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Hydatid Cyst in Lung- A Rare Case Report

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Abstract
Hydatid cyst is the cystic space occupying lesion caused by echinococcus .Cystic echinococcosis is a zoonosis caused by larval stage of E. granulosus .Other less common species are vogeli, oligarthrus, multilocularis. In adults cysts are more frequently in liver followed by lungs but in children lung is the predominating site .Pulmonary cystic echinococcosis (CE) is an incapacitating disease frequently found across a wide geographic range. The majority of children and adolescents with lung lesions are asymptomatic despite having lesions of impressive size. Symptoms mostly by mass effect which exerts pressure on the surrounding tissue. Here we document a case of hydatid cyst of lung who presented to our hospital with secondary bacterial pneumonia.
Keywords: *Hydatid cyst ,pulmonary cystic echinococcosis, zoonosis.*

Introduction

Human echinococcosis, also known as hydatid disease, is a zoonotic disease caused by the larval stage (metacestode) of the parasite belonging to the family *Taeniidae* and genus *Echinococcus*. *Echinococcus granulosus* causes cystic echinococcosis (CE) is the most common species to cause the human disease. Other less common species are *Echinococcus multilocularis*, vogeli, oligarthrus.[1]
Hydatid disease is a major zoonotic disease of significant public health and economic impact.[2]
CE is the most common presentation in human, contributing to more than 95%. Unlike an adult, lung involvement is more common than liver in the children, with frequencies of 64% and 28%, respectively [3]
Hydatid disease is mostly asymptomatic. The most common symptoms are: cough (53–62%), chest pain (49–91%), dyspnea (10–70%) and hemoptysis (12–21%). Other symptoms described less frequently include dyspnea, malaise, nausea, and vomiting and thoracic deformations.[4]
Lung tissue adjacent to a cyst is compressed and this may result in atelectasis. Cysts close to the pleural membranes can cause reactive inflammation, secondary bacterial infection.

Secondary lesions may develop if cyst contents are spilled to the surrounding tissues[5]

Most important complication is cyst rupture Another important complication is the infection of the cyst, manifesting as a pulmonary abscess with poorly defined margins(6)

CE is endemic in many parts of the world, particularly the Mediterranean countries, Central Asia including the Tibetan Plateau, Northern and Eastern Africa, Australia, and South America[7]

Global burden of the human CE is approximately 18,235 new cases per annum. The impact of the disease on a human has been assessed by the disability-adjusted life years (DALYs) and the economic impact.[8] The socioeconomic impact of CE is enormous, and the calculated global burden in terms of DALYs is 1009,662 when under-reporting was taken into account[9]

Case Presentation

A 6 yrs old female child, product of non-consanguineous marriage from low socioeco-nomic status presented to our hospital with fever and cough for 5 days not associated with running nose, loosestool, vomiting, hemoptysis. Patient had history of similar complaint 1 yr back for which child was diagnosed as pulmonary tuberculosis and completed a course of CAT-I ATT for 6 months with no default at periphery. Family and sibling history nothing suggestive. Child was neurodevelopementally normal and immunised as per age. O/E-child was conscious, oriented, afebrile, HR-86/min, RR-36/min, spo2-96% in room air. Anthropometric measurement was normal for the age. On head to toe examination no abnormality detected. No pallor, icterus, clubbing, cyanosis, lymphadenopathy, edema was found. On systemic examination resp:- inspection-RR-36/min, trachea appears to be in central position, no chest deformity, No precordial bulge, no engorged neck veins, no visible pulsations was found. On palpation-trachea central in position, apex beat at 5thics just medial to mid clavicular line. On percussion- dull note heard over left mammary, inframammary, infrascapular, interscapulararea. Right side all chest normally resonant. On auscultation-diminished breath sound heard over left side of chest, right side normal vesicular breath sound heard over all areas. All other systems within normal limits.

On investigation complete blood count and peripheral smear within normal limits. Quantitative CRP, Serum electrolytes, urea, creatinine, liver function test was normal. On chest xray a big rounded homogenous opacity involving about 90% of chest area in left side, right side no abnormality detected. On USG chest it came out to be thin walled cystic lestion of size 10 cm×9cm×8cm involving left side of chest.USG abdomen came out to be normal.

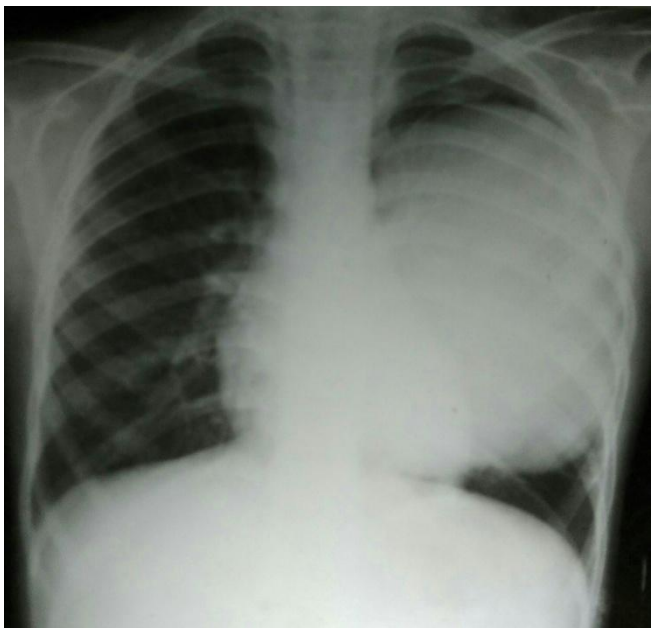

FIG showing a large, dense opacity occupying about 90% of the left hemithorax-Hydatid cyst in lung

