Spleen-Preserving Surgery in Treatment of Large Mesothelial Splenic Cyst in Children - A Case Report and Review of the Literature

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Abstract

The nonparasitic primary splenic cysts are very rare clinical entity. In the past, splenectomy was the treatment of choice but with the recognition of the spleen's important immunological function, spleen-preserving surgery is the preferred treatment modality. We hereby present a case of a large splenic mesothelial cyst and its treatment with preservation of the remaining splenic parenchyma. Our case shows that spleen-preserving surgery in treatment of the large splenic cysts is possible and safe procedure with maintenance of the splenic function.

KEY WORDS: Mesothelial splenic cysts, spleen preservation, children

INTRODUCTION

In 1829, Andral first described the splenic cyst found at the autopsy and Pean performed the first recorded splenectomy for cyst in 1867 [1]. Splenic cysts are rarely found in clinical practice, occurring in only 0.5%-2.0% of the population [2]. Splenic cysts are classified into primary and secondary cysts, according to the presence or absence of an epithelial lining of the lumen [3]. The primary cysts are further subdivided into parasitic and nonparasitic [4]. The nonparasitic cysts can occur as a congenital and neoplastic, whereas congenital cysts are originally classified into epidermoid, dermoid and endodermoid cysts [5]. Primary splenic cysts (parasitic and nonparasitic) account for 25% of the total percentage of the splenic cysts [6]. The epithelial cysts account for approximately 25% of all primary (true) splenic cysts [7]. Primary splenic cysts occur more frequently in children and young adults [7,8].

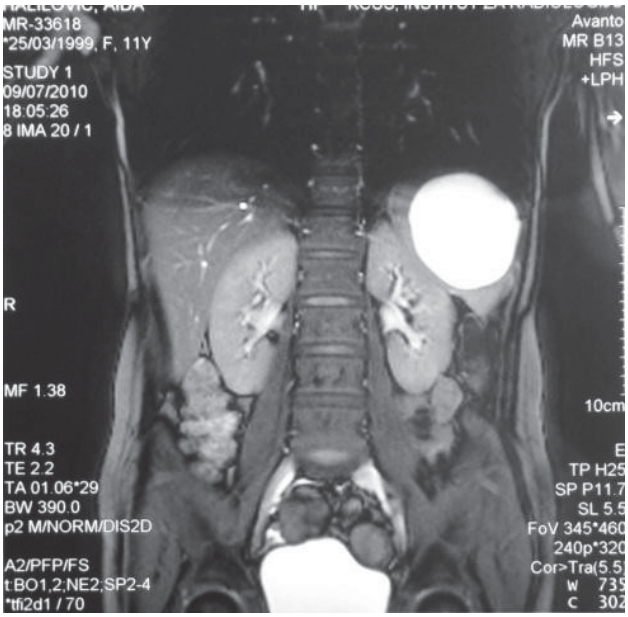

FIGURE 1. MR-reconstruction of a spleen and a splenic cyst (T1 FS COR).

CASE REPORT

A 10-year-old girl was examined at the Department of Pediatric Gastroenterology of the University Clinical Center Sarajevo, Bosnia and Herzegovina, for celiac disease. During clinical evaluation, abdominal ultrasonography revealed a solitary splenic cyst located in the central part of the spleen with a maximum diameter of 4,4 cm with smooth wall and anechoic central areas. The patient had no history of trauma or infection. Physical examination revealed nothing abnormal, but mild tenderness was found in the left hypochondriac region. Follow-up abdominal ultrasonography, performed 3 and 6 months after the initial ultrasonography, and MR, performed 6 months after the detection of splenic cyst, showed a moderate growth of the cyst (the cyst measured 6,24 x 6,07

