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AN UNUSUAL CASE PRESENTATION OF A PULMONARY HYDATID CYST IN A YOUNG CHILD AT A TERTIARY CARE CHEST HOSPITAL, HYDERABAD, INDIA.

Medical Microbiology

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ABSTRACT

Introduction: Hydatid cysts highest incidence is reported mainly from the sheep-rearing countries. Though India is not primarily a sheep-rearing country, a large number of cases have been reported from Andhra Pradesh and other states of India. Man is an accidental host and does not play a role in the biological cycle of the worm. The mode of infection is by the ingestion of food contaminated with dog feces and also by direct contact with dogs. **Case:** In the present case a 15-year-old boy, presented with 1 month history of gradual and progressive dyspnea, cough that was dry initially but had started to produce blood-stained sputum since 2 days, per nasal bleeding 2 episodes in 2 days. With the above history and examination patient was admitted with a clinical diagnosis of left lung lover lobe space occupying lesion under evaluation with differential diagnosis as lung abscess with history of empirical ATT started. **Findings:** Sputum was sent for culture which was reported as no pathogenic organisms and CBNAAT/ GeneXpert which was reported as MTB not detected. A computed tomographic (CT) scan revealed a large, well-defined, oval, cystic lesion in left posterior basal segment with peripherally enhancing smooth walls. It showed fluid attenuation with multiple air filled cavities within the lesion. Atelectatic bands in the lower lobe along with minimal pleural thickening in posterior basal segment. This fluid was sent to histopathology, gram stain, ZN stain and culture. For the same sample fluorescent stain was done, which showed apple green hooklet. Serum sample was sent for Echinococcus serology. IgG antibody ELISA was done which was reported as positive. **Conclusion:** Hydatid disease is an important health problem in India. It is prevalent in communities from low socio economic status and in rural areas, who are unaware of this parasite. Thus improvement in personal hygiene and awareness regarding disease in the community will result in control and even eradication of this morbid condition.

KEYWORDS

Echinococcosis, Hydatid cyst, Pulmonary Hydatid cyst, Helminth infection, Alveolar Echinococcosis.

INTRODUCTION:

Genus Echinococcus has four species that can cause infection in man. These are: E. granulosus, E. multilocularis, E. vogeri and E. oligarthus. E. granulosus is the most widespread and cosmopolitan in distribution. The highest incidence is reported mainly from the sheep-rearing countries. Though India is not primarily a sheep-rearing country, a large number of cases have been reported from Andhra Pradesh and other states of India (Parija, S. C. (2008), Michail, O. P (2007), Malik, A. A (2011)). Cystic echinococcosis is a zoonosis caused by larval stage of E. granulosus. Man is an accidental host and does not play a role in the biological cycle of the worm. The mode of infection is by the ingestion of food contaminated with dog feces and also by direct contact with dogs. The most common sites affected are the liver (63%), the lungs (25%), followed by muscles (5%), bones (3%), kidney (2%), spleen (1%), and other sites (1%) (Topley, W. W. C., & Wilson, G. S. (1998)). (Table 1).

Table 1: Incidence Of Hydatid Disease Affecting Various Organs/Tissues.

Organs/tissues	Incidence (%)
Liver	63
Lungs	25
Muscles	5
Bones	3
Kidney	2
Spleen	1
Brain	1
Other sites (Orbit, Breast, Thyroid, Urinary bladder)	1

Infection is usually acquired in childhood and most cases are asymptomatic. The ingestion by humans of such contaminated food leads to hatching of the ova in the gastrointestinal tract. The enclosed embryos are liberated in the duodenum and transported to the liver by portal circulation. The liver acts as the first filter in trapping the embryos which then develop into hydatid cysts in 55–70% of cases, followed by the lungs as the second filter in 18–35% of cases. Some escape from these filters and develop in other organs (Ahmad, Q. A., & Ahmed, M. S. (2010)). The incubation period is highly variable. The cyst grows at a rate of 0.3–1 cm per year and may take 5–20 years to attain sufficient size to cause symptoms. The various sites of hydatid cysts reported in India are represented in (Table 2)

Table 2: Review Of The Literature Of Hydatid Disease In India.

