



Case report

Spleen salvation: A successful case of spleen-preserving surgery for hydatid cyst



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ABSTRACT

Introduction and significance: Hydatid disease is a parasitic infection caused by tapeworm larvae that can affect different organs, including the spleen. While isolated hydatid cysts in the spleen are rare, they are usually asymptomatic and are frequently discovered incidentally. Treatment options depend on several factors, such as cyst location, size, and number.

Case presentation: We present the case of a 9-year-old child who lives in rural areas. He was suffering from pain in the left flank for 3 months. An ultrasound and CT scan of the abdomen were performed. It was found that there was a solitary hydatid cyst in the spleen, about half the size of the spleen. Surgical intervention was performed and the cyst was completely removed without opening the cyst and with preservation of normal splenic tissue.

Clinical discussion: In cases of splenic cysts, the spleen must be preserved and the cyst must be removed with caution so as not to rupture it. Therefore, protecting the child from the possibility of hydatid cyst spread and anaphylactic shock.

Conclusion: In conclusion, this article underscores the importance of differential diagnosis of a hydatid cyst in the spleen and taking the necessary preventive measures before and during surgery to avoid the rupture of the cyst.

1. Introduction

Cystic echinococcosis is a parasitic infection caused by the Echinococcus granulosis parasite. Humans can become infected by ingesting food contaminated with the parasite's eggs, which develop into cysts containing clear fluid. The cysts continue to grow over time and can affect different organs, with the liver being the most commonly affected (around 75 % of cases), followed by the lungs (around 15 %). Spleen involvement is rare, occurring in only 2-5% of people [1–2]. Symptoms of the infection can include vague abdominal pain, a palpable abdominal mass, constipation, or indigestion. However, it is more commonly discovered incidentally during abdominal ultrasound [3]. Diagnosis is typically based on a combination of clinical presentation, radiological imaging (with or without serological tests) [4].

This case is described in accordance with the criteria of SCARE [5].

2. Presentation of case

2.1. Patient information

A 9-year-old boy from a rural area presented with mild left flank pain for 3 months, without fever or digestive symptoms. He was referred after a cystic lesion in the spleen was identified on imaging. The family mentioned a story of contact with sheep due to the location of the residential area being in a rural area. His family history was unremarkable for tumors or deformities.

3. Clinical findings

On admission, the child was in good general health with normal vital signs and mild left flank pain. Abdominal examination was unremarkable with no palpable masses. Examination of other organ systems was normal.

Abbreviations: US, ultrasound; CT, computed tomography.

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4. Diagnostic assessment

Laboratory tests revealed normal hemoglobin (12.8 g/dL), white blood cell count (11,000/mm³), and platelet count (443,000/mm³). Echinococcus Ab 1\320 (negative).

Abdominal ultrasound showed a well-defined cystic lesion in the spleen without internal solids.

Computed tomography (CT) revealed a well-defined, non-calcified cystic lesion in the spleen periphery, 5 × 5 cm, not attached to the kidney, and not enhancing with contrast (Fig. 1-A).

Therapeutic Intervention

Due to the suspicion of a hydatid cyst and its large size compared to the spleen, the pneumococcal, *Haemophilus influenzae*, and meningococcal vaccine was given to the child due to the possibility of the need to remove the spleen. The vaccinations were given two weeks prior to surgery, in addition to starting albendazole before surgery.

Based on the findings, surgery was performed under general anesthesia. A left subcostal incision was made. After reaching the spleen, the splenic ligaments were released from the lateral side and a 5 % saline serum was placed in the area adjacent to the spleen in anticipation of the cyst rupturing. A cyst measuring 4 × 5 cm was found in the spleen. The cyst was removed completely without rupturing the cyst and the edges of the cyst area were coagulated (Figs. 2-A – 2-B). It was resected while preserving the spleen. The abdomen was closed in layers.

Post-operative pathology confirmed a hydatid cyst. The child was monitored for 5 days with a normal clinical examination and without inflammatory manifestations. Oral albendazole was started and the child was discharged in good general condition, to be reviewed after 3 weeks with liver enzyme testing.

5. Discussion

Hydatid disease is caused by a tapeworm known as *Echinococcus granulosus* and affects around 2 to 3 million individuals worldwide, mainly in specific regions [6]. There are four species of tapeworm that can cause this disease, namely *E. granulosus*, *E. multilocularis*, *E. vogeli*, and *E. oligarthrus*. *E. granulosus* is the most common cause of hydatid disease. It forms chronic cysts that grow slowly each year [7].

