobectomy. The resected lobe contained a thin walled cyst lined by granulation tissue. In the adjacent parenchyma there was interstitial fibrosis; surviving distal air

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Accepted 2 December 1986

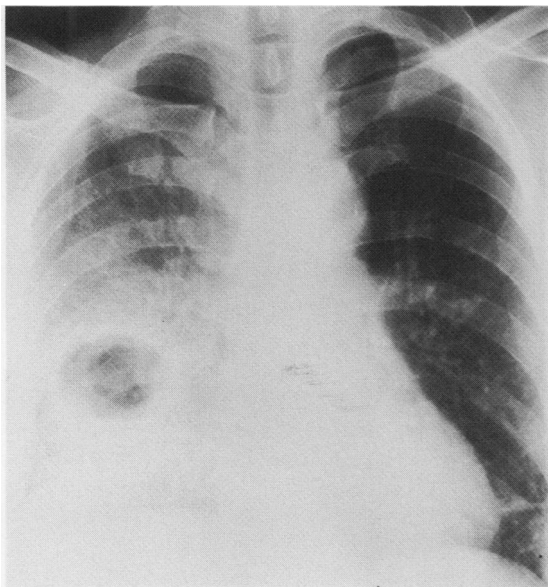


Fig 1 Case 1: Chest radiograph at the time of admission to hospital showing the cystic lesion in the right lung.

spaces were dilated and lined by proliferating type II cells.

CASE 4

A 20 year old man was admitted to hospital after being injured in a traffic accident. A cystic lesion was evident on the chest radiograph one hour after the accident. Bronchography was undertaken in an attempt to identify the draining bronchus but no communication was seen between the bronchial tree and the affected lobe and cyst. One month later there

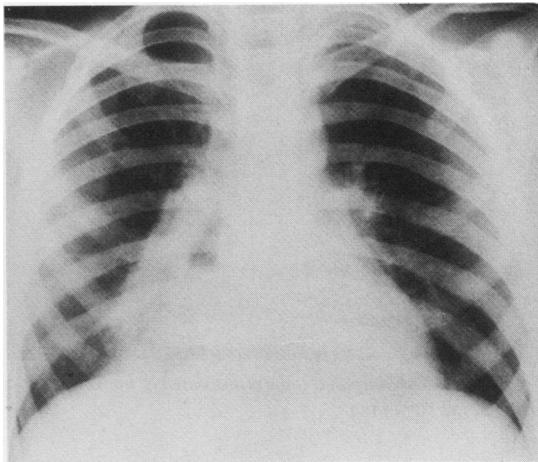


Fig 3 Case 2: Chest radiograph showing paramediastinal cystic lesion in the lung.

was almost complete resolution of the radiological shadows.

Discussion

Traumatic lung pseudocyst is a much less common sequel of blunt chest trauma than intrapulmonary haematoma or pulmonary contusion. Although two of our patients were over 40 years of age, Sorsdahl and Powell¹ reported that 85% of patients with traumatic lung pseudocyst were younger than 30 years. A higher incidence in the young was also suggested by Stultz *et al.*,⁴ who reported that traumatic lung pseudocyst was most often seen in children or young adults, in whom the thorax is elastic, the visceral



Fig 2 Case 1: Tomogram showing (a) the irregular wall of the cyst; (b) decrease in the size of the cyst; (c) further improvement.

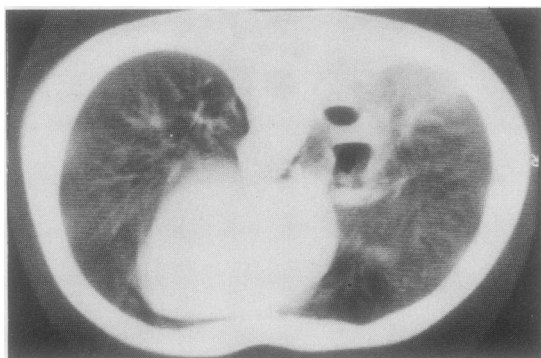


Fig 4 Case 2: Computed tomogram showing multiple cystic lesion in the right lung.

pleura intact, and the parenchyma easily injured. In adults the chest radiographic appearances are sometimes similar to those of lung abscess, cavitating tuberculosis, or bronchial carcinoma with cavitation.¹ In children the lesion may be confused with pneumatocele, pulmonary cyst, or sequestration.^{1,2} Thorvinger and Albrechtsson⁵ have reported a case in which resection after a diagnosis of traumatic lung pseudocyst had been made showed that the lesion was a spindle cell sarcoma. Usually, however, the history of the accident makes diagnosis easy.

Characteristic symptoms of traumatic lung pseudocyst are haemoptysis, chest pain, cough, and sometimes a small rise in temperature in the early days after the trauma. Fourteen of the 25 patients reported by Sorsdahl and Powell had haemoptysis. Leuco-

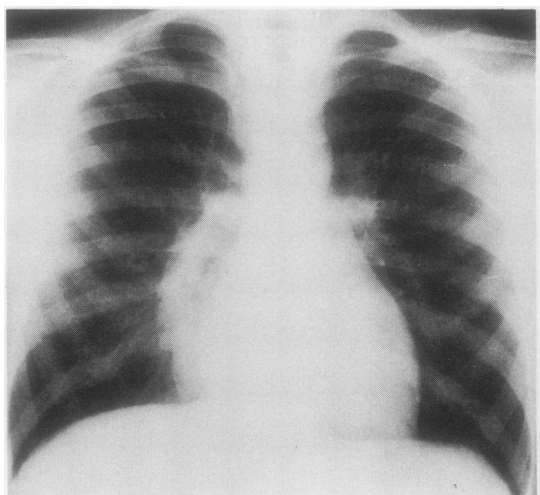


Fig 5 Case 2: Chest radiograph showing complete resolution of abnormal shadowing.



Fig 6 Case 3: Tomogram showing an oval cystic lesion in the right lung.

cytosis and fever usually last one or two weeks after the injury, while absorption of blood and damaged lung tissue is occurring.⁴

The characteristic pseudocystic lesion usually appears within 12 hours of the trauma, although sometimes it may appear later. An air-fluid level is commonly seen on the chest radiograph and the surrounding lung often shows consolidation due to pulmonary contusion. Computed tomography is useful for diagnosing traumatic lung pseudocyst and following its clinical course. It is also superior to chest radiography in the diagnosis of paramediastinal pneumatocele, occasionally found in children. Consolidation usually disappears within seven or 10 days and the cavitary lesion generally diminishes in size and completely resolves within two or three months. Virtual disappearance of radiological appearances within one to three weeks has been reported.⁶ Only symptomatic treatment seems to be necessary¹ and prophylactic antibiotic treatment is not necessary despite the fever and leucocytosis. Close follow up is recommended nevertheless.

Three of the 25 patients described by Sorsdahl and Powell¹ underwent surgical resection. The wall of the cyst appeared to be derived from the subpleural and interlobar connective tissue. Microscopic examination showed numerous haemosiderin laden macrophages and fibrosis in the surrounding tissue.

Pseudocysts are considered to be due to tearing or laceration of the lung parenchyma. The development of round, air containing lesions in the lung has been demonstrated experimentally by Moolten⁷ and by Forse and Blake⁸

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