Giant complex non-parasitic splenic cyst in a young boy: is laparoscopic spleen-preserving surgery safe?

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Case Report

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Abstract

Non-parasitic splenic cysts are an uncommon finding in pediatric patients. We report on a 14-year-old male presenting with a giant abdominal mass. Imaging documented a giant splenic cyst, and preoperative blood tests revealed high levels of CA125. Minimally invasive unroofing of the cyst was performed. Notably, the cyst content was hematic, but histopathological studies described a mesothelial cyst lining. To date, no recurrence has been noted. Laparoscopic spleen-preserving surgery appears to be a valid and safe treatment option in children with complex non-parasitic splenic cyst to preserve the splenic parenchyma.

Introduction

Non-parasitic splenic cyst reports are scarce in the pediatric literature, and presenting symptoms of splenic cysts are usually based on their size [1]. Splenic cysts have been classified into primary and secondary by Mirilas and colleagues in 2007 [2]. Currently, no specific guidelines exist for the treatment of splenic cysts in children. In the past, the gold standard for giant splenic cysts was total splenectomy; however, laparoscopic spleen-preserving surgery should be the main goal [3, 4]. Herein, we share our experience with an unusual giant complex non-parasitic splenic cyst accidentally found in a young boy.

Case Presentation

A 14-years-old boy presented to our institute with a visible abdominal mass (Fig. 1). Past medical history was uneventful, and in particular no traumas or infections were reported. Abdominal ultrasonography (US) revealed an oval cystic mass, without vascularization, localized in the upper quadrants. Computed tomography (CT) documented the presence of a giant cyst of the spleen 23x20x14 cm in size (Fig. 2). Remarkably, CT also described a compression of the left kidney with development of a collateral circulation. Routine blood tests and tumoral markers were normal except for CA125 and IgE, which were found above the average levels (169.4 U/mL and 151 kU/L, respectively). Serodiagnostic tests for *Echinococcosis* and *Bartonella henselae* were negative. Surgery was scheduled after administration of vaccines against encapsulated organisms (*Hemophilus influenzae B*, *Pneumococcus* and *Meningococcus*). The patient underwent laparoscopy (Fig. 3), and intraoperatively a huge cyst localized at the upper splenic pole was confirmed. About 3000 mL of hematic fluid were drained from the cyst. After the cystic content was removed, an unroofing with partial cystectomy was performed, preserving the thin splenic parenchyma. The defect was covered with omentum, no drainage was left in situ. The macroscopic aspect showed a glistening surface with thick trabeculae, and histopathological analysis demonstrated a mesothelial cyst lining. Furthermore, cytopathological study confirmed the hematic content drained from the cyst. The postoperative course was regular. The patient was discharged home two days after surgery and started a clinical and US follow up that so far has shown no signal of recurrence.

Discussion

Splenic cysts can be classified as primary or secondary. Primary splenic cysts are divided into congenital (characterized by a mesothelial, transitional and/or stratified squamous cystic lining with trabeculated white-colored gross appearance) and neoplastic (characterized by endothelial cystic lining with blood content). The neoplastic category also includes dermoid cysts, which present ectopic, mature ectodermal tissues. On the other hand, secondary splenic cysts can be traumatic or necrotic based on positive trauma or infectious history (characterized by hemorrhagic gross appearance with a normal splenic architecture) [2, 5]. In our case, a mesothelial cystic lining confirmed at histopathological analysis was associated with blood content in a patient with a mute past illness history.

Furthermore, high levels of CA 19.9 or carcinoembryonic antigen (CEA) have been widely reported in the current literature. However, values of CA125 above the average levels are less common and not typically reported as an isolated finding [6, 7]. Interestingly, ours is an isolated case presenting with a mixed (mesothelial cystic lining with blood content) non-parasitic splenic cyst and high levels of CA125.

To date, no consensus exists about the best management. Non-operative treatment is the first choice in asymptomatic cysts and/or less than 5 cm in diameter [4, 8]. In the past, the treatment for huge splenic cysts was total splenectomy. With the discovery of the importance of the splenic immune system, spleen-preserving surgery is now preferred. Moreover, despite a longer operating time and increased technical difficulty, a laparoscopic approach is usually suggested due to a shorter hospitalization and less post-operative pain [4, 9]. Considering the size and position of the cyst, we opted for a laparoscopic approach with unroofing and partial cystectomy in order to preserve as much splenic parenchyma as possible. Arguably, while use of this technique may result in a higher rate of recurrence, this could be avoided with an extended resection of the cyst and by covering the parenchyma defect with the omentum [9, 10].

