Case Report

Primary pancreatic hydatid cyst; typical radiological signs: A case report

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ABSTRACT

Pancreatic hydatid cysts are rare, especially in pediatric populations, and their diagnosis presents a remarkable challenge because of the non-specific clinical presentation and the limitations of available diagnostic tools, particularly in resource-limited settings. Our case highlights the importance of maintaining a high index of suspicion for hydatid disease, even in pediatric patients presenting with non-specific abdominal symptoms, particularly in rural regions, where diagnostic resources may be limited. Early recognition and accurate diagnosis are crucial for guiding appropriate therapeutic interventions and preventing potential complications associated with this rare but clinically significant entity.

Key words: Hydatid disease, Magnetic resonance imaging, Pancreatic hydatid cysts, Ultrasonography

Hydatid disease, a zoonotic infection caused by the larval stage of *Echinococcus granulosus*, predominantly affects regions engaged in livestock breeding and agriculture, highlighting its endemic presence in the Northern Hemisphere particularly in continental European countries, the Russian Federation, China, North America, extensively in the Middle East, and India [1,2]. This condition notably implicates dogs as definitive hosts and goats and sheep as intermediate hosts, with humans accidentally becoming dead-end hosts through the ingestion of *Echinococcus* egg-contaminated vegetables [3]. Although the liver (50–77%) and lungs (15–47%) are the most frequently involved organs, documented cases reveal that hydatid cysts could develop virtually in any body organ, including less common sites such as the kidneys (2–4%) and spleen (0.5–8%). However, primary pancreatic hydatid cysts (PHCs) remain exceedingly rare, with only a handful of case reports available in the literature [4,5].

This case report introduces a peculiar instance of a girl presenting with epigastric pain, and she was found to have a hydatid cyst located in the head of the pancreas, underscoring the diagnostic challenge and rarity of such manifestations.

CASE REPORT

A 10-year-old girl presented to our institute complaining of recurrent epigastric pain for about 1 year. No other significant medical history other than she lives in a rural area in Egypt where echinococcosis is endemic.

Medical examination revealed some tenderness in the epigastric region with no evidence of conjunctival yellowish discoloration. After admission, the complete blood count, liver functions, and amylase were unremarkable.

On the imaging examination, ultrasonography (USG) primarily showed a well-defined pancreatic head cyst measuring approximately 4.5 cm × 5 cm in axial dimension and internal free-floating membranes. Neither intrahepatic biliary radicle dilatation nor other cysts were seen in the liver or abdominal cavity (Fig. 1). Then, magnetic resonance imaging (MRI) of the abdomen was requested confirming a 4 cm × 5 cm cyst centered upon the pancreatic head region eliciting low 1W and high T2W signals with few internal free-floating membranes (a typical sign of hydatid). No biliary dilation or cysts were detected elsewhere in the abdomen (Fig. 2).

During laparotomy, a cyst located in the head of the pancreas confirmed by intra-operative USG was separable from the common bile duct and main pancreatic duct. It is abutting the medial aspect of the second part of the duodenum. Full aspiration of the cyst content was performed, showing clear fluid with little internal debris. Afterward, surgical pericystectomy of the cyst wall was performed, and the removed cyst was sent for histopathological assessment (Fig. 3).

The patient was discharged 1 week later and prescribed anti-parasitic medication (albendazole) orally for 1 year as prophylactic medication to prevent recurrence. The pathological

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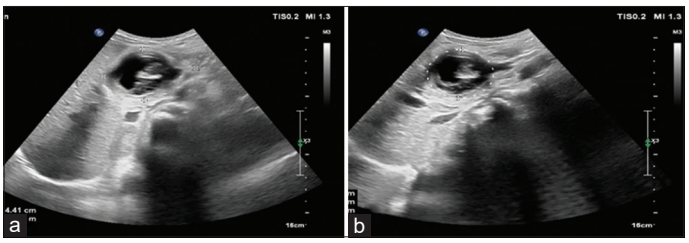

Figure 1: Ultrasonography of the pancreatic hydatid cyst. (a) transverse and (b) sagittal views of pancreatic head hydatid cyst showing well-defined anechoic cyst with internal free-floating membranes

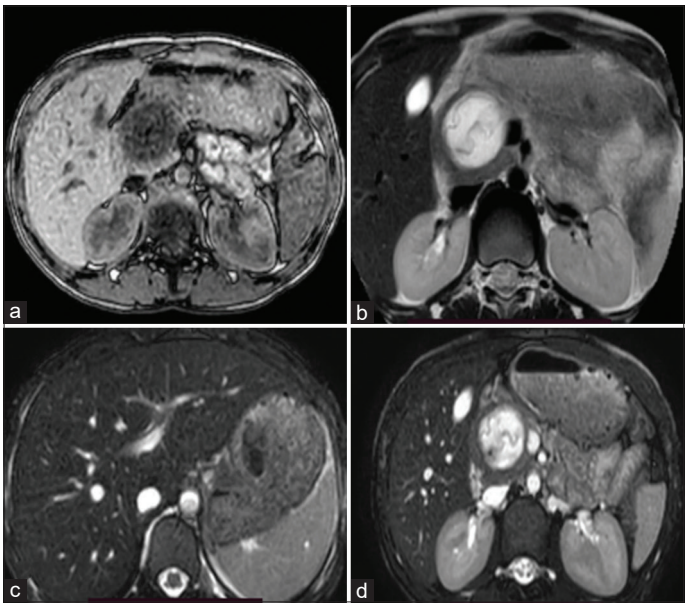

Figure 2: Magnetic resonance imaging of the pancreatic hydatid cyst. (a) axial T1W; (b) axial T2W, (c and d) axial T2W with fat suppression images showing pancreatic head cyst with internal free-floating membranes, no intrahepatic biliary radical dilatation, no other abdominal cavity cysts

