

Post-Traumatic Splenic Pseudocyst in Children- A Complication of a Successful Conservative Approach

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Article Information

Received date: Apr 13, 2016

Accepted date: Jul 06, 2016

Published date: Jul 11, 2016

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Abstract

Blunt abdominal trauma is a major cause of morbidity and mortality among children and the spleen is the most frequently affected solid organ. Splenic conservation has become the accepted treatment for splenic blunt trauma. We report a case of a successful conservative approach with a consequent uncommon complication. The emphasis of this case lies in the fact that despite surgical intervention required to treat the splenic pseudocyst it was possible to preserve this important organ, especially in the paediatric age.

Introduction

The efficacy of non-operative treatment in splenic blunt trauma is well documented in children and spleen conservation has major benefits in this population [1-9]. A rare complication from conservative approach is the development of pseudocysts, considered secondary cysts without true cellular lining, usually formed after the resolution and encapsulation of a subcapsular or intraparenchymal hematoma.

Symptoms are present in two-thirds of patients and are related to the cyst's growth and the mass effect with compression of adjacent organs. A symptomatic pseudocyst also occurs in the presence of complications – infection, torsion, haemorrhage or rupture. Although optimal treatment of post-traumatic pseudocysts is not clearly defined, cysts larger than 5cm or symptomatic cysts require surgical treatment due to a higher risk of complications. Asymptomatic patients with small cysts (<5cm) may be observed and in the majority of cases do not require any kind of treatment.

When surgery is indicated, the main options are splenectomy, cystectomy with partial splenectomy, percutaneous drainage, and marsupialization/fenestration. When possible, the spleen-sparing procedures are always preferable [10-13].

In this report, we describe laparoscopic marsupialization of a giant splenic cyst.

Case Report

We report a case of a 13-year old male who suffered a blunt abdominal trauma during the practice of a contact sport. At admission he was hemodynamically stable and complained of upper left quadrant pain without rebound tenderness suggestive of peritonitis. The CT scan revealed an impressive grade III splenic hematoma (14x13cm) and a grade II liver laceration without signs of active bleeding. The child remained stable and therefore conservative approach was decided with bed rest, continuous monitoring with serial abdominal examinations and hemoglobin measurements. Because the parents had religion convictions that precluded blood transfusions, the patient received erythropoiesis stimulating agents - erythropoietin. The control CT showed a significant reduction in the free fluid but an increase in the hematoma dimensions. The conservative approach was successful and the child was discharged after 30 days, 5 of which in Intensive Care Unit to allow a more strict monitoring. In follow-up examination it was evident a splenic pseudocyst. Because of its dimensions and high risk of complications namely spleen rupture, it was decided to proceed with surgical intervention through a minimally invasive approach 9 months after the trauma admission. A well-defined and large cystic lesion in diaphragmatic spleen surface was punctured with drainage of serohematic fluid and debris. In the presence of parenchymal integrity without active bleeding, it was possible to conserve the spleen. The pathologic findings from the capsule fragments removed during the fenestration were consistent with a pseudocyst since epithelium layer was not present. Bacteriological test was negative. Surgery and postoperative course were uneventful and patient was discharged in the 4 fourth postoperative days, keeping a regular ambulatory follow-up. He was asymptomatic in the last review.

