Clinical Insights into Abdominal Cystic Lesions: A Spotlight on Differential Diagnoses and Prognosis through a Case Report

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Abstract

This article emphasizes the importance of accurate differential diagnosis in managing abdominal cystic lesions and it highlights the important role of primary care physicians in utilizing imaging tools, especially ultrasound, for accurate screening diagnoses. Various potential diagnoses for abdominal cystic lesions are discussed.

Keywords: Cystic pancreatic neuroendocrine tumors, differential diagnosis, ultrasound imaging

Introduction

Abdominal cystic pathologies often present similar characteristics in both imaging and clinical manifestations, necessitating a comprehensive approach to evaluation. This article highlights the importance of broaden our differential diagnoses umbrella to be accurate when using echography in our daily practice. Special focus will be on cystic masses in the liver and pancreas, which pose diagnostic challenges, since they can show only nonspecific symptoms and the ultrasound images can be very similar.

Case Report

This report presents the case of a 50-year-old male from Nicaragua, who complained of abdominal pain persisting for more than 20 days, exacerbated by ingestion and accompanied by nausea. Physical examination revealed a distended abdomen with diffuse pain in the right hypochondrium. Palpable hepatomegaly was noted, with a border extending 5 cm below the ribcage. The diagnostic workup included urgent laboratory analysis and abdominal ultrasound. After questioning the patient, he explains a family history of an unspecified digestive tumor in his father. The father underwent intervention, and there has been no subsequent recurrence. The rest of the family, who reside in another country, has no history of gastrointestinal tumors. The procedure was carefully explained, and oral and written consent was obtained from the patient, and we performed an abdominal ultrasound. Abdominal ultrasound revealed a slightly hyperechoic liver with a mass near the left hepatic lobe. The mass measured 15.59 cm × 14.38 cm with ill-defined borders. The solid content, with multiple heterogeneous areas (honeycomb pattern) made us think of an active cystic echinococcosis 4 stage hydatid cyst [Figure 1]. No areas of detached membrane or calcifications were observed. Hydatidosis serology initially yielded negative results, ruling out immediate suspicion of a hydatid cyst. Lipase and amylase were in normal range. The primary diagnosis was established as a retroperitoneal cystic mass related to the head of the pancreas.

The patient was referred for an abdominal mass study, and a thoracoabdominal computed tomography (CT) scan revealed:

- Thorax: Sliding hiatal hernia, no pathological findings in the thoracic region
- Abdomen: A large encapsulated cystic mass with calcifications, displacing the pancreatic head and compressing the duodenum. A solid nodular lesion and a

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dense pseudonodular area were identified. Gastroscopy showed normal findings in the esophagus, stomach, and part of the duodenum. Fine-needle aspiration (FNA) of a retroperitoneal mass suggested a neuroendocrine tumor (Ki67 <1%).

Following a tumor board decision, a Whipple procedure was performed, and the pathology indicated a well-differentiated neuroendocrine tumor (T2N1, possible R1, G1). Further, evaluation in oncology with Gallium (Ga)-68 positron emission tomography (PET) is pending.

Diagnosis

Probable pancreatic/pyloric origin neuroendocrine tumor, pT2 pN1, possible R1, and Ki67 <1% was diagnosed.

Discussion

When evaluating abdominal cystic lesions in primary care, attention should be directed toward both clinical presentation and imaging. In our context, ultrasound stands out as the most accessible modality. Clinical features, while often nonspecific, play a crucial role, making ultrasound a valuable, harmless, and cost-effective method. Comprehensive ultrasound examination is imperative for the accurate diagnosis. For instance, when encountering an image compatible with an extrahepatic abdominal hydatid cyst, differential diagnosis is essential to distinguish it from other lesions. Images can be very similar [Figure 2], although no pathognomonic features of hydatic cyst, such as a detached membrane, would be observed.

Differential diagnoses and prognosis

Hydatid cysts can be asymptomatic and an incidental finding.[1] In a patient with relevant epidemiological history and cystic features, hydatidosis serology should be conducted. If negative, further evaluation of other possible cystic lesions is warranted. Mucinous pancreatic cystadenoma (MCA) accounts for half of pancreatic cystic neoplasms. It primarily affects young women, with a median diagnosis age between 40 and 50 years. The definitive diagnosis is reached through helical tomography or magnetic resonance cholangiopancreatography. The latter seems to be the most reliable, in the differential diagnosis, for detecting ductal communication and distinguishing intraductal papillary mucinous neoplasia from the pseudocyst.[2] Gastrointestinal stromal tumors GISTs are rare, making up <1% of all gastrointestinal tumors. GISTs, although typically solid, can occasionally exhibit cystic areas, and the large size of the tumor discovered could contribute to its atypical manifestation.