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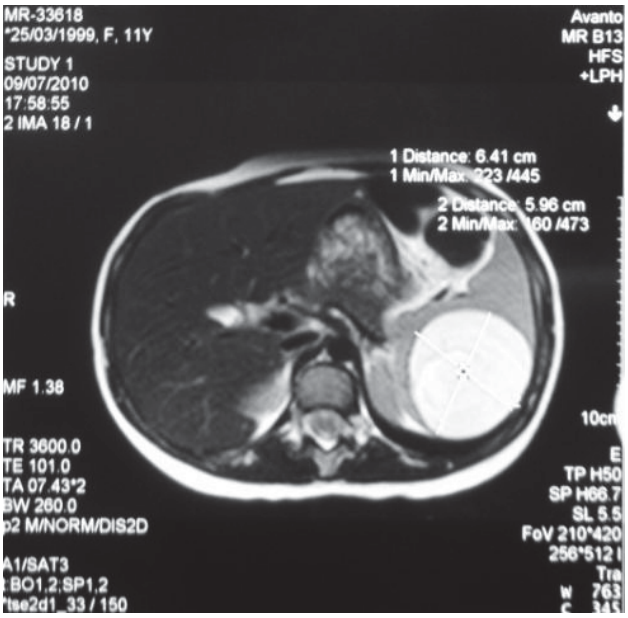

FIGURE 2. MR- reconstruction of a spleen and a splenic cyst is presented. Crossed lines: a splenic cyst (6,4x6 cm in diameter) (T2 TSE TRA)

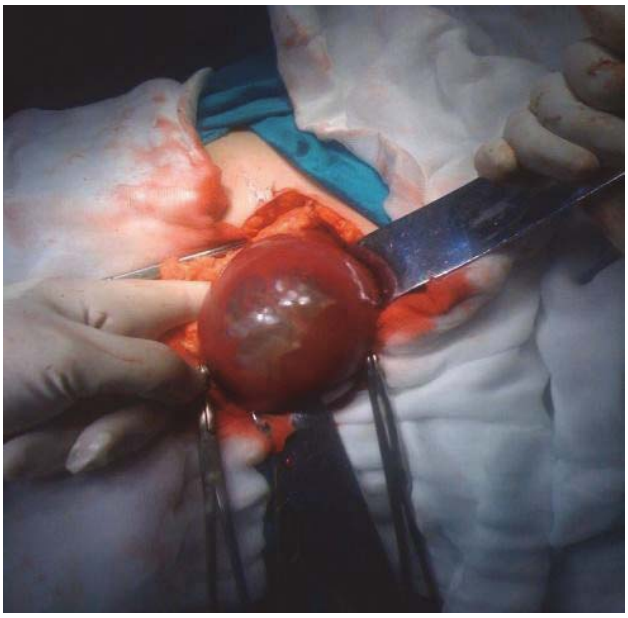

FIGURE 3. Wall of the cyst and the cyst cavity (intraoperative view)

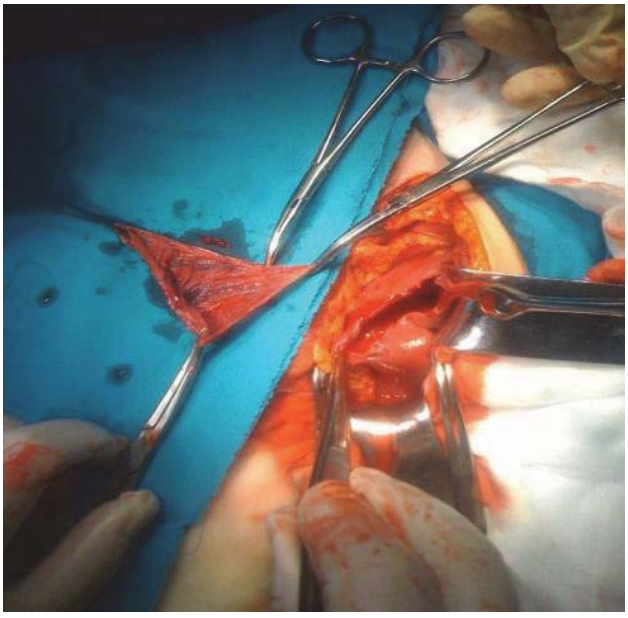

FIGURE 4. Wall of the cyst and the cyst cavity (intraoperative view)