S. No.	Case report	Year	Site of lesion
1	Arora et al.	2006	Muscle
2	Babu et al.	2008	Intraabdominal
3	Mohan Rao et al.	2011	Anterior abdominal wall
4	Shanthi et al.	2011	Spleen
5	Malik et al.	2011	Spleen
6	Rao et al.	2012	Spectrum of hydatid disease in Central India
7	Mathur et al.	2016	Spectrum of hydatid disease in south Rajasthan
8	Gautham et al.	2018	Intra cranial
9	Present case	2022	Left lobe of the lung

Case Report:

A 15-year-old boy, presented with 1 month history of gradual and progressive dyspnea, cough that was dry initially but had started to produce blood-stained sputum since 2 days, per nasal bleeding 2 episodes in 2 days. Before this episode he was hospitalized at a private clinical and treated symptomatically with antibiotics and supportive therapy. He was discharged after 4 days. Empirically ATT was started at the time of discharge. After 15 days post discharge he had fresh complaints (present complaints).

His past medical history was unremarkable, though his father reported that the child had lost significant weight through the course of the illness and had experienced intermittent low-grade fevers. The boy had history of contact with tuberculosis patient during his childhood.

Upon examination, the boy was moderately pale, not cyanotic, and saturating at 96% on room air. His pulse rate was 102 beats per minute; his resting blood pressure was 110/70 mmHg; and he was afebrile with a temperature of 36.7 °C. Chest expansion was bilateral, with tenderness in left hemithorax region, dull percussion note on left side. No peripheral lymphadenopathy was appreciated. The findings of his abdominal and neurological examinations were within normal limits. With the above history and examination patient was admitted with a clinical diagnosis of left lung lover lobe space occupying lesion under evaluation with differential diagnosis as lung abscess with history of empirical ATT started since 2wks at the time of admission.

Laboratory Data:

His hemoglobin concentration was 11.2g/dl with anisocytosis normochromic normocytic, few microcytes, platelet count was 327000 cells/cumm, leukocyte count was within normal limits(10500 cells/cumm) with relative neutropenia(2530 cells/cumm), CT and BT was within normal range. Serum creatinine was 0.8 mg/dL, total bilirubin was 0.4mg/dL, total protein was 5.2 g/dL and random blood glucose was82 mg/dL. Sputum was sent for culture which was reported as no pathogenic organisms and CBNAAT/ GeneXpert which was reported as MTB not detected. His urine test result was negative for leukocytes, nitrates, glucose, and proteins. A plain chest x-ray (Fig 1) was done and showed a well-circumscribed cystic mass on the left lower lobe quadrant of hemithorax. A computed tomographic (CT) scan revealed a large, well-defined, oval, cystic lesion in left posterior basal segment with peripherally enhancing smooth walls. It showed fluid attenuation with multiple air filled cavities within the lesion. Atelectatic bands in the lower lobe along with minimal pleural thickening in posterior basal segment.

METHOD:

USG guided aspiration was done, 3-4 ml thick jelly like material was aspirated under local anesthesia. This fluid was sent to histopathology, gram stain, ZN stain and culture. Histopathology (Fig-2) showed short clumps of eosinophilic material with hematoxylin stain constituting mainly neutrophils, karyorrhectic debris, also seen numerous isolates refractile hooklets and fragments of lamellated membrane, reported as possibility of Echinococcus multilocularis to be considered. Wet mount (Fig-3) was performed which showed refractile hooklets. Gram stain (Fig 4) showed plenty neutrophils with isolates refractile hooklets. ZN stain also showed refractile hooklets. For the same sample fluorescent stain (Fig -5) was done, which showed apple green hooklet. Serum sample was sent for Echinococcus serology. IgG antibody ELISA was done which was reported as positive (2.10 OD).

