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Case Report
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Costal Aneurysmal Bone Cyst: An Exceptional Location

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Abstract

Aneurysmal cyst is a rare benign bone tumor that occurs mainly in young people, in a wide variety of locations. It forms a uni- or multilocular bone cavity with a hematic content. The most common sites are the long bones of the limbs and the spine. The costal location is uncommon. We report a new observation.

Introduction

Aneurysmal Bone Cyst (ABC) is a rare benign tumor of unknown etiology, which forms a uni- or multilocular bone cavity with a hematic content, most commonly in the spine and long bones. Costal localization is exceptional. We report a case of (KOA) located on the rib in a 35-year-old man discovered incidentally on a thoracic CT scan.

Case Presentation

A 35-year-old man was admitted to hospital with deep venous thrombosis of the superficial femoral vein of the left lower limb. The history-taking did not reveal any factors that might have contributed to the thrombosis. Clinical examination revealed a subfebrile state at 38°C and concomitant tachycardia at 100 bpm. The ECG showed sinus tachycardia and right bundle branch block. These ECG abnormalities prompted a thoracic angioscan, which confirmed the presence of a right sub-segmental pulmonary embolism and also revealed an eccentric expansive bone lesion in the posterior arch of the 9th left rib, with internal trabeculations and no cortical reaction extending over approximately 73 mm, suggestive of an aneurysmal cyst (Figure 1). X-rays of the costal girl showed a lytic lacunar image in the same location, respecting the cortical bone. Additional MRI revealed a partitioned expansive bone lesion centered on the posterior arch of the left 9th rib with a T1 hyposignal, T2 hypersignal without enhancement after injection of gadolinium, measuring 50 mm × 19 mm, with no intralesional fluid level and no invasion of the adjacent soft tissues, in favor of an aneurysmal cyst of the left 9th rib (Figure 2). The clinical examination did not reveal any palpable mass, pain or skin abnormalities.

The biology initially revealed a biological inflammatory syndrome with a CRP of 120 mg/l and hyperfibrinemia of 4.23 g/l, which resolved spontaneously during the hospital stay. The rest of the biology was without abnormalities.

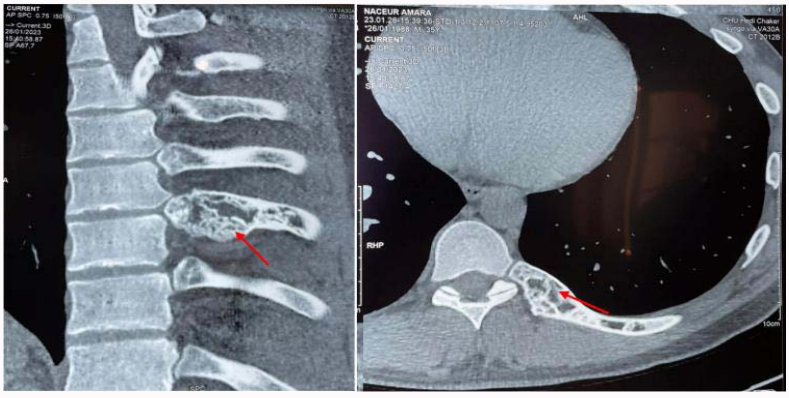

Figure 1: Thoracic CT scan; A-B coronal reconstruction and axial section through a bone window showing a multilocular expansive blowing bone lesion in the posterior arch of the 9th left rib (arrows). The lesion is internally trabeculated with no cortical reaction or soft tissue invasion.

