

Case Report

Hydatid Cyst in Mesentery: Rare and Unusual Site of Occurrence

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ABSTRACT

Background: Hydatid disease (HD) is zoonotic and infectious disease caused by *Echinococcus granulosus*. *Echinococcus*, a tapeworm belonging to the family *Taeniidae* and genus *Echinococcus*, has four species, the commonest being *E. granulosus*. *E. granulosus* frequently causes cystic disease that mainly affects liver and lung but any organ can be involved. Infection of mesentery and peritoneum is very rare and unusual. When it presents as cystic disease of mesentery or peritoneum, it poses diagnostic challenges since the differential diagnosis includes many other varied congenital and malformative cystic conditions.

Case report: The case presented here pertains to a 46-year-old woman who presented with a mass in the abdomen. Diagnostic image screening studies revealed a cystic lesion that extended from epigastric region to sigmoid colon. It did not arise from ovarian or other adnexal structures. Patient had eosinophilic leukocytosis. Surgical excision and subsequent histopathological examination revealed it to be hydatid cyst of mesentery, a rare kind of presentation of Echinococcosis and hence finds its place here as a rare and interesting case of mesenteric cyst.

Keywords: Hydatid cyst, *Echinococcus*, mesenteric cyst, peritoneal cyst, tape worm

INTRODUCTION

Hydatid cyst or cystic echinococcosis is infectious parasitic disease with its causative agent being *Echinococcus granulosus*.^[1,2]

EPIDEMIOLOGY

According to World Health Organization, *Echinococcus granulosus* infection is endemic in parts of South America, Eastern Europe, Russia, the Middle East, and China where the incidence is as high as 50 per 100,000-year. In certain areas of slaughter houses of South America the incidence is higher and varies from 20 percent to 95 percent.^[3] It is also endemic in New Zealand, Australia, Turkey, and Southern Europe and India in which it is more

prevalent in Andhra Pradesh, Tamil Nadu and Jammu and Kashmir.^[4]

The causative organism, a cestode belonging to the phylum platyhelminthes, measures around 3mm-6mm in length and 0.5 mm in breadth. *Echinococcus granulosus* has three or four proglottids and a scolex or head with four attached suckers and a double row of hooklets on the rostellum.^[5] *Echinococcus granulosus* thrives in the intestines of definitive hosts such as dog, wolf and other carnivorous wild animals. It attaches to the intestinal wall with the help of hooklets. The parasite matures within eight weeks, though it has an overall life span of five months. In eight weeks, the parasite matures and develops both male and female sex organs in the

proglottids. The eggs are deposited in the terminal proglottid which detaches and ruptures releasing eggs, each of which measure 25 microns in size, which are excreted out in the faeces. [3,5-6] The ova soil the vegetables, grass and even the fur of the excreting animals. When sheep, cattle, reindeer, moose, caribou, different variant of deer, elk, bison and rarely domestic hogs and the horse graze on the grass contaminated by eggs, they get infected and become intermediate hosts. When man consumes contaminated vegetables or contaminated water or soil or comes in contact with egg-bearing faecal matter of dogs and other domesticated animals, man gets infected and becomes accidental intermediate host. [3,5,6] The ingested egg is liberated after digestion of chitinous layer and the liberated egg is carried to the liver through portal circulation. Some of the eggs portal circulation and enter lungs and other organs. The egg develops into a vesicle lined on the outer side by a lining of cells known as germinal layer or endocyst. Germinal grows inwards and forms a cyst-like structure known as brood capsule, which forms a protoscolex with hooklets. The cystic structure is lined on the outside by a thick lamellated layer known as exocyst. The host tissue forms a thick fibrous tissue outside to the lamellated layer called pericyst. Sometimes, the endocyst or germinal layer grows inward to form a small cyst-like structure called brood capsule with protoscolex and hooklets and is lined by endocyst. It contains a clear alkaline fluid. When these brood capsules are surrounded by fully formed germinal layer and an outer fibrous tissue layer, they are known as daughter cysts. Often the daughter cysts detached themselves from the endocyst and undergo degenerative changes as amorphous material referred to as hydatid sand.

CASE REPORT

46-year-old female came to the tertiary care hospital with history of lump in abdomen since six months. The growth started in lower abdomen and then

progressed to grow upwards. No complaints of abdomen pain, vomiting and loose stools or constipation were present. Neither was there any history of jaundice or any history of urinary or menstrual complaints. Laboratory investigation revealed no remarkable findings except an elevated total white blood cell count of 14500 cells/cubic millimeter with eosinophilia. Absolute Eosinophil count (AEC) was 14464 cells/cubic millimetre which formed 16 percent of the total white blood cell country. Other clinical investigations such as Ultrasonography (USG) revealed a hypoechoic lump measuring 20x18x15cm in size within abdomen with internal echoes. Contrast-enhanced computed tomography (CECT) of abdomen showed a cystic mass, 21x20x11 cm in size, extending from epigastric region up to the fundus of gall bladder on one side and on the other side it extended inferiorly as mass with external solid nodule with calcification indenting the sigmoid colon. The mass was not arising from adnexal structures of the pelvic organs and therefore, any possibility of it being an adnexal tumor was ruled out. After surgical exploration and excision, the specimen was sent to histopathology section of the central laboratory of the tertiary care teaching hospital. On gross examination, the specimen consisted of multiple, friable soft to firm, grey-brown tissue pieces with the smallest piece measuring 4x3 cm and largest measuring 50x15 cm in size. Largest piece showed an area of grey-brown thickening at one end. On microscopic examination, the sections showed portions of cystic structure with irregular and slightly convoluted or undulating cyst wall. The cyst wall consisted of an outer layer of dense fibrous tissue showing areas of hyaline change. The inner layer of the cyst wall is lined by degenerated flat cells (endocyst) which formed few tiny rounded degenerated cystic structures lined by inconspicuous cells (daughter cysts). At places, the cystic cavity showed the presence of abundant partially calcified granular debris (hydatid sand). Also noted were few calcified spherules.