In conclusion, although CA 19.9 and CEA are considered the main markers for non-parasitic splenic cyst, it is our opinion that CA125 could be included in the diagnostic panel for this kind of disease, especially in the event of negativity of the other markers. Moreover, while the treatment of non-parasitic splenic cyst remains controversial, laparoscopic unroofing with partial cystectomy appears to be a valid and safe option to preserve the maximum amount of splenic parenchyma in complex cysts. Further studies are needed to confirm our findings.

Declarations

Conflict of Interest Statement. The authors have no conflicts of interest related to this article to declare.

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Authors' contributions: Dr Boscarelli and Dr Miglietta contributed to the conception of the study and draft the initial manuscript; Dr Murru and Dr Maita contributed to the acquisition of data and images; Dr Scarpa and Dr Codrich revised the final manuscript; Dr Schleef supervised and revised the final manuscript. All the authors approved the final version of the manuscript and attest that they meet the ICMJE criteria for authorship.

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Figures

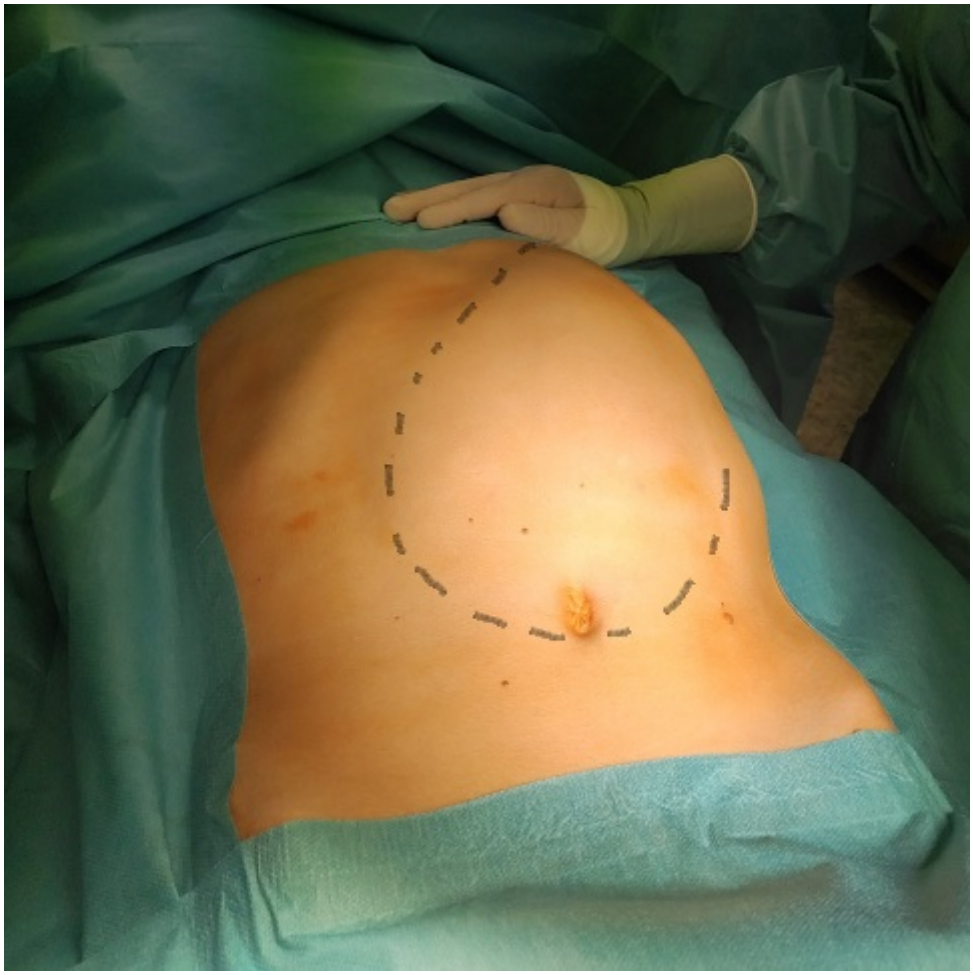

Figure 1

Close-up photograph that shows a huge abdominal mass (dotted line).