Cystic pancreatic neuroendocrine tumors (cPNET) constitute a rare entity, accounting for 13%–17% of pancreatic neuroendocrine tumors.[3] With a low incidence, their biological

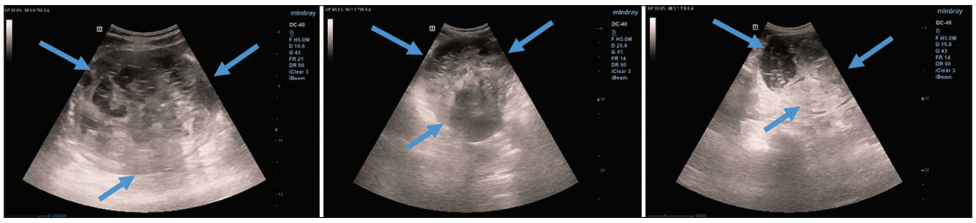

Figure 1: Image of a pancreatic cystic tumor. The solid content with multiple heterogeneous areas (marked with blue arrows) could resemble a hydatid cyst (compare with images in Figure 2)

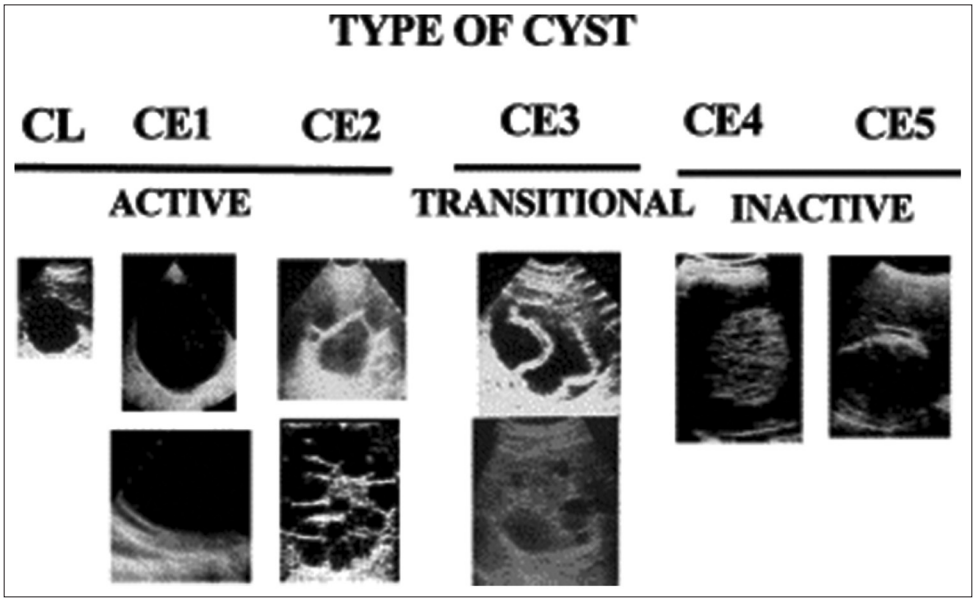

Figure 2: International classification of hydatid cyst from the WHO Informal Group on Echinococcosis. CE: Cystic echinococcosis, CL: Cystic lesions

behavior remains poorly understood. Initial descriptions date back to 1940, but they were officially recognized as a distinct entity in 2008. Most cases have been described as isolated instances, and only 13 authors have published series with more than 10 cases.[4] The etiopathogenesis of cPNET is controversial. Kamisawa *et al*.[5] proposed that the slow expansive growth of neuroendocrine tumors led to the development of a fibrous capsule, compromising the tumor's blood flow and causing infarction and central necrosis. In this regard, Buetow *et al*.,[6] in a series of 133 pancreatic neuroendocrine tumors, concluded that the presence of cystic degeneration or necrosis correlated with tumor size. On the other hand, Iacono *et al*.[7] suggested that hemorrhage is the initial event in the development of its cystic form. Radiological diagnosis has low specificity, as the image`s are similar to other cystic lesions of the pancreas: Solid pseudopapillary tumor, mucinous tumor, intraductal mucinous papillary neoplasia, pancreatic metastases, etc., In the review conducted by Singhi *et al*.,[3] out of 53 cases, 23 (43%) were misdiagnosed and referred to as ductal adenocarcinoma, intraductal mucinous papillary neoplasia, and mucinous cystadenoma. Endoscopic ultrasound has shown diagnostic superiority, with an increase in performance over CT by 36% and over magnetic resonance imaging by 54%.[8] In a review by Morales-Oyarvide *et al*.,[9] they reported a cytology sensitivity of 71% compared to 38% using only endoscopic ultrasound and concluded that cytological diagnosis with FNA biopsy is the indicated diagnostic test. cPNETs can present as sporadic tumors or in the context of hereditary cPNETs. Ligneau *et al*.[10] report that the phenotype of cPNETs associated with multiple endocrine neoplasia type 1 syndrome is clinically and pathologically distinct from sporadic cPNETs, as they occur in younger patients, with a higher percentage of functioning tumors, generally multiple, and located in the tail of the pancreas.

Prognosis and prevention

In terms of survival, the intraoperative biopsy of the pancreatic section margin revealed no malignancy, and resection margins were tumor-free. The patient is awaiting completion of a Ga-68 PET extension study. Currently, if there is no evidence of distant or residual disease, adjuvant treatment is not indicated postsurgical resection.

Regarding survival outcomes, noteworthy findings include a 100% overall survival at 5 and 10 years in Stages I and II according to the ENETS classification.[11] In Stage III, 1-year and 5-year overall survival rates were 100% and 85.7%, respectively. For Stage IV, 1-year and 5-year overall survival rates were 100% and 75%, respectively ($P = 0.05$). Disease-free survival rates at 1, 5, and 10 years in Stages I-IIIa (without lymph node involvement) were 98.5%, 91.5%, and 91.5%, respectively. In Stages IIIb-IV (with lymph node involvement), rates at 1 year and at 5 and 6 years were 100%, 54.2%, and 54.2%, respectively ($P = 0.001$).

Ethics statement

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and its amendments. The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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