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Primary Hydatid Cyst of the Abdominal Wall in Children: A Case Report and Literature Review

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Abstract **Case Report**

Introduction: In endemic areas, hydatid cyst disease is a serious health problem, typically associated with parasitic infections affecting primarily the liver and lungs. However, cases of hydatid cysts in the abdominal wall are rare. We surgically treated a 13-year-old boy with this condition, and we also provided a brief literature review on this topic. ***Conclusion*:** Hydatid cyst should be sought in the differential diagnosis of abdominal wall masses. Its preoperative diagnosis plays an important role in preventing rupture with subsequent anaphylaxis and recurrence. Surgery remains the primary treatment modality.

Keywords: Surgical treatment, endemic areas, preoperative diagnosis, anaphylactic rupture.

INTRODUCTION

Hydatid cyst disease presents a significant public health concern in endemic regions [1]. It is primarily a parasitic infection affecting the lungs and liver [2], caused by the larval stage of the parasite Echinococcus granulosus [1]. While dogs serve as the primary host, intermediate hosts typically include sheep and occasionally humans [3]. Although the lungs and liver are commonly affected, hydatid cysts can manifest in any organ or tissue, often with varying degrees of symptoms [4]. While instances of primary hydatid disease in skeletal muscle without liver and lung involvement are uncommon, they have been documented in the literature, with abdominal wall involvement being particularly rare [2].

Information about the patient

A 13-year-old boy presented with pain and an epigastric mass in 2021 that had been evolving for 3 months prior to admission. The mass was slowly growing and had developed a fistula at the level of the abdominal wall. The medical and surgical history was negative. No family history was reported.

Clinical Findings

On examination, there was a (4 cm × 4 cm), smooth-surfaced, firm, non-tender mass over the epigastric region.

The overlying skin appeared normal and was attached to the underlying muscles via a fistulous tract.

Diagnostic Evaluation

All laboratory tests were normal except for the white blood cell count (WBC) which was slightly elevated (WBC; 1O160).

Abdominal ultrasound revealed a heterogeneous hypoechoic collection within the subcutaneous soft tissues of the epigastric region, measuring approximately 30 x 14 x 33mm (AP x CC). This collection was observed to communicate via a fistulous path with the skin opposite and showed infiltration of the surrounding soft tissues.

Abdominal CT revealed a lesional process in the epigastric region, with well-defined, lobulated contours. The lesion appeared spontaneously echogenic and hypodense, showing peripheral enhancement after contrast injection, defining a wide area of necrosis measuring 40 x 33 x 45mm (AP x T x CC). Anteriorly, it protruded and infiltrated both rectus muscles of the abdomen as well as the subcutaneous fat. Posteriorly, the process extended intraperitoneally, coming into close contact and causing scalloping on segment III of the liver with separation, without obvious detectable infiltration.

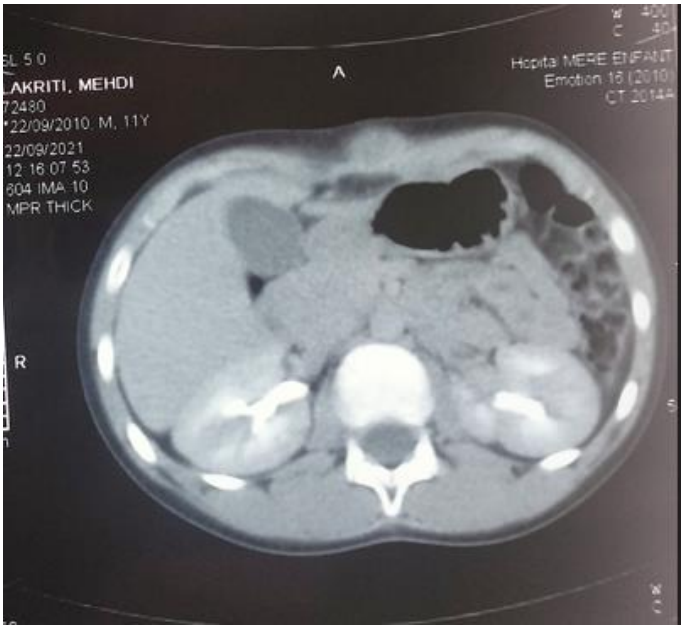

Figure 1: CT scan of a primary mesenteric hydatid cyst in a 13-year-old child

Therapeutic intervention

The patient had not received any medical treatment prior to the operation, and the mass continued to slowly increase in size, with fistulization at the skin level. The decision to proceed with the operation was made, and the patient was prepared accordingly during the operation: Under general anesthesia, in a supine position, the mass was excised by a supra-umbilical midline incision and the defect was reconstructed with a double layer of absorbable vicryl2 suture. No suction drain left behind. Grossly, the lesion appeared to be a hydatid cyst with calcification, invading all layers of the surrounding abdominal wall except for the skin and subcutaneous fat. There was an absence of fistulization or intra-abdominal adhesion.

The specimen was sent for pathological documentation, which revealed a nonspecific inflammatory cyst with abscessed foci, showing no signs of malignancy or specificity.

