Hydatid cyst of bone

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Abstract

Hydatid disease is an extremely uncommon differential diagnosis in the cystic/lytic lesions of bone. We present a rare case of echinococcal infection of femur which presented as pathological fracture in a middle-aged female and diagnosis was confirmed by histopathology. Hydatid disease of bone is often asymptomatic, and its diagnosis is usually made when lesions have become extensive.

Key words: Echinococcal infection, lamellated eosinophilic membranous structure, tender coconut like

Introduction

Hydatid disease is a rare anthropozoonosis that seldom affects bone. A combination of clinical history, imaging findings and serological tests are diagnostic of Hydatid disease. However, histopathological examination is gold standard. Early diagnosis is uncommon and usually present at an advanced stage of the disease such as pathological fracture. Therefore, management is difficult and recurrence is common.

Case Report

A 52 year old woman was admitted in the Dept. of Orthopaedics, Govt. Medical College, Kottayam, with difficulty to walk following an accidental trivial fall. She had dull aching pain in right thigh. Radiographs revealed fracture with suspicious lytic lesion in the shaft of right femur [Figure 1]. Lab investigation revealed normal hemoglobin, total and differential leukocyte count, ultrasonography of abdomen and chest X ray. Clinician proceeded with right upper tibial traction, interlocking, nailing of right femur and biopsy from the lytic lesion in the shaft of right femur. Provisional clinical diagnosis considered were primary malignancy of bone or metastasis from elsewhere. Curettage from surrounding soft tissue and bone, nibbled from fracture site was submitted for histopathological examination in the Dept. of Pathology, Govt. Medical College, Kottayam. While examining the specimen, we could identify a few whitish tender coconut like membranous fragments along with bony tissue and adjacent soft tissue [Figure 2]. Wet preparation from scrapings of whitish membranous structures showed a few scolecis with suckers and hooklets of echinococcus granulosus [Figure 3]. Histopathology of soft tissue curetting and bone nibbled from fracture site showed lamellated linear eosinophilic anucleated membranous structures [Figure 4]
and cortical bone tissue with surrounding granuloma formation and chronic inflammatory reaction. Scolices of echinococcus granulosus were seen occasionally near the lamellated structures. With these findings, a diagnosis of hydatid cyst of bone with pathological fracture was made. No lesions detected in any other organ by imaging. There was no history of anaphylactic reaction following fracture. Post operative period was uneventful and discharged on appropriate anti helminthic therapy. This case was under follow up for 1 year, and complicated by non union of fracture. The patient might have contracted the disease by close contact with her pet dog or by ingestion of water contaminated by eggs.

Discussion

Hippocrates and Aretaeus were clinically familiar with hydatid disease. The knowledge of evolution of stage of the parasite has been greatly advanced by Deve and Dew. Hydatid disease is a parasitic infestation produced in the intermediate host like man, sheep or cattle by the tapeworm Echinococcus. Genus Echinococcus has different species including Echinococcus vogeli, Echinococcus granulosus and Echinococcus multilocularis. Echinococcus granulosus is the most common cause of hydatid disease in humans. Infection by this parasite is endemic in temperate region than of tropics. The disease is spread when food or water that contains the eggs of the parasite is eaten or by close contact with an infected animal.

Developing countries with poor hygiene, where sheep and cattle are raised are high-risk areas of acquiring this disease. The extent of its prevalence in animals is not known. In India, highest prevalence is reported from Andhra Pradesh and Tamil Nadu, but rare in Kerala.

In India, G1 and G5 (cattle strain) strain of E. granulosus have been frequently associated. G2 genotype (Tasmanian sheep strain) in buffalo has been reported from India. Humans acquire primary infection by ingestion of E. granulosus eggs excreted by infected carnivores. The infection may be acquired by contact with infected definitive hosts, egg-containing faeces or egg-contaminated

Figure 1: X ray Femur – Fracture with lytic lesion in diaphysis

Figure 2: Tender coconut like membranous fragments and bony tissue

Figure 3: Wet preparation- scolex with suckers and hooklets

Figure 4: Lamellated eosinophilic membranous structures and bone tissue
plants or soil, followed by direct hand-to-mouth transfer. Dog ownership has not been found to be a risk factor in seropositive individuals, indicating an indirect contact with dog faeces in the environment. Eggs can also be ingested with vegetables, salads, uncooked fruits, drinking water and other plants that become contaminated. Farming and female sex are risk factors in an Indian study.[2] Liver and lung are the commonest sites affected, as they act as first and second filters respectively.[3] Only 1% of the disease affects bone. Common sites are ribs, vertebrae and upper end of long bones such as femur, humerus and tibia. In the long bone, primary cyst may start either in the diaphysis or in the metaphysis giving rise to a multi-locular cyst causing scalloping of the cortex but with little expansion, sclerosis or periosteal reaction. If the cortex is eroded, soft tissue is involved. Calcification occurs in the latter, which is typical of the lesion. The articular surface is never breached. The periosteum and articular cartilage usually offers some resistance to extension of cyst.[4] Progression of the disease takes place in two forms: Formation of diverticuli and exogenous vesiculation. Potential complications include pathological fracture, infection and fistulisation of the abscess. In bone, the lamellated layer of hydatid cyst is poorly developed and lesion migrates like a metastatic growth along the canaliciuli of bone.[5-7] The clinical manifestations of bone hydatid disease may take 10–20 years to become obvious. Secondary infection plays an important role in killing the hydatid parasite. Pathological fracture of long bone due to primary hydatid cyst is usually complicated by localized secondary echinococcosis, non-union, sinus formation and sometimes grave anaphylactic reaction.

Conclusion

The hydatid disease of bone should be considered as a differential diagnosis in osteolytic lesion in long bone, though it is rare. Presence of tender coconut-like membranous structures in the osteolytic area is classical of echinococcal infection. This highlights the importance of proper macroscopic examination of the specimen even though only microscopic examination can confirm the diagnosis.

Acknowledgement

Department of Orthopaedics, Government medical college, Kottayam.

References