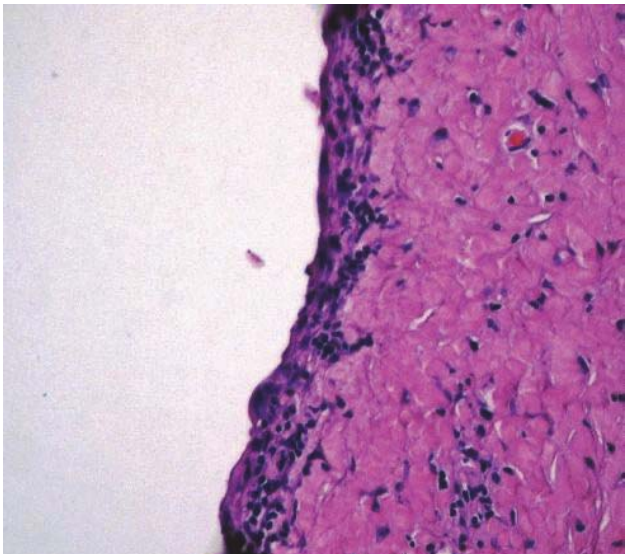

FIGURE 5. Histopathological view cross-section of the mesothelial splenic cyst. Microscopically, the lining is composed of cuboidal to low columnar non-ciliated (mesothelial-like) epithelium (H and E X400)

x 5,96 cm in size) (Figure 1,2). The patient was transferred to the Department of Pediatric Surgery. Since the diameter of the cyst was larger than 5 centimeters and the cyst showed progressive growth, we found that there was an indication for open surgical treatment. The abdomen was entered through a left subcostal incision and a large splenic cyst was revealed at the central part of the spleen (Figure 3). The two thirds of the spleen tissue was occupied by the cyst (Figure 3). The cyst roof was punctured and about 150 mL of serous fluid was aspirated and sent for culture and cytological examination (bacteriological cultures and cytological examination of the fluid were negative). Visible portion of the collapsed cyst wall was excised and then the entire cyst wall was "peeled" from the splenic parenchyma to exclude the risk of recurrence (Figure 4), with careful preservation of the remaining spleen tissue. Successful hemostasis was achieved by lining of the cyst cavity with Surgicel and with splenorrhaphy. The diagnosis of a primary mesothelial cyst was based on the histology report (Figure 5). There were no postoperative complications. The patient was postoperatively hemo-

dynamically stable, and postoperative ultrasonography scan and platelet counts showed preservation of splenic function. The patient was discharged on the ninth postoperative day.

DISCUSSION

Although the etiology, pathogenesis and development of the congenital splenic cysts are not completely clear, proposed mechanisms include: involution of pluripotent cells in the splenic parenchyma during development with subsequent squamous metaplasia; entrapment of peritoneal endothelial cells or coelomic mesothelium within the developing spleen, and invagination of the surface mesothelium or dilatation of normal lymph spaces [7]. During the diagnostic evaluation of the spleen cysts, ultrasonography was able to show that the cysts are either anechoic or hypoechoic and that they have a smooth thin wall, whereas solid tumors are either isoechoic or hypoechoic [9]. Computerized tomography and magnetic resonance imaging can provide additional relevant information related to the morphology of the cyst, composition of the cystic fluid, the precise localization of the cyst within the spleen and its anatomical relationship with the surrounding abdominal organs [10]. Open splenectomy was acceptable therapeutic modality in the treatment of splenic cysts until 1970s. Being aware of the important role of the spleen in hematopoiesis, immune function and protection against infections, especially in children as well as recognizing the possibility of overwhelming life- threatening septicemia [8,11], spleen preservation has been established as essential in the treatment of splenic cysts, when feasible. Recently, recommended treatment options are partial splenectomy, total cystectomy, partial cystectomy (cyst decapsulation, unroofing) or marsupialization, performed by open laparotomy or laparoscopy [8,12]. Nevertheless, when splenic tissue is completely replaced by the cyst or giant cysts are severely inflamed or infected, total splenectomy should be performed [13].

CONCLUSIONS

True splenic cysts are very rare clinical entity, which are surgically treated in case of life threatening complications like rupture, intracystic hemorrhage, abscess formation, compression of the adjacent abdominal organs or if their diameter exceeds 5 cm [14]. Because of the exceptional importance of the spleen in hematological and immunological functions of the organism, the recommended treatment goals include elimination of the cyst, prevention of recurrence with preservation of as much spleen tissue as possible. Preservation of more than 25% of splenic parenchyma is sufficient for physiological function of the spleen, primarily in providing immunological protection [8]. Our case shows that spleen-preserving surgery in treatment of the large splenic cysts is possible and safe procedure with maintenance of the splenic function.

DECLARATION OF INTEREST

Authors declare no conflict or interest.

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