Occasional focal areas of necrosis of the cyst wall with partial calcification were seen. Depending on all these features the lesion was diagnosed as degenerated

inflammatory cyst with extensive areas of fibrosis suggestive of Echinococcal cyst (Hydatid cyst).



Figure no 1: Hydatid cyst excision during surgery



Figure no 2: Post-operative specimen received in pieces

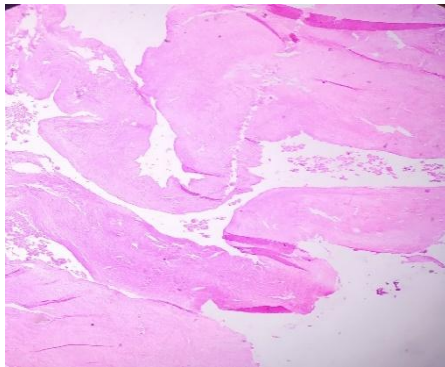


Figure no 3:
Photomicrograph shows convoluted cyst lining H and E, 10X

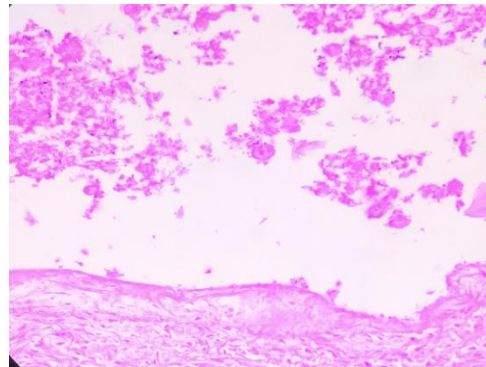


Figure no 4:
Photomicrograph showing degenerated daughter cysts scattered amidst debri (hydatid sand), H and E, 10X

DISCUSSION

Hydatid disease or Echinococcosis (or hydatidosis) is a parasitic disease caused by infection with *Echinococcus granulosus*. *E. granulosus* is a more frequent cause of hydatid disease in humans than *E. multilocularis*.^[5] *E. granulosus* is a 3-6 mm long and 0.5 mm wide tape worm which requires two hosts for completion of its life cycle.^[3] The carnivore animals like dogs, foxes, wolves are the definitive hosts and herbivores such as sheep, cattle, horses, camel are intermediate hosts who ingest the eggs. These eggs penetrate the intestinal mucosa, enter the portal circulation and are then trapped in liver and a few may escape into the systemic circulation. The life cycle is completed when the carnivores eat the infected offal of the intermediate host.

Human beings are the accidental hosts who get infected after consuming infected vegetables, chewing grass or contaminated water or soil or through contact with dog contaminated with egg-bearing faecal matter^[3,5,6] and thus become a dead end in the life cycle of *Echinococcus*. The diagnosis of hydatidosis of mesentery is aided by clinical investigative methods such as radiological examination including ultrasonography (USG), computed tomography (CT) and Medical Resonance imaging (MRI) studies with conclusive diagnosis hinted to by elevated Eosinophil count and serological detection of antibodies against echinococcal antigens carried out through Enzyme-linked immunosorbent Assay (ELISA), which could not be done in the present case as the patient had undergone exploratory

laparotomy for a huge mass extending epigastrium to the sigmoid colon. [3-10]

Primary hydatid disease of mesentery is very uncommon, and in the last 20 years barely 49 cases of hydatid cyst of mesentery, peritoneum and omentum have been reported in English medical literature. [1] Kushwaha J.K et al [7] also reported a case of primary mesenteric cyst. Sachar et al, [4] in their study of rare sites of hydatidosis reported a case of echinococcal cyst of omentum while Singh B.K [8] et al reported a case of mesenteric hydatid cyst, which is testimony of its rarity of occurrence inasmuch as 80-90 percent of hydatidosis in man is generally confined to liver and lungs. [4]

CONCLUSION

Hydatid disease is one of the common parasitic diseases and it can virtually occur in any organ or tissue of the body by virtue of the ova of the parasite gaining access to portal circulation and thereby systemic circulation through portocaval circulation. Hydatid disease of the mesentery is very rare with only few cases reported in English literature and hence, albeit being rare in occurrence, the case presented here is a significant admonisher that any cystic lesion of the mesentery should have hydatidosis as one of the differential diagnosis inasmuch as hydatid disease happens to be quite endemic in certain geographic areas of the world.

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