

Case Report

Pulmonary hydatid cyst in children

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ABSTRACT

Hydatidosis is a zoonotic parasitic disease with global existence caused by tapeworm of family Taeniidae and genus Echinococcus. It is transmitted by feco oral route or direct contact with dogs. A 7-year-old female was admitted with cough, fever, chest pain and history of contact with dog. Chest radiography showed round to oval mass with air fluid level while ultrasonography of thorax was suggestive of a large cystic lesion in right mid zone with dense moving echo and multiple hyper echoic foci with connected artifacts without calcification. Computerized tomography showed large cystic lesion containing fluid with air within it in right mid zone. Initially cystic aspiration followed by pericystectomy was done. Health education, hand washing practices, creating awareness and protection of intermediate host by vaccine will help to control the disease.

Keywords: Cystic echinococcosis, Echinococcus granulosus, Hydatid cyst, Pulmonary hydatidosis

INTRODUCTION

One of the major zoonotic disease worldwide in distribution and endemic in the Mediterranean countries, central Asia including Tibetan plateau, Australia, South America, Northern and Eastern Africa is Hydatid disease. In India, it is more prevalent in Andhra Pradesh and Tamilnadu.^{1,2} It is caused by the larval stage of parasite belonging to the family Taeniidae and genus Echinococcus. The disease is transmitted through ingestion of contaminated food with dog faeces or through direct contact with dog, with dogs being the primary host and human as accidental host. While liver is the most common site of involvement in adults, lung particularly right lower lobe is the most common site in children.³

Most of the children with pulmonary hydatidosis are discovered incidentally or may be symptomatic due to its location and size. Most of the studies reported cough, fever, chest pain, dyspnea and cough with mucopurulent

expectorant are the common symptoms.⁴⁻⁶ Here we describe a case of pulmonary hydatid cyst in children from the institute.

CASE REPORT

A 7-year-old female child, resident of nearby state of rural area, presented with cough with yellowish expectorant without blood or whitish grapes like material on and off since one-month duration. She had also recent onset moderate grade fever and chest pain in right hemithorax which was aggravated on respiratory movement. There was no history of loss of appetite/weight, jaundice or abdominal mass. Patient had similar complaint in past and received some medication. On examination, her PR-98/min, RR-28/min with mild respiratory distress and SPO₂ was 98% off oxygen supplementation. There were no stigmata of tuberculosis on general examination. Respiratory system examination revealed bulge on right mammary/inframammary region with dull note and decrease air entry on right hemithorax.

Peripheral blood finding revealed hemoglobin of 9.4 gm% with normal total leukocyte/ differential count and marginally elevated erythrocyte sedimentation rate. Tuberculin test was negative. Other routine tests including liver function test and renal function test was within normal limit. Chest radiography showed round to oval mass with air fluid level (Figure 1).



Figure 1: Round to oval cyst with air fluid level.

Ultrasonography of thorax was suggestive of a large cystic lesion in right mid zone with dense moving echo and multiple hyper echoic foci with connected artifacts without calcification. Abdominal ultrasound was within normal limit. Computerized tomography showed a large cystic lesion containing fluid within air in the right mid zone of size 12.1x9.1x11.1cm suggesting possibility of a lung abscess or hydatid cyst (Figure 2).



Figure 2: CT chest showed cystic mass.

Hence, with the above-mentioned clinical symptoms and radiological findings, the patient was taken up for surgery by pediatric surgeon. With right thoracic incision in left decubated position, initially cystic aspiration was done followed by 10% normal saline irrigation and pericystectomy was done. There was no bronchial communication. Post-operative period was uneventful. On gross examination there were multiple gray white irregular flaps like tissue pieces aggregating to size

6.5x4.5x1 cm with smooth grey white surface (Figure 3). Histopathological examination showed a continuous lamellated layer in the cyst wall; however germinal layer was not distinctly evident. A confirmed diagnosis of hydatid cyst was made.



Figure 3: Gross examination of cystic mass.

DISCUSSION

Hydatidosis is a zoonotic parasitic disease with a global existence. Larval stage of tapeworm of Taeniidae family of genus *Echinococcus* is responsible for the disease. Four species of *Echinococcus* have been recognized as a public health concern. *Echinococcus granulosus* is the most common species causing disease in humans while, *Echinococcus multilocularis* is the most virulent species causing alveolar disease. Other species *Echinococcus vogeli* and *Echinococcus oligarthrus* are responsible for polycystic disease.⁷ Carnivorous such as dogs and wolves are definitive host. Humans, being the intermediate host and dead end of the parasite, acquire infection via various routes, viz, feco oral route, ingestion of contaminated food or water, by feces of an infected host or through direct contact with dogs.⁸

Most of the cases of cystic *Echinococcus* are reported in adult as human infection occurs during childhood and adolescence. Children of all age groups are susceptible. Tantawy et al, reported that largest number (50%) of cases of hydatid cyst belonged to age groups of 2-6 years while Aslanabadi et al, observed average age of patient with hydatidosis was 7.93 ± 3.0 years in their study. In concurrence with trends in literature, our patient was a 7-year-old. Youngest patient of hydatid cyst has been reported in 6 month old infant by Jain et al.⁹

Pediatric hydatidosis is more common in boys compared to girls because of behavioral difference between both sexes with more exposure of boys, however Rao et al from same geographic area reported female predominance in their study while Bulent et al, revealed equal incidence in males and females.^{3-6,10,11}

Through, no organ is spared in hydatidosis, liver and lungs are most commonly involved. Liver involvement is more frequently evident in adult while lung is most common in children due to elasticity of organ. Right lower lobe with most common part affected in lung while Tatar et al, reported equal involvement of right lower and middle lobe and more cases (32.2%) with bilateral lung involvement are also reported.² Concomitant hepatic involvement is more common in adult than children. Clinical features of pulmonary hydatidosis are dependent on size and site of cyst. Cough, fever, chest pain, hemoptysis, dyspnea are the common symptoms reported by most of the authors.²⁻⁵ This case also had similar features.

Diagnosis of pulmonary hydatid cyst in endemic area is suspected based on the presence of pulmonary cyst with a history of exposure to dogs and sheeps. Routine investigation like peripheral blood eosinophilia and raised erythrocyte sedimentation rate are nonspecific. Radiological and serological investigations are the principal diagnostic modalities used to confirm the diagnosis of hydatid disease. Round to oval opacities of variable size on chest radiograph and various signs like water-lilly sign, air bubble sign, meniscus sign on CT chest indicates rupture of cyst. MRI is not superior to CT and hence is not done routinely. Though serological tests are useful in the primary diagnosis of hydatidosis, it's role is limited due to high false positive and negative results. To detect parasitic material on biopsy specimen and to assess the viability of parasite after chemotherapy, Echinococcus specific polymerase chain reaction test is useful.⁷

Though surgical intervention is the treatment of choice in pulmonary hydatidosis pharmacotherapy may also be useful in selected patients. Enucleation, pericystectomy, cystotomy with capitonnage, segmentectomy and lobectomy are the various surgical methods used in pulmonary hydatid cyst. In our case successful pericystectomy was performed.

CONCLUSION

A common presentation leading to the diagnosis of an uncommon disease is what has been highlighted in our case. The most important step in preventing this disease is by breaking the transmission cycle. The following measures can be used to control this disease - proper health education, hand washing practices, creating awareness and protection regarding intermediate host by vaccination.

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