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Human hydatid disease and its effect on bones and joints: edital

Abstract

In this short note, we present general information on Echinococcus granulosus and its impact on human health. Our objective is to alert physicians and health professionals to hydatid cyst locations in humans, with emphasis on bones and joints, and the necessity for special care before, during or after surgery. Effectively, opening of a hydatid cyst requires special care not to spill the contents into the peritoneal cavity or tissues, since this may result in an anaphylactic reaction to the spilt fluid or in dissemination and implantation of the immature scolices contained in the "sand" in the fluid. Incomplete removal of viable germinal epithelium from the liming of a hydatid cyst results in the formation of multiple cysts.

Keywords: hytadid cyst, hydatidosis, echinococcosis, hydatid cysts/locations in human

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General considerations

Hydatid disease is also known as hydatid cyst, hydatidosis and echinococcosis. This parasitic disease is caused by the development of the hydatid cyst (larval stage) of the dog tapeworm *Echinococcus granulosus* in human tissues, which occurs most frequently in the liver, with the lungs as the other common site. As the dog is the definitive host and sheep and goats are among the common intermediate hosts, most of the humans affected are closely involved with these animals. Humans acquire their infections when their hands or food become contaminated with eggs from dog faces. After ingestion the egg hatches and the embryo bores into the gut wall and is carried by the blood stream to the liver or some other organ. There it develops in the course of a few years into a fluid-filled hydatid cyst, which after 10 years or so may have a capacity of several litres.

Hydatid cysts in human

On rare occasions hydatid cysts develop within the medullary canals of long bones. They are often asymptomatic and unsuspected, but they can be detected by radiography. Cyst enlargement is limited by the surrounding bone, but this may be weakened by the constant pressure and is then liable to fracture. The diagnose of hydatid disease can be confirmed radiologically, by ultrasound or by immunological tests. Human infection with the larval stages of *E. granulosus* is accidental. The cycle of infection normally occurs between sheep (or goats, cattle, or horses) and dogs (or other carnivores). The adults are small, live in the gut of the dog and each one comprising a scolex and usually three segments. Their eggs are released from the terminal gravid segments and are passed in the faeces. They give rise to larval stages in the viscera of the intermediate hosts (sheep, etc) when the eggs are ingested. The larva grows steadily until it frequently becomes a substantial hydatid cyst (5-20 cm in diameter). The cyst is filled with fluid, and is lined with germinal epithelium that produces groups of young scolices inside it. If these scolices are eating by a carnivore they grow into adult worms in its gut.

Human hydatid infection in which human becomes the intermediate host is found mostly in people closely involved with sheep rearing (e.g. shepherds and dog handlers) and to a lesser extent in those working with goats, camels and horses. Infection in the dog is maintained by scavenging carcases of infected sheep. Hydatid cysts are the larval stage of the tapeworm *E. granulosus* and may occur in the brain. These cysts are enclosed in well-defined capsules which are partly of host and partly of parasite origin. Tapeworm cysts in the brain are relatively rare, probably occurring in not more than 5% of the cases of infection with this parasite. The embryos develop slowly into fluid-filled cysts. *E. granulosus* cysts elsewhere in the body may contain several litres of fluid after a number of years, but such unrestrictive growth is impossible in the brain.

Bearing in mind the location of the hydatid cyst we show next that it can be very variable, according to reports by several authors.

In,[1] the authors conclude that: (i) *E. granulosus* can affect any organ in the body from head to toe; (ii) a high suspicion of the disease is justified in endemic regions. Between the different locations of hydatid cyst reported by several authors, we emphasize:[2] a case (a twenty-six-year-old man) of primary musculoskeletal hydatid disease involving the femur and adjacent muscles with imaging findings on plan radiographs, US and CT. Confirmation was done by surgical exploration;[3] in a total of 41 patients with bone cystic echinococcosis, the spine was the most commonly involved skeletal site (55.8%), following by the femur (18.6%), pelvis (13.9%), humerus (7.0%), rib (2.3%), and tibia (2.3%). Some patients demonstrated complications such as paraplegia (22.0%) pathologic fracture (48.8%), and scoliosis (9.8%). The pathological fracture most frequently affected the spine (75.0%) followed by the femur (20.0%) and tibia (5.0%);[4] 50-year-old man with primary hydatidosis of the femur, which had been complicated by an extraosseous involvement, cortical erosion and a pathological fracture.[5] patient with hydatid disease of the left femur;[6] 55-years-old male who was a known case of hydatid disease of the tibia and distal femur presented with gradual onset of right hip pain which made him bed ridden, serological test proved the infection, magnetic resonance imaging showed heavy infection of the proximal femur;[7] In a 27-years-old female with right buttock pain and sciatica, plain radiographs, computed tomography, and magnetic resonance imaging scans revealed destructive expansive lesion located of the right sacrum and extended through the right sacroiliac joint. Surgical curettage of the lesion was performed histopathology examination confirmed hydatid cyst.[8] "The radiographic features of hydatid disease of bone have been reviewed in 16 Kuwaiti patients, the majority of the lesions were in the lower limb or pelvis, and the commonest presentation was with a pathological fracture".[9] The authors present

"a detailed review on hydatidosis of the bony skeleton particularly of patients who normally seek medical attention late.

Final conclusion

In[1] we have a good article concerning hydatid disease in a general context. In it we can read: (i) hydatid disease is a dynamic entity with varying imaging appearances; (ii) It can arise in any part of the body the bloodstream reaches; (iii) familiarity with imaging findings, especially in patients living in countries where this disease is endemic, provides important advantages in making the diagnosis; (iv) despite the characteristic imaging finding, hydatid disease in unusual anatomic locations may make differential diagnosis difficult , even in patients from endemic regions; (v) however, hydatid cyst should be kept in mind when a cystic lesion is encountered anywhere in the in the body.

The diagnosis of hydatid disease can be confirmed radiologically, by ultrasound or by immunological tests. Surgery in patients with hydatid cysts needs of special care before, during or after surgery. Effectively, opening of a hydatid cyst requires special care not to spill the contents into the peritoneal cavity or tissues, since this may result in an anaphylactic reaction to the spilt fluid or in dissemination and implantation of the immature scolices contained in the "sand" in the fluid. Incomplete removal of viable germinal epithelium from the liming of a hydatid cyst results in the formation of multiple cysts.

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Conflicts of interest

The author declares there are no conflicts of interest.

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