PULMONARY PUZZLES

An extra piece of grey

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A 14-year-old boy presented to the paediatric accident and emergency with a 2-week history of right-sided pleuritic chest pain, cough and intermittent fevers. A chest radiograph (CXR) was performed (figure 1A), and he was discharged home with advice to return if symptoms did not resolve.

He re-presented a week later with increased work of breathing, chest pain and temperature spikes up to 38.5°C. On clinical examination, there was dullness on percussion and reduced breath sounds on the right side. The repeat CXR is shown in figure 1B.

The initial blood investigations showed a normal white cell count and raised C-reactive protein of

303 mg/L (0–10). He was tachypnoeic, requiring 1–2 L of oxygen, and was commenced on intravenous co-amoxiclav and clarithromycin. A chest ultrasound demonstrated a large pleural effusion, and he was transferred to us for further management of suspected empyema.

A chest drain was inserted into the right hemithorax under ultrasound guidance and general anaesthesia. Instead of the anticipated pus, 750 mL of heavily dark blood-stained fluid was drained.

QUESTION

What is the diagnosis?

Figure 1 (A) Initial chest X-ray. (B) Repeat chest X-ray.

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ANSWER

Haemothorax associated with bony costal exostosis

DISCUSSION

In addition to the pleural fluid collection on the right, there is a costal exostosis on the anterior end of the right fourth rib. There is also a modelling deformity of the adjacent fifth rib. Another exostosis is also seen on the posterior end of the left seventh rib (figure 2B). It was noted that he underwent multiple surgical procedures in the past for excision of benign bony exostoses in the knees, shoulder and forearms. A non-tender 3×2 cm bony swelling was also palpable on the right radius. He was under continued orthopaedic follow-up and did not have any symptoms of bone or joint pain and was systemically well prior to the recent illness. There was no family history of bone pathology.

The patient was treated with intravenous antibiotics with a good response, and underwent video-assisted thoracoscopic evacuation of blood clots and washout. Pleural fluid cultures were negative. He was discharged home well.

We report this case to illustrate the importance of a detailed examination of the CXR even with an apparently obvious abnormality; the exostoses were initially missed when the child was first seen.

Haemothorax commonly presents after chest trauma, and is rare in children. It can result from erosion of a blood vessel in association with inflammatory processes such as empyema and TB. Congenital anomalies, including sequestration, and sub-pleural pulmonary arteriovenous malformation may be complicated by haemothorax. Occasionally, it may be the manifestation of intrathoracic neoplasms, costal exostoses and a bleeding

Figure 2 (A) Initial chest X-ray. (B) Chest X-ray demonstrates right haemothorax; the arrow on the right points to the exostosis on anterior end of the right fourth rib and the arrow on the left points to the exostosis on the posterior end of the left seventh rib.

Figure 3 CT image of long bone with exostoses (the arrows point to the exostoses).

diathesis. Spontaneous haemothorax may occur in neonates and older children, but is extremely rare.¹

Osteochondromas or exostoses are benign bony outgrowths from long bones capped by cartilage. Costal exostoses are mostly asymptomatic, but can rarely cause intrathoracic complications, including haemothorax, pneumothorax as well as injury to the pleura, lung, diaphragm or pericardium.² The association between spontaneous haemothorax and rib exostoses may be because of rupture of markedly dilated pleural vessels due to prolonged friction between the exostosis and the pleura.³ Hereditary multiple exostoses (HME) and solitary costal exostosis are the two types of costal exostoses. HME is an autosomal-dominant condition with exostoses involving the long bones of the limbs (figure 3). Body growth may be impaired in patients with HME, leading to limb-length discrepancies and short stature. Patients with solitary costal exostosis in contrast are usually asymptomatic with absent family history of similar conditions. Osteochondromas usually present in childhood or adolescence and stop growing at puberty; but patients may also present as adults.² Surgical follow-up was arranged for our patient for contemplation of resection of exostosis to prevent recurrent haemothorax.

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