Rib fibrous dysplasia associated with aneurysmal bone cyst

Clinical History:
A 25-year-old man with chest pain. No history of trauma or relevant prior medical history. Chest X-ray was performed. Chest X-ray 5 years before was completely normal.

Imaging Findings:
Chest X-ray (Fig 1) showed an extrapleural density on lateral thoracic wall; rib X-ray (Fig 2) confirmed a lytic expansile lesion on a rib.
Chest MDCT (Fig 3, 4) was performed to define the rib lesion and showed a pathologic fracture associated. The lesion had a heterogeneous density inside but no calcified matrix nor fluid-fluid levels. There were no trabeculations, cortex was not interrupted and there was no soft-tissue mass associated.
At scintigraphy the rib lesion showed increased uptake of radionuclide with no other bone affected.

Discussion:
Surgical excision of the rib was performed because it was symptomatic and has grown over the years. Fibrous dysplasia with focus of aneurysmal bone cyst was histologically demonstrated.
Primary bone tumours of the chest wall are uncommon, 95% of these primary tumours are located in the ribs [1]. The most frequently benign chest wall lesions are fibrous dysplasia, osteochondroma and enchondroma [1]. Fibrous dysplasia [2] is a developmental bone disease in which there is a medullary replacement by fibrous tissue. There are two forms: monostotic and polyostotic. Monostotic disease can involve any bone and is usually asymptomatic. The most frequent bones affected are: femur, tibia, rib and mandible. Radiologically it appears as a well demarcated lytic lesion, diaphyseal, with a ground-glass inside appearance, endosteal scalloping and expansion are usually present. No treatment is necessary if a typical lesion is recognised. Lesions usually stabilise after puberty. Complications are rare; the most frequent is pathologic fracture.
Aneurysmal bone cyst (ABC) is an expanding lytic lesion that can appear with two forms [3] primary or secondary to other bone lesions: giant cell tumour (the most common), chondroblastoma, chondromyxoid fibroma and fibrous dysplasia. In one third of cases the preexisting lesion can be identified [3]. Over 50% affect long tubular bones and is usually symptomatic with pain and swelling. At imaging ABC are lytic expanding lesions, tend to be localised metaphyseal and eccentric; can be septated and fluid-fluid levels can be present. [2] Surgery is the treatment of
choice.
Both fibrous dysplasia and aneurysmal bone cyst are lesions that appear in children and young adults.

TEACHING POINT: It is important to know the association of aneurysmal bone cyst to other bone lesions as fibrous dysplasia, as it can explain the rapid growth of a radiologically benign lesion.

**Differential Diagnosis List:** Rib fibrous dysplasia associated with aneurysmal bone cyst, Fibrous dysplasia, Aneurysmal bone cyst

**Final Diagnosis:** Rib fibrous dysplasia associated with aneurysmal bone cyst

**References:**


Description: Rib X-ray shows an expansile lytic lesion on a right rib. Origin: Gómez-Herrero H, Department of Radiology, Complejo Hospitalario de Navarra, Pamplona, Spain.
Description: Chest X-ray shows a peripheral opacity in the right lung with extrapleural lesion morphology. Rib involvement cannot be defined in this projection. Origin: Gómez-Herrero H, Department of Radiology, Complejo Hospitalario de Navarra. Pamplona, Spain.
Description: Chest MDCT, soft tissue window, shows an expansile lytic rib lesion. It has an heterogeneous density inside, with no calcifications nor trabeculations. No soft-tissue mass associated.

Description: Volume rendering reconstruction from chest MDCT shows the expansile nature of the rib lesion. Origin: Gómez-Herrero H, Department of Radiology, Complejo Hospitalario de Navarra. Pamplona. Spain.
**Description:** Chest MDCT, sagittal view, shows the expansile lytic rib lesion with the pathological fracture associated (arrow) **Origin:** Gómez-Herrero H, Department of Radiology, Complejo Hospitalario de Navarra. Pamplona. Spain.