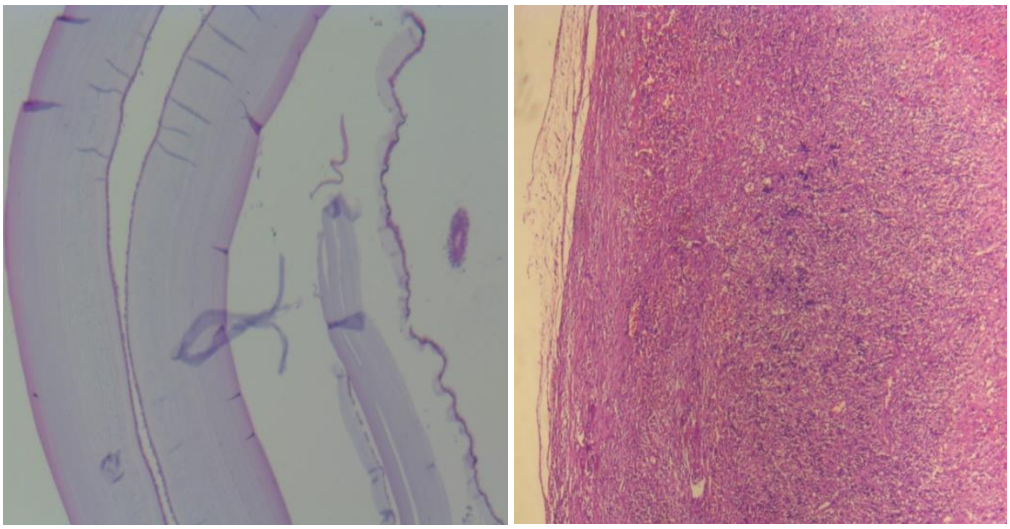

Figure 2: Pathological anatomy of a primary mesenteric hydatid cystic a 13 year old child

Follow-up and results

The postoperative period was uneventful, and the patient was discharged after 7 days of hospitalization.

DISCUSSION

Skeletal muscle hydatid cyst is a rare condition that accounts for 1-4% of all hydatid cyst diseases [2]. The low prevalence of this type of cystic hydatid disease can be attributed to physical barriers that impede the hematogenous spread of cysts, which are present in the pulmonary capillaries and hepatic sinusoids. Additionally, chemical factors, such as a high concentration of lactic acid in skeletal muscle, and mechanical factors, such as muscle contraction, may

further reduce the likelihood of parasite encystment in these tissues [5].

Primary hydatid cysts in the musculature of the abdominal wall are exceedingly rare, with only six reported cases to date. Table 1 presents a literature review of reported cases of hydatid cysts in the abdominal wall [6, 7].

Several pathways have been proposed to elucidate the occurrence of extrahepatic-extrapulmonary hydatid cyst. Approximately 5-15% of the parasites manage to escape from the capillaries of the liver and lungs and enter the systemic circulation to establish themselves at various sites. Other dissemination routes include veno-venous shunts in the liver, which transport parasites from the intestine to the systemic circulation via the lymphatics, bypassing the portal filter [2]. Proposed routes for the localization of hydatid cysts in the musculature of the abdominal wall (particularly on the right side) include: 1- Direct entry of the parasite into the inferior vena cava through a connection between the portal and systemic veins and implantation facilitated by reflux parasites due to the Valsalva maneuver that can occur with daily activity. 2- Penetration of parasites into the peritoneal space from the intestine, , followed by invasion of the abdominal wall.. 3- Penetration of the parasite into the abdominal lymphatic system, leading to localization in the musculature of the abdominal wall [2]. Signs and symptoms of hydatid cyst are non-specific and depend on the size and exact location of the cyst. Typically, it presents as a painless, slowly growing, non-inflammatory mass [5]. However, in the currently reported case, the presentation began with a painless mass but later transformed into pain, while the overlying skin remained completely normal.. The differential diagnoses of a mass involving the abdominal wall include abscess, sebaceous cyst, liposarcoma, sarcoma and lipoma [5].

The precise preoperative diagnosis of a hydatid cyst is crucial due to the risk of anaphylaxis or the dissemination of daughter cysts, which can lead to subsequent recurrence.Ultrasound, MRI and CT are very useful radiological images for diagnosis, determining the type, size and location of the cyst [6]. The management of the muscular hydatid cyst is the total excision of the cyst with the surrounding tissues [2]. Conservative management of the hydatid cyst is highly questionable. Some authors have reported that albendazole, used alone for about 6-8 weeks, heals the hydatid cyst in about 50% of cases [3]. Srivastava et al reported in 2008 a 10cm x 15 cm HC in the right lower quadrant of a 14-year-old man who was reluctant to undergo surgery, was on Albendazole 50 mg/kg/day. Fourteen weeks later, the boy was completely cured [3]. Our case had initially received conservative therapy for two years without success because he refused surgery.

CONCLUSION

Hydatid cysts (HC) can manifest anywhere in the body and should be considered in the differential diagnosis of abdominal wall masses. Timely preoperative diagnosis is crucial to prevent rupture, subsequent anaphylaxis, and recurrence. Surgery remains the primary treatment modality. Furthermore, in cases of symptomatic abdominal wall masses without a history of trauma, particularly in endemic areas, the diagnosis of hydatidosis should be promptly considered to facilitate early treatment and prevent potential complications associated with cystic contents spillage into the intraperitoneal cavity.

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