In the parasite's life cycle, humans act as intermediate hosts, while dogs serve as the definitive host, shedding parasite eggs in their feces. The average lifespan of this worm ranges from 5 to 20 months. Hydatid disease usually affects the liver, accounting for approximately 75 % of cases. Other organs, such as the uterus (0.3 %) and, as presented in our case, the spleen, are less commonly involved [8].

When contaminated food is consumed, the eggs of the tapeworm enter the human body and hatch, releasing larvae. These larvae penetrate the intestinal lining, enter the bloodstream, and migrate throughout the body, potentially reaching diverse organs [9].

When the cysts reach large sizes, it can put pressure on surrounding

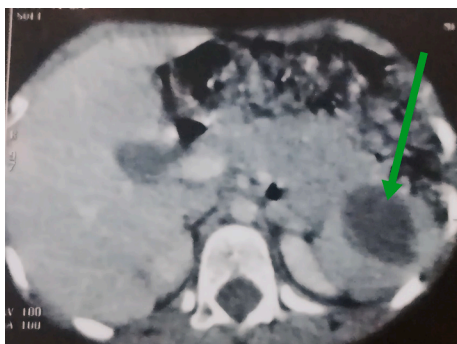


Fig. 1-A. CT/cross axial view showing an isolated cyst formation in the spleen in the peripheral part (green arrow) of it and far from the navel of the spleen, without calcifications.



Fig 2-A. Intraoperative image showing the area of the excised cyst after its complete removal and coagulation of the edges of the spleen surrounding the cyst.



Fig. 2-B. Gross appearance shows the Hydatid cyst after complete resection without membrane rupture.

organs and cause various symptoms depending on its location, size, and interaction with the intestine. Sometimes, hydatid cysts don't cause any symptoms and are only discovered incidentally [10]. However, if a cyst ruptures, it can lead to a severe allergic reaction.

In particular, splenic hydatid cysts can cause constipation due to pressure on the colon and colonic fistula. In rare cases, lower back pain may be the only symptom [11]. The growth rate of a hydatid cyst is slow, at approximately 2 cm per year [12]. However, as the cyst gets bigger, it can put pressure on the splenic vasculature, leading to splenic atrophy.

Complications of hydatid cysts include secondary infection and rupture, which can cause life-threatening anaphylactic shock, especially in the case of very large splenic hydatid cysts [13]. When diagnosing a splenic cystic lesion, The differential diagnosis can be multiple, such as hydatid cysts, hematomas, non-parasitic cysts, and cystic tumors [14].

Serological tests, particularly ELISA, are highly sensitive and specific for hydatid disease [8]. In combination with imaging, they play a crucial role in diagnosis. Abdominal ultrasound is the recommended first line of investigation when hydatid cyst is suspected, with a sensitivity of 90–95 % and a specificity of around 93–100 % for evaluating hydatid cysts [15]. CT scan is useful in determining the cyst's relationship with surrounding structures and its contents. However, radiological findings alone are not specific as various abdominal cysts can appear similar. Accurate diagnosis is achieved by combining abdominal ultrasound, CT scan, and immunological tests like ELISA and IHA, which can reach an accuracy of about 90 % [16]. It is important to maintain a high index of

suspicion for hydatid cysts in patients with splenic cystic lesions, especially in endemic areas [17]. Upon diagnosis, a complete systemic evaluation should be performed to rule out involvement of other organs.

Drug therapy is considered to be very ineffective and is used in cases where there are contraindications to surgery, the cysts are located in multiple places, or in cases of incomplete resection. In these cases, The patient was given Albendazole, 400 mg daily, for two 28-day cycles with a 15-day break in between [18].

6. Conclusion

Through our dealings with this case and review of previous literature, it seems necessary to take the necessary measures when surgical intervention on splenic cysts, with an emphasis on preserving the spleen if possible, even in the presence of large cysts within it.

Consent of patient

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Author contribution

Shkri Jaweesh: Conceptualization, resources, who wrote, original drafted, edited, visualized, validated, literature reviewed the manuscript, and the corresponding author who submitted the paper for publication.

Marwa Jaweesh: Supervision, visualization, validation, resources, and review of the manuscript.

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All authors read and approved the final manuscript.

Conflict of interest statement

The authors declare that they have no competing interests.

Data availability

The datasets generated during and/or analyzed during the current study are not publicly available because the Data were obtained from the hospital computer-based in-house system. Data are available from the corresponding author upon reasonable request.

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