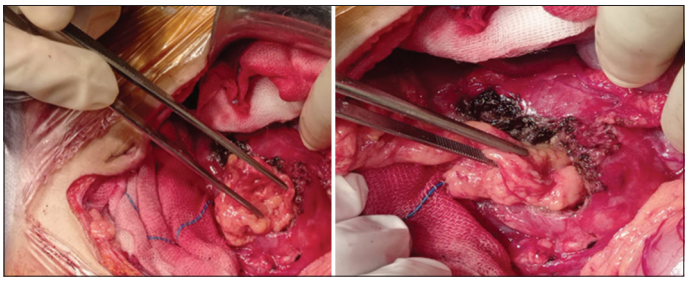

Figure 3: Surgical pericystectomy of the pancreatic hydatid cyst

results revealed the presence of *E. granulosus* surrounded with granuloma and fibrosing reaction. The patient has been asymptomatic for the past 4 months since the operation. Recently, repeat USG of the abdomen was unremarkable.

DISCUSSION

PHCs are rare entities accounting for 0.14–2% [6]. In the literature review and based on a search on PubMed, about 22 papers reported 33 cases of primary pancreatic cysts between 2011 and 2021. "PHCs are usually solitary (90–91%) and distributed unevenly throughout the head of the pancreas (50–58%), body (24–34%), and tail (16–19%)" [1]. Hematogenous dissemination is hypothesized to be the common mode of PHC spread to the pancreas. The other possible modes of spread of cystic elements to the pancreas include passage through the biliary system, lymphatic spread from the intestinal mucosa, direct passage through the pancreatic veins, and retroperitoneal dissemination [3].

Clinical presentation depends on the location of the cyst within the pancreas. Cysts located in the head can usually present as obstructive jaundice because of the external compression of the common bile duct and masquerade as a choledochal cyst [7], which is not in our case that present with just recurrence epigastric pain. PHCs are often mimicked to other cystic pancreatic lesions such as pancreatic cyst adenoma, choledochal cyst, and pancreatic cystadenocarcinoma. For unequivocal cases, the social history and area where echinococcosis is endemic as well as close contact with dogs and sheep are diagnostic indicators of PHC rather than other aforementioned pancreatic cysts. In our case, the social history and radiological imagining criteria by USG and MRI are keeping with the hydatid cyst.

A wide variety of imaging modalities can be used to diagnose such pancreatic cysts, including USG, computed tomography, and MRI. Abdominal USG is a sensitive tool for diagnosing hydatid cysts with characteristic findings such as floating membranes, hydatid sand, and daughter cysts, although the sensitivity is decreased because of retroperitoneal location and bowel gas in the case of PHCs [8]. Based on cross-sectional imagining, an MRI of the abdomen with magnetic resonance cholangiopancreatography sequences provides an excellent tool to diagnose PHC and differentiate it from other cystic lesions and shows the potential involvement of the pancreatic and biliary duct system [9]. The MRI findings such as a well-defined cyst with internal free-floating membranes as depicted in our case and multiple daughter cysts within the mother cyst indicate PHC diagnosis. No pancreatic or biliary duct system was found affected in the presented case. Endoscopic ultrasound can be used in some cases for further characterization of the cyst and guided aspiration of its content to exclude the malignancy [10]. For cases strongly suspected to be pancreatic hydatid, pre-operative evaluation should be combined with imagining and laboratory examinations. Tests for detecting specific serum antibodies and circulating echinococcal antigens include indirect hemagglutination assay, complement fixation test, enzyme-linked immunosorbent assay, immunoelectrophoresis, and immunofluorescence assay [1].

A surgical procedure and post-operative anti-parasite medication (albendazole) to prevent intra-abdominal spread and recurrence may be an effective treatment for the disease. Conservative techniques such as puncture, injection, aspiration, and re-aspiration or direct percutaneous catheterization with medical therapy have been described in patients not fit for surgical intervention. Cysts present in the head without any communication (as in our case) can be treated with pericystectomy, partial pericystectomy with external drainage or omentopexy, and marsupialization. However, in the case of biliary involvement, cyto-enteric anastomosis is the favored procedure.

CONCLUSION

The primary hydatid cyst of the pancreas is a rare entity. Thus, we aim to present such a case to emphasize that physicians should bear in their minds the PHC in approaching and putting differential diagnoses of pancreatic cysts, especially in endemic areas. Different imagining modalities such as USG and MRI are diagnostic with high accuracy in some cases like ours.

CONSENT TO PARTICIPATE

The patient's father provided consent for the use of images and publication of this case report.

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