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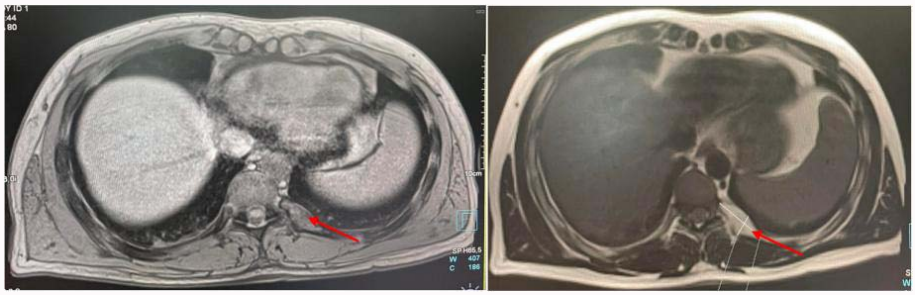

Figure 2: Thoracic MRI: compartmentalized expansive bone lesion centred on the posterior arch of the 9th left rib (arrows) in T1 hyposignal (A), T2 hypersignal (B).

The patient was being treated with curative dose heparin therapy followed by Sintrom for venous thrombosis complicated by pulmonary embolism. No underlying cause for this thrombotic event was found. Orthopedic surgery to curettage the aneurysmal cyst was scheduled.

Discussion

Aneurysmal cyst is a benign bone tumor that was first described in 1942 by Jaffe and Lichtenstein [1]. It accounts for approximately 1% of primary bone tumors [2]. The name aneurysmal bone cyst is due to the macroscopic appearance of this usually solitary lesion, which forms a uni- or multilocular bone cavitation with a hematic content. The term "aneurysmal" simply evoked the blown appearance of the bone lesions.

The development of an aneurysmal bone cyst results from a local hemodynamic disturbance with an increase in venous pressure or the creation of abnormal arteriovenous communication, leading to bone resorption and the formation of blood-filled cysts. The increase in vascular intraosseous pressure eventually leads to bone expansion [3].

This tumor mainly affects young female adults during the first two decades of life [4]. The etiology of KAO is unclear. Some studies have considered that this condition is secondary to arteriovenous malformation, while others have favored an increase in circulatory venous pressure or trauma, leading to bone resorption and the formation of blood-filled cysts [5].

The most common presenting sign is chronic pain, sometimes associated with local swelling. A pathological fracture may sometimes be the way in which the tumor is discovered. Its non-specific clinical manifestation makes it difficult to diagnose [6]. Our patient was asymptomatic and the discovery of the tumor was fortuitous.

The diagnosis may be made later on the occurrence of complications. The most frequent locations are, in decreasing order of frequency, long bones (60%), short bones (25%) and flat bones (15%). Costal location is reported in 2.7% of cases in the literature [7].

Standard radiographs show a uni- or multilocular lacunar image with partitions creating a soap bubble or honeycomb appearance. It is bordered by a fine border of osteocondensation. The cortical bone may be blown away. This appearance is similar to that seen in our patient [8,9]. A CT scan provides a clear picture of the extent of the tumor and shows the same features as a standard X-ray. MRI, the most effective imaging test, determines the extent of the tumor, the boundary between healthy tissue and the lesion, and clearly defines the cystic component.

Pathological examination is the key test for making a positive diagnosis of aneurysmal cysts in bone. Histologically, this lesion generally consists of several blood-filled cavities separated by septa containing trabecular bone or osteoid tissue and osteoclastic giant cells. Giant cells are often found. According to Server et al., they differ from those observed in giant cell tumors (smaller cells and fewer nuclei). Their presence confirms the active nature of the tumor [10].

Although it is a benign tumor, aneurysmal cysts in bone have the potential to be locally aggressive, which can be significant depending on the anatomical location. The standard treatment is surgical removal of the lesion followed by bone reconstruction. Results are excellent, with a low rate of recurrence [11].

Other therapeutic alternatives have been proposed for the management of aneurysmal cysts in bone, such as radiotherapy, percutaneous treatment by intralesional injection of a sclerosing solution under radiological control, and selective preoperative arterial embolization for large lesions or those inaccessible to surgery. Improvement is incomplete and there is a significant risk of hemorrhage [6].

Conclusion

Aneurysmal bone cyst of the rib is a rare benign tumor with a non-specific clinical presentation. It presents a differential diagnosis with other chest wall tumors. Because of the clinical and radiological similarities of this entity with malignant tumors of the bone, its complete excision represents the best diagnostic and therapeutic approach. The prognosis is good.

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