Discussion

E. granulosus tapeworms live in the intestine of dogs or other canines (definitive host) and their eggs are passed out with the faeces, disperse widely and can survive for at least one year in the environment. Once ingested by a suitable intermediate host (usually herbivores such as sheep, cattle, goats, pigs, horses or camels), eggs hatch into embryos in the intestine, penetrate the intestinal lining, spread through the blood in the portal circulation, and lodge in tissues, most

usually in the liver and lung as major filtering organs. Embryos then transform and develop into cystic metacestodes in which the infective protoscolices will be produced. When cysts in infected viscera are ingested by a dog, protoscoleces attach to the dog's intestine, developing into mature adult tapeworms in about 40 – 45 days. Humans can act as intermediate hosts if they ingest the eggs, developing large cysts many years after the infection [10-12]

In children predominant site is lung followed by liver. Giant cyst may form in lung due to compressible nature, vascularization, and negative pressure [13]

The majority of lung cysts are primary cyst formed by a filled cavity and comprise three layers: the pericyst, of host origin and consisting of compressed lung tissue with an associated inflammatory host reaction evoked by the parasite and fibrosis; ectocyst (laminated layer, or hyaline membrane); and endocyst (germinal layer). Protoescolices located on the inner surface of the germinal layer deposit as a sediment (hydatid sand) or form daughter cysts. When cysts rupture, either by spontaneous trauma or during medical intervention, protoscolices contained in the cyst fluid may disseminate, developing secondary cysts in the surrounding tissues[14]

The clinical features of hydatid cysts depend on the site and size of the cyst and the presence of complications. peripherally located small cysts often remain asymptomatic and are discovered incidentally on chest radiography. Shehatha *et al.* reported asymptomatic cysts in 37% of 763 cases.[15]

Symptoms occur when the cysts grow large enough to exert pressure effects on the adjacent structures or to develop complications. Complications of pulmonary hydatid cysts include rupture, secondary infection, pneumothorax, and suppuration. Patients may develop sudden onset of chest pain, cough, fever, and hemoptysis after a cyst ruptures. Perforation of the cysts into a bronchiole and the resulting expectoration of the germinative membrane or the hooklets of the parasite are called hydatoptysis. Another important feature of rupture is the development of hypersensitivity reactions ranging from urticaria and wheezing to anaphylaxis.[16]

A cough is the predominant symptoms in the majority of series. Darwish *et al* reported a cough in 54% of 206 patients with pulmonary hydatidosis. [17] Other symptoms of pulmonary hydatid cysts include chest pain, breathlessness, expectoration, fever, hemoptysis, and anaphylactic phenomena. Hemoptysis is more common in adults than in the pediatric population. Singh *et al.* reported hemoptysis as a presenting symptom in up to 70% of adult patients, but it is rare in pediatric patients.[18]

In endemic areas, we should have a high degree of clinical suspicion and anybody with a chronic cough (>2 wks) should have a screening chest X-ray to R/O tuberculosis. Incidentally if we get a cyst then abdominal ultrasound is a must in all cases to search for liver cyst.

In our case diagnosis was incidental when the patient had a chest X-ray that revealed a large, dense opacity occupying about 90% of the left hemithorax. Hydatid cyst in lung usually do not calcify but unlike in liver where calcification rate is 20-30%.

Hydatid cysts of the lung in our institute are usually treated medically (albendazole with a dose of 15 mg per kg of body weight for three courses of 28 days each, with a rest of 2 weeks in between) [19].

This medical treatment is effective for most small cysts where surgical intervention is not mandatory. Galanakis et al.[20] suggest that medical treatment alone can be sufficient for small pulmonary hydatid cysts. Larger cysts usually need surgical intervention in addition to albendazole (either pre-operative or pre- and post-operative). The appropriate surgical intervention in a large but non-complicated hydatid cyst is parenchyma-preserving surgery and includes cystotomy or cystotomy with capitonage, in addition to meticulous suturing of the communicating bronchioles.

Conclusion

In our setting we rarely found hydatid cyst in lung .mostly it is a incidental finding. In endemic areas, we should have a high degree of clinical suspicion and anybody with a chronic cough should have a screening chest X-ray and possibly an abdominal ultrasound. Liver cysts should be searched in all cases. Hydatid cyst usually treated medically with albendazole in our institute. Surgery is an option for giant cyst and with features of complication. Our patient was on medical therapy and on follow up. After completion of 3 cycles with 4 wks gap chest xray revealed complete resolution of cyst.

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