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Review Article

Hydatid disease of liver and disseminated hydatidosis: anatomical, microbiological and radiological perspective

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ABSTRACT

The article underlies the geographic locations of the disease as the disease is not uniformly distributed and is common in certain parts of the world and rare in other parts. The article tries to summarize the microbiological aspects along with the anatomical and surgical perspectives for in depth knowledge and reasons for spread of disease. The photographs indicate the radiological spectrum of the disease in line with the text.

Keywords: Hydatid, Cyst, Liver, Alveolar, Cholangiopancreatography

INTRODUCTION

Hydatid disease is not a rarity in northern states of India. In the state of Jammu and Kashmir cases of hydatid disease of liver are infrequently seen. Dissemination of the disease occurs very rarely. A series of cases in the tertiary care hospital of SKIMS were reported. The brief overview of the disease along with the radiographs of patients are presented in this topic.

MICROBIOLOGICAL ASPECTS

Hydatid disease is an infection due to the larval or cyst stage of infection by the tapeworm Echinococcus granulosus, which lives in the dog.[1]

Two species are responsible for two distinct clinical presentations, Echinococcus granulosus (cystic hydatid)[2] and the more malignant E. multilocularis (alveolar hydatid).

It is found that in most of the cases the humans, sheep, and cattle are intermediate hosts. The dog is infected by eating the viscera of sheep that contain hydatid cysts. Dogs, wolves, dingoes, jackals, coyotes, and foxes are hosts to the small adult worms composed of two to six proglottids. These have scolices which are armed with a double row of 35-40 hooks. Eggs from adult worms are passed in stool and contaminate the soil and water, as well as the coat of the dogs themselves. Scolices, contained in the cysts, adhere to the small intestine of the dog and become adult taenia, which attach to the intestinal wall. The infected ova-containing feces of the dog contaminate grass and farmland, and the ova are ingested by sheep, pigs, and humans. The ova have chitinous envelopes that are dissolved by gastric juice. The liberated ovum burrows through the intestinal mucosa and is carried by the portal vein to the liver, where it develops into an adult cyst. Most cysts are caught in the hepatic sinusoids, and 70% of hydatid cysts form in the liver. A few ova pass through the liver and are held up in the pulmonary capillary bed or enter the systemic circulation, forming cysts in the lung, spleen, brain, or bones. Disseminated disease can occur with the distribution of these cysts in almost any organ.

Hydatid disease is most common in sheep-raising areas, where dogs have access to infected offal. These include South Australia, New Zealand, Africa, Greece, Spain, and the Middle East. The disease is uncommon in Britain.

E. granulosus thrives in environments as diverse as arctic tundra and the deserts of North Africa. Wherever animals are herded by humans with the help of dogs, there is potential for transmission of this parasite. Cysts have been detected in up to 10% of the population in Northern Kenya and Western China. Transmission of E. multilocularis[3] occurs primarily in temperate climates of Northern Europe, Siberia, Turkey, and China. There is also an extensive area of transmission in Alaska, Canada, and the central United States as far south as the state of Nebraska. A separate species (E. vogeli) causes polycystic disease similar to alveolar hydatidosis in South America.

Hydatid cysts commonly involve the right lobe of the liver, usually the anterior-inferior segment. The uncomplicated cyst may be silent and found only at autopsy or incidentally. Occasionally, the affected patient presents with dull right upper quadrant pain or abdominal distention. Cysts may become secondarily infected, involve other organs, or even rupture, which leads to an allergic or anaphylactic reaction with fatal consequences

Many cysts never become symptomatic and regress spontaneously. Those that become symptomatic have relatively nonspecific symptoms early on. Later, there is increased abdominal girth, hepatomegaly, a palpable mass, vomiting, or abdominal pain. The more serious complications, however, are due to compression of adjacent structures, spillage of cyst contents, and location of cysts in sensitive areas such as the reproductive tract, brain, and bone. [3]Jaundice due to cystic hydatid is rare. Though the majority of cysts occur in the liver, the second most common site is the lungs, where cysts produce chest pain, coughing, or hemoptysis.[4] Bone cysts may cause pathologic fractures, and in the genitourinary system they can produce hematuria or infertility.

