HAEMOTHORAX FROM ANEURYSMAL BONE CYST OF THE SPINE

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Aneurysmal bone cyst (ABC) is a benign bone tumour characterised by rapidly expanding osteolysis. The nomenclature was proposed by Jaffe and Lichtenstein (1942), who also determined the nature of the lesion. Between 9% and 12% of all aneurysmal bone cysts occur in the spine (Campanacci, Capanna and Picci 1986), presenting with back pain and symptoms resulting from cord or root compression and from vertebral collapse. Haemothorax is an unusual presentation and to our knowledge has never been reported in the English literature.

Case report. A nine-year-old girl presented with a one-month history of increasing dyspnoea and dull upper back pain, radiating to the left hemithorax. Radiographs showed a large quantity of fluid in the left pleural cavity (Fig. 1). This was drained and 1500 ml of haemorrhagic fluid was removed; histologically there was no evidence of malignancy. Further radiographs indicated a tumour mass in the left superior and posterior part of the mediastinum and a CT scan showed a cystic lesion involving the body of the fourth thoracic vertebra (Fig. 2).

Over the next six days, recurrence of the haemothorax was associated with a precipitous drop in the haemoglobin level requiring transfusion of two units of blood. Left thoracotomy revealed a tumour mass, 6 × 10 cm in diameter, originating from the upper thoracic spine; the tumour seemed to have penetrated the pleura developing loose adhesions with the left lung. The pleura was incised longitudinally over the spine, the segmental vessels proximally and distally were ligated and the whole tumour mass was exposed. It had a cystic appearance and a very thin bony shell. Removal of the periosteum revealed a crater 1 × 2 cm in diameter, containing clotted blood which was removed; this was followed by profuse haemorrhage. At the base of the crater was the body of the fourth thoracic vertebra. There was erosion of the neck of the left fourth rib. The tumour was resected en bloc, requiring removal of only a thin layer of cancellous bone from the vertebral body. The neck of the affected rib was also partially resected. Frozen sections showed no evidence of malignancy and the presumptive diagnosis of ABC was later confirmed by permanent histologic sections. These revealed a multilocular cystic mass with great cellularity, no atypia, several giant cells of osteoclastic type, areas of osseous metaplasia, and calcium deposits in the walls of the cavities. All these findings were typical of ABC.

Fig. 1

Fig. 2
The patient made an uncomplicated recovery, her haemothorax resolved and she was discharged after seven days. Follow-up examination including an MRI scan of the spine, 13 months later, showed no evidence of recurrence of the tumour or of other pathological changes.

**Discussion.** The unusual feature of our patient was the presentation with symptoms of dyspnœa and a haemothorax, making the initial diagnosis difficult. A CT scan helped, but the final diagnosis of ABC was established only after surgical exploration and histological examination. There are two possible explanations of the haemothorax. First, penetration of a segmental vessel by the expanding tumour; however, exploration did not reveal such a bleeding vessel. Secondly, spontaneous rupture of the ABC following perforation of its outer shell; to the best of our knowledge this complication has never been reported. On the contrary it is well documented that ABC, although it may grow at an alarming rate, remains well contained by a rim of reactive bone (Enneking 1983); if this is absent, the thickened peristomeum and the compressed soft tissues circumscribe the lesion (Spjut et al 1971) and therefore no spontaneous bleeding occurs.

However, profuse bleeding following evacuation of the blood clot from within the cavity does occur. The source of this bleeding seems to be the highly vascular lining that forms the inside wall of the reactive bone (Schajowicz 1981). In our case the thin shell of the tumour was ruptured at one site and we therefore assume that a spontaneous evacuation of the clot took place into the pleural cavity and caused the haemothorax.

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**A METHOD OF DIAGNOSING SMALL AMOUNTS OF FLUID IN THE KNEE**

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A normal knee contains 1 to 4 ml of synovial fluid (Ragan 1946). Any irritation leads to a synovial reaction which increases the amount of fluid; this serves as a sensitive, though nonspecific sign of knee injury or internal derangement.

A large amount of fluid can be detected by observation of the patient and by the ‘patellar tap’ test, a small amount by the ‘fluctuation test’ (squeezing the suprapatellar pouch and fluctuating the fluid from one side of the knee to the other) and an intermediate amount by observing one side of the straight knee while stroking the other side (‘the bulge test’ or ‘stroke test’), or by measuring the circumferences of the suprapatellar pouch (Nicholas et al 1976).

Since 1977, we have been using a method, not previously described, for detecting excess fluid in the knee. It is simple, accurate and capable of detecting a minimal excess of fluid. The patient lies supine; on flexing the knee a few degrees an indentation becomes clearly visible on the lateral side of the patellar ligament (Fig. 1). At a certain increased angle of flexion, this indentation disappears (Fig. 2). The angle at which this occurs depends on the amount of fluid which protrudes as the available joint space becomes reduced during flexion.

First the normal knee is flexed until the recess vanishes, then the affected knee is flexed to the same angle. If the indentation in the affected knee fills up at a lesser angle of flexion, this indicates a relative excess of fluid. If, at this angle of flexion, the thumb and index finger are placed on the two sides of the patellar ligament, the fluid can be moved from one side to the other and this is readily palpable.

The test is based on the relative weakness of the part of the capsule which is lateral to the patellar ligament (Smillie 1980) and on the negative pressure in synovial joints (Ropes and Bauer 1953) which causes the recess to appear when there is no excess fluid. The findings can easily be verified by observing the indentation in a flexed