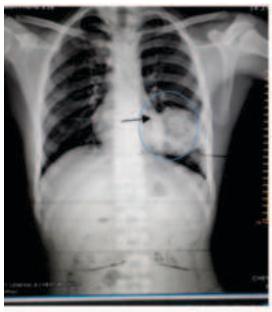


Fig:1 Chest X-ray PA view

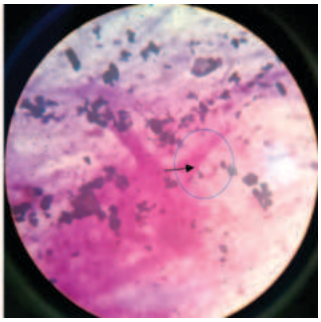
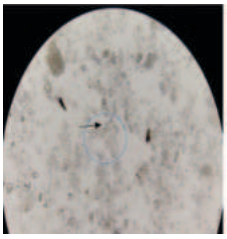


Fig 2: Histopathological section



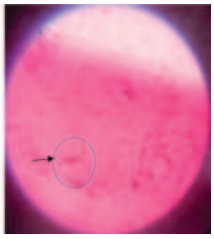


Fig 3: Wet mount showing refractile hooklets;
Fig 4: Gram stain showing hooklet;

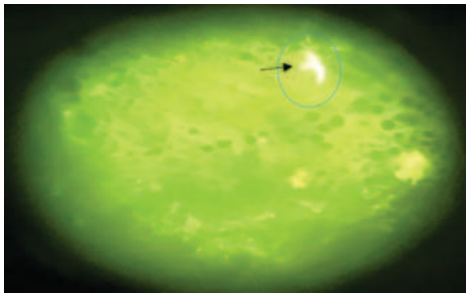


Fig 5: Fluorescent stain showing Apple-green hooklet

DISCUSSION:

Pulmonary hydatid cyst should be kept in mind in children presenting with lower respiratory tract symptoms in regions where echinococcosis is endemic. Because of the compressibility of the lung tissue, its higher vascularity, and lower negative pressure, pulmonary hydatid cysts more easily become symptomatic (Cevik, M.(2014), 30(7), 737-741). Because of the high compliance and flexibility of the lungs, hydatid cysts can grow up to more than 5 cm per year (Aydogdu, B, (2015), 50(9), 1481-1483). Pulmonary hydatid cyst should be kept in mind in children presenting with lower respiratory tract symptoms in regions where echinococcosis is endemic. Parenchyma-sparing methods should be the first choice in the management of pulmonary hydatid cysts. Patients who develop early postoperative complications should also be followed closely for late impediments. Pulmonary hydatid cysts with a diameter larger than 10 cm are called giant cysts (Sarkar, M. (2016), 33(2), 179-191.). Giant pulmonary cysts have been reported with a rate of 15%-31% in pediatric series (Ksia, A. (2020), 55(4), 752-755.). Although pulmonary hydatid cysts can infest all lobes of the lung, it has been reported that they are found more commonly and especially in the right lower lobe (Kabiri, E. H., & Kabiri, M. (2021), 69(12), 1539-1544.). However, in the study by Hamouri et al., they observed that both ruptured and non-ruptured cysts were more prevalent in the left lower lobe (Hamouri, S. (2021, 62, 31-36.). The main treatment of pulmonary hydatid cysts is conventional surgery. The procedure aims to remove all parasitic substances and close the possible existing bronchial fistulas while preserving the maximum lung tissue, especially in children. Many techniques have been described for surgical treatment, such as open enucleation, peri-cystectomy, cystotomy and capitonnage, cystotomy without capitonnage, segmental resection, and lobectomy (Rawat, S., (2019), 8(9), 2774-2778.).

CONCLUSION:

In the present study a clinical diagnosis of Left lung Lower lobe hydatid cyst was made and was started on Metronidazole and Albendazole, high protein diet. ATT was stopped. Patient's history regarding contact with pets was clearly mentioned by the patient and attenders. The patient along with their guardians were explained the condition of the patient and need for surgical resection. But after a couple of days the patient left against medical advice from the hospital. Hydatid disease is an important health problem in India. It is prevalent in communities from low socio economic status and in rural areas, who are unaware of this parasite. Hydatid disease has quite an impact on morbidity due to higher infection rate in farmers and house wives, who are mainly involved in cattle raising job in rural areas. Thus improvement in personal hygiene and awareness regarding disease in the community will result in control and even eradication of this morbid condition.

Conflicts Of Interest - Nil.
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