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CASE REPORT

Aneurysmal Bone Cyst of the Twelfth Rib: A Case Report

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ABSTRACT
Benign tumors of the chest wall are rare. Aneurysmal bone cyst is a benign tumor of the skeleton system which mainly develops at the level of the long bones and the vertebrae, and rarely at the rib level. We present a case of a 17-year-old young female with no medical history who presents a mass at the right basal level of the chest wall. The CT scan shows a multiloculated mass at the level of the twelfth ribs, by an elective incision the tumor was resected. The histology was in favor of an aneurysmal bone cyst.
KEYWORDS: Chest wall tumors - Aneurysmal bone cyst – Ribs.

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INTRODUCTION

Aneurysmal bone cyst (ABC) is a benign bone tumor, described for the first time by Jaffe and Lichtenstein in 1942, is an uncommon lesion of the bones represented only 1.3% for all bone tumors and is located mainly in the long bones and the vertebrae, costal localization is extremely rare (1). We present a rare case of ABC involving the 12th rib in a young woman.

CASE REPORT

We report a 17-year-old woman, with no previous history of thoracic trauma nor fever, presenting a right thoracic mass gradually increasing in volume for one year. Her physical examination found a right basal thoracic mass without inflammatory signs. The laboratory assessment was normal. Thoracoabdominal Computed Tomography (CT) showed an exophtic, multiloculated mass in the middle part on the twelfth rib enhanced after injection of contrast product measuring 63*47*43 mm pushing back the rectus abdominis muscle (figure 1). The CT-guided biopsy came back inconclusive. By an elective incision, the mass was resected en bloc with respect for the healthy margins (figure 2), no invasion of the retroperitoneum was visualized, and a bilateral surgical grid was placed. Patient was discharged day 5 after operation. Histopathological examination shows a tumoral proliferation comprising numerous aneurysmatic cystic formations with hemorrhagic contents arranged on a fibrous background, sheltering a few multinucleated giant cells as well as numerous foci of ossification (figure 3). The final diagnosis was aneurysmal bone cyst. She has been followed up for two years with no signs of recurrence.

DISCUSSION

ABC is a benign tumor representing only 1.3 % for all bone tumours; Rib localization remains rare (1,2), ABC can be located on all ribs but the location at the level of the last 3 ribs is extremely rare, to our knowledge this is the first described case of an ABC of the twelfth rib.

ABC is a tumor whose etiology is still controversial, according to the vascular theory the tumor is caused by the presence of a circulatory disorder responsible for an increase in blood pressure which causes the formation of a mass with cavities filled with blood, in the other hand others suggested the preexisting of a bone tumor as giant cell tumor the most common, fibrous dysplasia or non-ossifying fibroma (2,3).

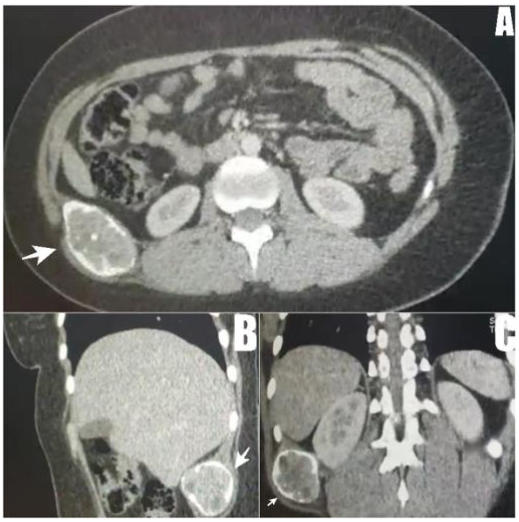

Figure 1: A, B, C : Computed tomography of the chest showing a multiloculated exophytic mass arising from the right 12th rib.

