Rib Haemangioma: A Rare Differential for Rib Tumours

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Abstract Haemangiomas account for approximately 1% of all bone tumours and commonly involve the skull and the vertebrae Dorfman et al. (Human Pathol 2:349–376, 1971). Rare costal originated haemangiomas have been reported as a case report in literature Clements et al. (Am Surgeon 64:1027–1029, 1998), Filosso et al. (J Cardiovasc Surg 36:97–98, 1995). We report a case of 26 years old female presenting with haemangioma of the eighth rib (right). And conclude that haemangiomas should be included in the differential diagnoses of an osteolytic and expansile lesion of the ribs on radiology, especially in asymptomatic or mildly symptomatic patients.

Keywords Haemangioma · Rib · Costal · Tumour

Introduction

Haemangiomas account for approximately 1% of all bone tumours and commonly involve the skull and the vertebrae [1]. Rare costal originated haemangiomas have been reported as a

case report in literature [2, 3]. We report a case of 26 years old female presenting with haemangioma of the eighth rib (right).

Case Report

A 26 year old female presented with pain and swelling in the right paraspinal region for last six years. Examination showed a well defined, ovoid, smooth surfaced, hard and tender swelling of size 3×5 cm in the right paraspinal region of lower rib cage. The patient had no history of chest trauma or fracture of the ribs.

Laboratory investigation values were within normal range. Chest roentgenogram on antero-posterior view revealed a well defined expansile lesion in the right paracardiac region with delicate loculations and coarse trabecular pattern arising from the eighth rib. The mass was located posteriorly on lateral chest roentgenogram. Plain CT scan of the chest confirmed the origin of the mass from the posterior end of the eighth rib. It showed an osteolytic eccentric expansile lesion with trabeculations and thinning of cortex, measuring 6.5×3×4.5 cm with poorly defined margins. No evidence of invasion into the surrounding structures was seen (Fig. 1).

A diagnosis of rib haemangioma was made and the patient was taken up for its surgical excision through a postero-lateral thoracotomy approach. Gross appearance of the tumor showed a red mass encasing the rib which on sectioning showed a sponge like appearance (Fig. 2). The whole rib along with surrounding soft tissue and seemingly involved part of the transverse process of vertebra were excised. Patient's post operative course was uneventful. Microscopy showed irregular, thin walled, dilated blood vessels containing RBCs and a diagnosis of cavernous haemangioma of the rib was made.

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Discussion

In some series bone haemangiomas account for approximately 1% of all osseous tumors [1]. Most of the cases occur in the vertebral body or skull. Involvement of rib [2, 3] and soft tissues of the chest wall [4] has only rarely been reported. Bone haemangiomas are mostly incidental findings seen in middle aged females. They have predilection for the metaphyseal/diaphysal region, but can involve the epiphysis across the joint space. Occasionally they may present with pain and swelling when associated with a pathological fracture [5].

The histopathological diagnosis of a haemangioma is not difficult in an *en bloc* specimen. However, diagnosis from biopsy or tissue curettage is challenging to the pathologist. This is due to the destructive nature of these procedures, disrupting thin-walled blood vessels and resulting in histological sections showing non-diagnostic empty spaces with scattered bone trabeculae. This causes hindrance in the pre-operative diagnosis of haemangioma by any invasive procedure [6]. Histologically, haemangiomas can be classified as cavernous, capillary, venous or mixed, depending on the type of vascular involvement [6]. Cavernous haemangioma is the most common type in the peripheral bones and accounts for up to 50% of all cases reported [6]. They are predominant in the medullary and the intracortical portion of the bone and are not yet reported in the subarticular epiphyseal bone. Pure capillary haemangioma accounts for 10% of all these types as reported in the literature [7]. The other varieties are rare. Haemangiomas are slow growing and malignant degeneration are virtually unknown.

Radiographically, a radiolucent, slightly expansile and well defined intraosseous lesion with a radiating trabecular pattern is highly suggestive of hemangioma for extraspinal sites [5]. CT or MRI are useful for assessing changes in bone trabeculae, and the results support the plain radiographic findings but provide greater detail.

Rib lesions entail a variety of differential diagnoses. Commonest non neoplastic bone tumor of thorax is fibrous dysplasia, although eosinophilic granuloma, giant cell tumor, and aneurysmal bone cyst may also occur [8]. Fibrous dysplasia presents as a painless, expanding, lytic area in ribs [8]. Solitary plasmacytoma is a rare tumor that is associated with latent systemic disease in the majority of affected patients. Plasmacytoma and multiple myeloma are typically seen as well-defined, punched-out lytic lesions with associated extrapleural soft-tissue masses, similar in appearance to most metastatic lesions [8]. Aneurysmal bone cysts occur as expansile lesions with well-defined inner margins on roentgenograms. CT is useful in delineating the size and location of the intraosseous and extraosseous components of the tumor. MR

Fig. 1 CECT chest image of the posterior part of eighth rib showing osteolytic eccentric expansile lesion having trabeculations and thinning of cortex

images typically show a lobulated or septated mass with a thin, well-defined rim of low signal intensity. Fluid levels are commonly seen in aneurysmal bone cysts [8]. Thoracic giant cell tumors often arise in subchondral regions of the flat and tubular bones of the chest wall. Plain radiographs of these tumors show eccentric osteolytic lesions accompanied by cortical thinning and expansion. CT allows evaluation of the extent of the tumor and its relationship to surrounding structures. Tumors typically have a long relaxation time at T1 and T2-weighted MR imaging and appear as areas of low signal intensity on T1-weighted images and high signal intensity on T2-weighted images [8].

In conclusion, haemangiomas should be included in the differential diagnoses of an osteolytic and expansile lesion of the ribs on radiology, especially in asymptomatic or mildly symptomatic patients.

Fig. 2 Showing the post operative specimen of the tumor and the attached rib segment which has been split open

However, the diagnosis can only be confirmed by histopathological examination. Surgical resection of the affected rib is the treatment of choice for hemangioma of the rib.

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