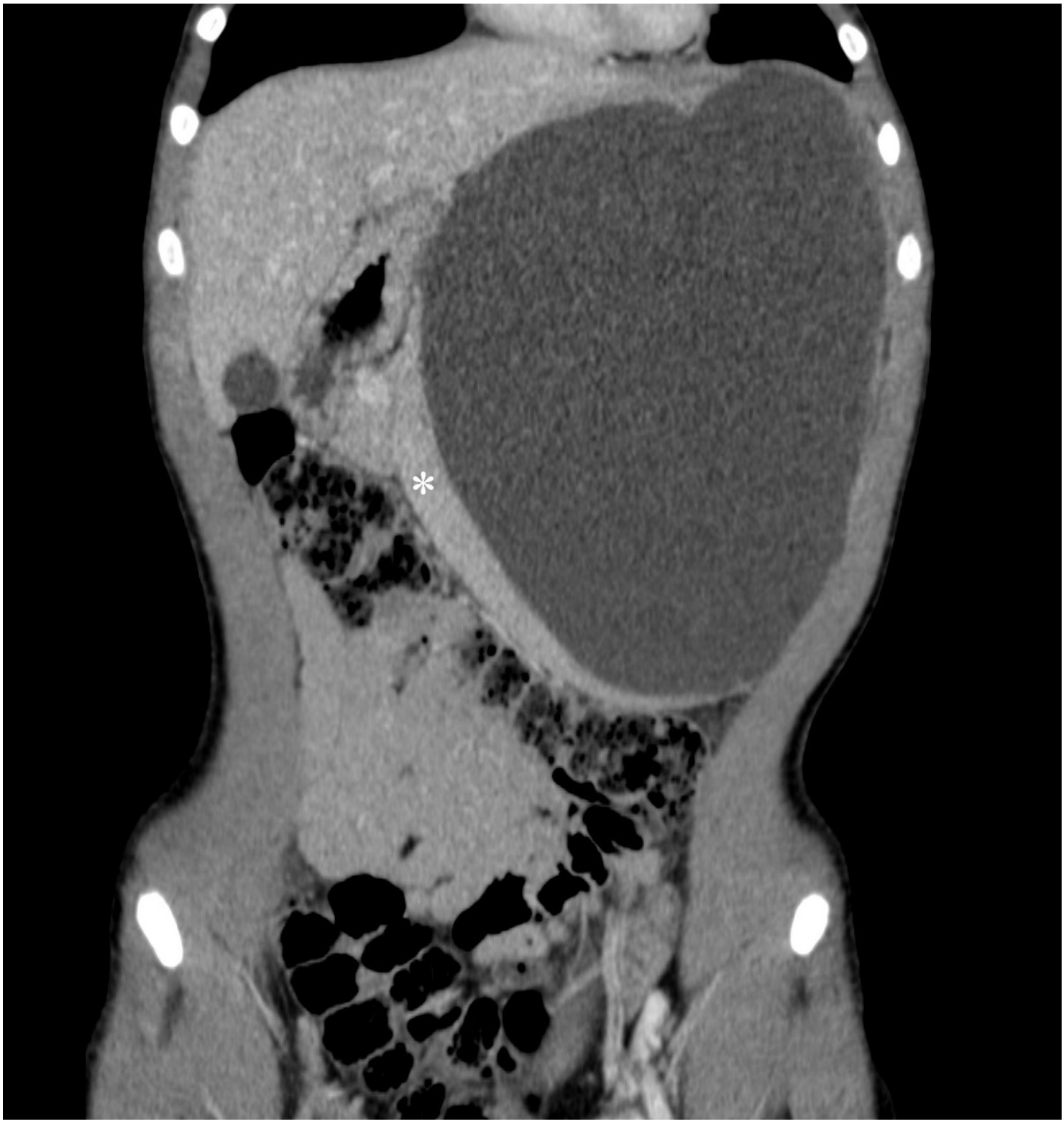

Figure 2

Coronal portal venous phase CT image showing the giant hypodense lesion arising from a thin splenic parenchyma (asterisk).

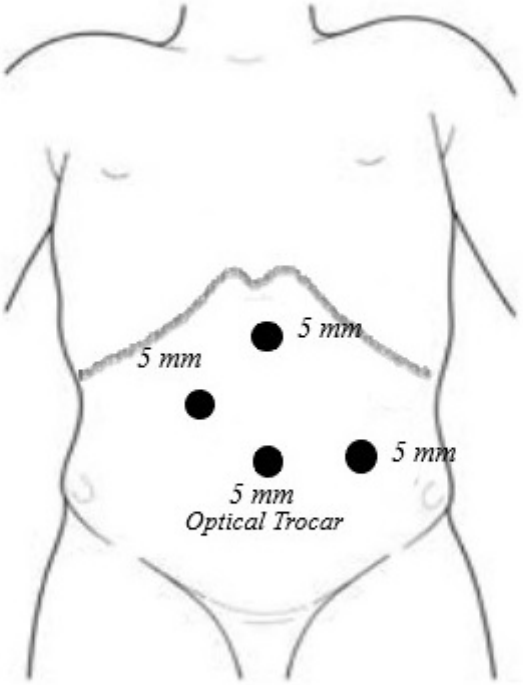

Figure 3

Placement of trocars for mini-invasive abdominal surgery in children with spleen disease.