

Hydatid Cyst Of Rib - A Case Report

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Citation

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Abstract

Osseous hydatid disease is caused by the parasitic tapeworm Genus *Echinococcus*. Patients usually present with pain, swelling, or pathological fracture.

INTRODUCTION

Human echinococcosis is a zoonotic infection caused by *Echinococcus granulosus* [1]. Liver and lung are the sites affected primarily, with musculoskeletal affection in only 1–4% of the cases [3] and occur as an isolated finding. The diagnosis is made through the combined assessment of clinical, radiological and laboratory findings [4, 5]. The role of imaging in this condition is to distinguish it from aneurysmal bone cyst, giant cell tumour and metastasis so that appropriate surgical procedure can be performed to prevent anaphylactic shock, which may be a fatal complication of surgery.

CASE REPORT

A twenty-eight year old male patient presented with history of swelling in the left upper posterior abdominal wall. On examination lump was firm and immovable, indicating a thoracic wall lesion. Local part x-ray and Contrast enhanced CT scan were performed. Penetrated view for left lower ribs showed presence of a lobulated expansile lytic lesion involving the posterior aspect of left 12th rib (Fig.1).

{image:1}

Adjacent ribs were normal. On CT scan there was presence of a well defined multi loculated predominantly cystic density lesion with internal septations noted involving the posterior thoraco-abdominal wall on left side (Fig.2).

{image:2}

The lesion appeared to be arising from the posterior aspect of left 12th rib and had a large intraabdominal and a small component involving the posterior abdominal wall. The intraabdominal component extended in the left

retroperitoneum and the left kidney was displaced anteriorly (Fig.3).

{image:3}

Sagittal reconstruction images confirmed involvement of posterior aspect of left 12th rib (Fig 4).

{image:4}

The patient underwent surgical excision of 12th rib and on histopathology; radiological diagnosis of Hydatid cyst of rib was confirmed.

DISCUSSION

Human echinococcosis is a zoonotic infection caused by larval forms (metacystodes) of genus *Echinococcus* inhabiting the small intestine of carnivores [1]. Genus *Echinococcus* comprises of two species: *Echinococcus granulosus* and *Echinococcus multilocularis*. The former is the most common frequently encountered type of hydatid disease in humans. Osteohydatidosis is caused by the larva of *Echinococcus granulosus* which is usually transmitted from dogs and other carnivorous animals to man. Osteohydatidosis has typically a multiloculated appearance due to the solid structure and tensile nature of bone. The incidence of overall bone involvement in hydatid disease is 1–4% and involvement of the thoracic cage is uncommon [4]. Osseous involvement in hydatid disease is most commonly seen in the spine and pelvis, followed by the femur, tibia, humerus, skull and ribs [7, 8]. The exact incidence of rib echinococcosis is not known. In osteohydatidosis, absence of pericyst formation allows aggressive proliferation of the parasite along the lines of least resistance, especially along the bone canals [8]. The parasite growth gradually replaces the osseous tissues

between the trabeculae and eventually destroys the cortex to involve the surrounding tissues [8]. The natural course of costal echinococcosis starts when the larvae lodge in the rib and buds start vegetating out of the mother cyst to produce a multilocular cavity with diverticular extensions. This process invades the spongiosa of the bone in all possible directions. The primary rib lesion is multiloculated and osteolytic which continues to grow slowly. This lesion may then involve adjacent organs such as vertebra, pleura and soft tissues.

The posterior ends of the ribs are most commonly involved in costal echinococcosis. Cysts grow along the long axis of the rib causing expansion of the cortex where it meets more resistance from the solid cortical portion of the rib [5, 6].

Costal echinococcosis may be classified as an intraosseous form and an extraosseous form. The intraosseous form may be further classified into a solitary costal form and a costovertebral form. The solitary costal form represents an area of multiloculated rib destruction without periosteal reaction or

soft tissue swelling. This lesion is not self limiting but gradually grows in all directions. The costovertebral form is an extension of the disease process into the adjacent vertebra. In many cases the disease involves the spine primarily and the disease extends into the neighbouring rib and costal cartilage. This form is frequently associated with paraspinal soft tissue swelling. The extraosseous form is secondary, which involves the rib by contiguity [6]. The mechanism of involvement is by pressure erosion of the rib(s). Sclerosis of the neighbouring segment of eroded rib(s) is seen in this form [6]. The extra osseous form is most commonly seen due to rupture of pulmonary cyst, either spontaneously or during surgery. Plain radiographs of costal echinococcosis shows an area of multiloculated rib destruction without periosteal reaction or soft tissue swelling. The rib is expanded with preservation of the cortical margins and absence of sclerosis, but when present, it is suggestive of secondary infection [6]. Pathological fracture of the rib may also occur. The rib lesion may extend further to involve the adjacent vertebra. Plain radiograph may show soft tissue calcification in up to 38% of patients. The appearance of calcification may depend on duration of the disease and its clinical course. Calcification represents dystrophic changes in dead parasites. Intraosseous disease rarely demonstrates calcification whereas extraosseous cysts may calcify [8].

CT scan provides the precise anatomical details of the lesion

along with bone destruction and definition of paraspinal and intraspinal extension of the same. Lesions of echinococcosis generally do not enhance following contrast administration. Delineation of intraspinal extension is also possible with computer assisted myelography although MR scores over CT in this regard. MR is helpful in verifying the extent of the disease, texture of the cyst, degree of medullary involvement and viability of cyst.

On T1 weighted images, there is a mixed morphological appearance. High signal intensity content of the cyst may correlate with high cell or protein content which is suggestive of extensive parasite–host reaction [1]. Daughter cysts are more hypointense than the parent cyst on T₁ weighted images. The cyst wall or capsule is seen as a low intensity rim, which shows mild enhancement following intravenous gadolinium.

On T₂ weighted imaging the daughter cysts are of slightly higher signal intensity than the parent cyst. Signal intensities may change with coexisting infection, calcification or haemorrhage. The T₂ weighted sequence indicates whether a cyst is viable or not. A decrease in hyperintensity and an increase in hypointensity from collapsed cyst wall is suggestive of succumbed cyst. Both CT and MR may show endovesicular daughter cysts, which are frequently observed in hepatic disease but are rare in musculoskeletal manifestations of this disease [1].

The differential diagnosis of such a radiographic picture includes giant cell tumour, osteolytic metastases, plasmacytomas, aneurysmal bone cyst and cystic neurofibromas [6].

Biopsy is contraindicated in echinococcosis due to fear of dissemination of scolices and other potentially fatal complications [6]. However, review of recent literature suggests that aspiration cytology is the procedure of choice in suspected cases of skeletal echinococcosis [2].

The gold standard in the therapy of this disease is the radical resection of the rib(s) involved. It has been proposed that better results are obtained by combining surgery with antihelminthic drugs like mebendazole or albendazole for a period of 3 months should be considered [1]. However there are sporadic case reports of percutaneous aspiration of these cysts using ultrasound or CT guidance with pre-medication with albendazole. In cases of osseous hydatidosis, even after radical removal of the parasites, the World Health Organization (WHO) suggests adjuvant chemotherapy with

mebendazole or albendazole for at least 2 years after surgery. In cases where only a palliative treatment is possible, the antihelminthic drug administration can be continuous.

To conclude, Computed tomography (CT) is still the best method for diagnosis and post therapy follow-up of osseous hydatidosis. On CT, skeletal cystic hydatidosis appears as one or several closely related, well-defined, osteolytic lesions. There may be bone expansion, cortical thinning, cortical destruction, sclerosis, honeycomb appearance, and extension into adjacent soft tissues as depicted in the case above.

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