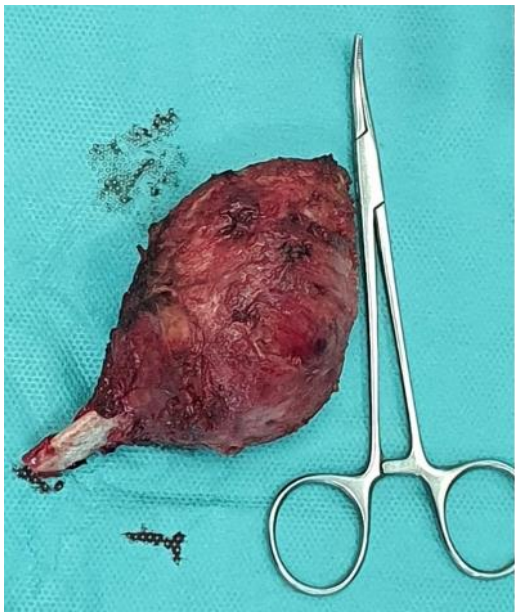

Figure 2: Macroscopic appearance of the mass.

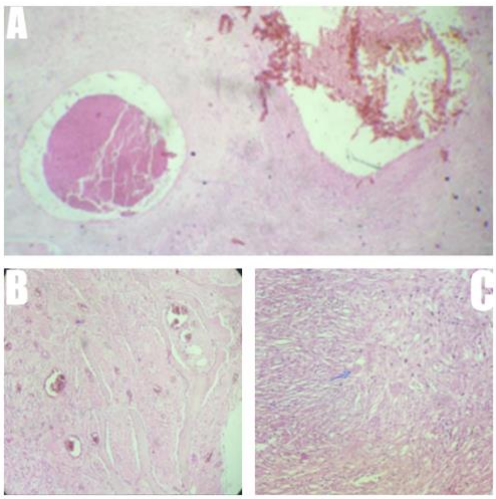

Figure 3 : A: microscopic image of an aneurysmal cyst made up of cavities filled with blood and separated by fibrous septa. B: Reactinal osteogenesis made up of bony trabeculae surrounded by regular osteoblasts. (HE low magnification) C- Fibrous sptas include fibroblasts, inflammatory mononuclear cells and giant cells (arrow) (HE Medium magnification).

ABC is found especially in young age group (our case is in this category), without any gender predilection, the symptomology is nonspecific can be asymptomatic or symptomatic with the presence of chest pain, chest mass ,dyspnoea , paraplegia , or pathological fractures(4–6). The physical examination may be unremarkable in case of tumor with intrathoracic extension(1) or showing a tissue mass without inflammatory signs like our case(2). CT remains the gold standard, it allows the extension of the tumor to be assessed and shows the typical appearance of the tumor, which is characterized by the presence of an excentric, lytic, destructive, multilocular type surrounded by a thin subperiosteal shell (soap bubble or honeycomb appearance).

Macroscopically, the tumor is well defined, consisting of multiple cavities containing or not blood and separated by tan-white, gritty septa. Histologically, the cavities of the aneurysmal cyst are devoid of any lining and are filled with blood. They are separated by fibrous septa containing fibroblasts, an inflammatory infiltrate made up of mononuclear cells and giant osteoclastic cells. We can note the presence of immature reaction osteogenesis made up of a network of osteoids or more frequently of mature bone tissue bordered by a clearly visible border of osteoblasts (7).

The differential diagnosis of ABC will include giant cell tumor, plasmacytoma, chondrosarcoma, ewing sarcoma, and eosinophilic granuloma, among others. But the main differential diagnosis of aneurysmal cyst is telangiectatic osteosarcoma, the main elements to look for in favor of osteosarcoma are the presence of atypical mitoses and a more atypical osteoid matrix (7).

The treatment of choice for ABC is essentially surgery with total excision of the tumor either through an elective incision or thoracotomy. Radiation therapy and selective arterial embolization can be used when the tumor is unresectable because of the site or the size or inoperability of the patient. Recurrences were noted in case of incomplete excision (5,6).

CONCLUSION

ABC of the ribs is a very rare benign bone tumor with a good prognosis, how should be considered as differentiel diagnosis of rib tumors, especially in young patients. The diagnosis is based on histopathological examination and radiological characteristics. The treatment is essentially surgical, but other therapeutic alternatives are possible for inoperable cases.

COMPETING INTERESTS

The authors declare no competing interests with this case.

AUTHORS' CONTRIBUTIONS

The participation of each author corresponds to the criteria of authorship and contributorship emphasized in the Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly work in Medical Journals of the International Committee of Medical Journal Editors. Indeed, all the authors have actively participated in the redaction, the revision of the manuscript, and provided approval for this final revised version.

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