In alveolar hydatid disease, cyst tissue continues to proliferate and may separate and metastasize distantly. The proliferating mass sufficiently compromises hepatic tissue or the biliary system to cause progressive obstructive jaundice and hepatic failure.

The humans are infected only with the intermediate stage of Echinococcus species, the parasite cannot be recovered from an easily accessible body fluid.

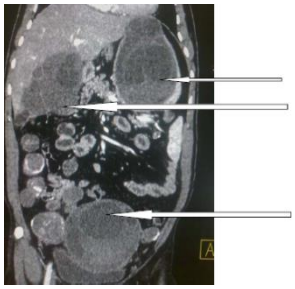
Subcutaneous nodules, hepatomegaly, or a palpable mass may present on physical examination. Ultrasound has proven a very valuable tool in the diagnosis of hydatid disease. Alveolar disease is less cystic in appearance and resembles a diffuse but solid tumor.

The CT scan findings are similar to those of ultrasound and can at times be useful in distinguishing alveolar from cystic hydatid in areas where both occur.

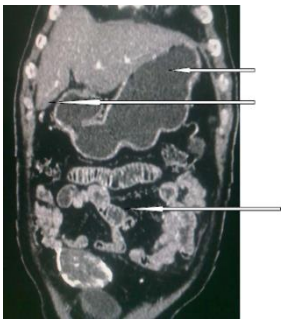
Approximately 70-80% of these hydatid cysts are initially single and in the right lobe. The most common presenting symptoms or signs are abdominal pain and palpation of a mass in the right upper quadrant. The cysts are usually greater than 5 cm. in diameter when they cause symptoms. The complications of echinococcal cysts include infection, rupture, anaphylaxis, biliary obstruction, and liver replacement. The patient may have eosinophilia and mildly elevated results of liver function tests.[5]

Of the serologic tests, the indirect hemagglutination test and the Casoni skin test have approximately an 85% sensitivity.

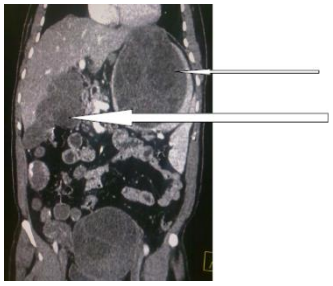
The complement fixation test has approximately 70% sensitivity. Calcification of the cystic wall is present in over half the patients. Liver scan, ultrasonography, CT, and arteriography all can have nearly 100% sensitivity.[6] Modified techniques such as Endoscopic retrograde cholangiopancreatography and cholangiography have been reported to be helpful occasionally. The finding of daughter cysts or hydatid sand on ultrasonography and CT helps differentiate this cyst from pyogenic or amebic liver abscess. It is important to distinguish this entity must be suspected to avoid percutaneous needle aspiration, which may cause spillage and spread of the cysts. Treatment is primarily surgical.



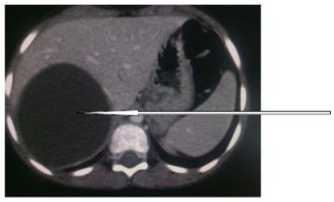
Radiology of hydatid cyst liver and disseminated hydatidosis.



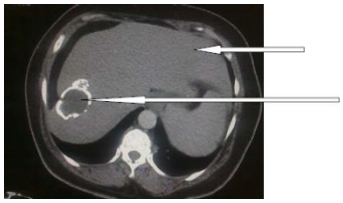
Hydatid cysts in liver, spleen and intestines.



Hydatid cysts in liver, spleen.



Hydatid cyst in liver.



Calcification in hepatic hydatid cyst.

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