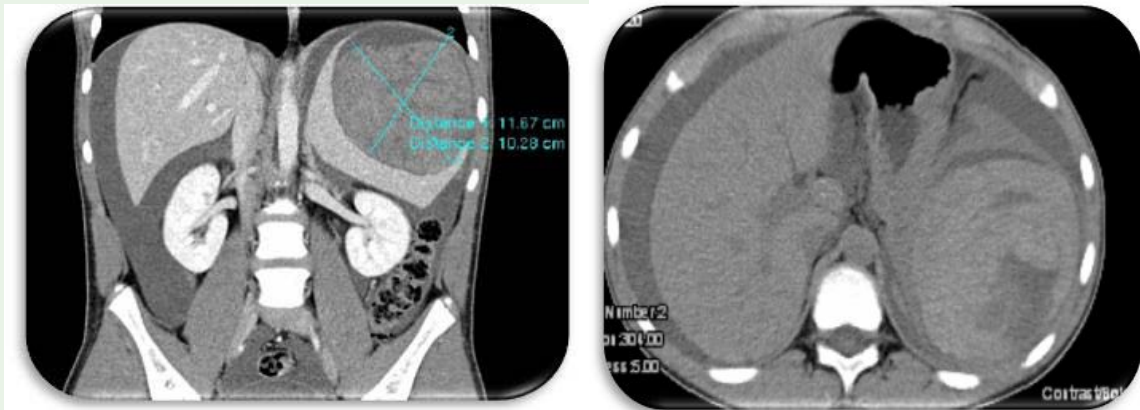


Figure 1 and 2: Detail of admission CT scan - hemoperitoneum evident in all peritoneal recesses and grade III splenic hematoma with estimated 12*10cm.

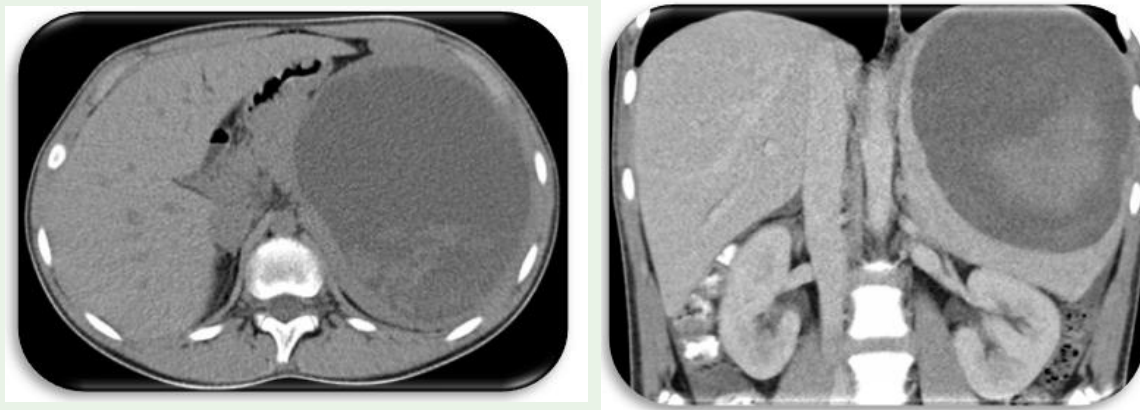


Figure 3 and 4: Follow-up imaging after conservative treatment discharge with large cystic lesion within the spleen suggestive of pseudocyst.

Discussion

Non-operative management of blunt splenic injuries has become the standard of care over the last decades, which explains a concomitant increase in the incidence of post-traumatic splenic pseudocysts.

Despite the recent explosion of literature on this topic, many questions remain unclear without conclusive answers to date - the intensity and duration of hospitalization (ideal need or length of stay in ICU, risk of late rupture), the frequency and need for serial examinations and the duration and intensity of activity restriction [1-9].

The extensive period of hospitalization in this case is explained by the need for strict monitoring in the presence of an injury with high risk of associated complications. Furthermore, the impossibility of performing blood transfusions demanded a thorough optimization in view of a possible surgical intervention. In this setting we should also highlight and discuss the increasingly supportive use of erythropoietin during the prolonged hospital stay of trauma patients [14].

As this case didn't require an urgent procedure and a subsequent fast intervention to avoid or restore acute blood loss, it was possible to stimulate erythropoiesis with this adjuvants to elective surgery that require a certain time to ensure their effectiveness. Also, it offers a safe and reliable solution in case of blood transfusion refusal minimizing the time period of these patients being at risk.

No parasitic splenic cysts are uncommon, with only around 800 cases described in the literature; 70-80% of these are pseudocysts.

Large cysts are more prone to injury and complications and may even present as acute abdominal emergency.

Although the natural history of secondary splenic cysts is not completely known, there is a risk of rupture, infection or haemorrhage. For symptomatic patients and large cysts, surgical treatment is indicated. Otherwise, they can be followed-up conservatively [10-13].

Preservation of spleen and its immunologic function is the aim of the surgical treatment and total splenectomy is only suggested for massive cysts covered with splenic parenchyma or those located near the hilum. Laparoscopic approaches, as in the reported case, have proven feasible and result in less postoperative morbidity.

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