Splenic Rupture Following Minor Trauma in a Young Man with Underlying Haemorrhagic Cyst in a Tertiary Victorian Hospital

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Abstract

Rupture of benign splenic cysts following minor trauma are extremely uncommon and described only a handful of times in the literature. We describe a 20-year-old patient who initially presented 1 day after falling onto his back after slipping off a step with worsening abdominal pain and distension. Contrast-enhanced computed tomography scan of the abdomen and pelvis was performed which showed an enlarged spleen containing a large cystic lesion with posterior rupture and open communication to the peritoneal cavity. Multiple benign splenic epithelial cysts including the largest responsible for rupture was confirmed on pathology after a total splenectomy was performed. Although the majority of splenic cysts are asymptomatic, rupture can lead to acute peritoneal signs and mimic other significant causes of abdominal pain such as viscous injury or acute appendicitis.

Keywords: Traumatic rupture, Splenectomy, Haemorrhagic Cysts

Introduction

Splenic cysts are uncommon, seen in only 0.07% of patients as described in a large autopsy series of 42,327 patients [1]. Splenic cysts are classified primary (true) or secondary (false), which are differentiated by the presence or lack of an epithelial lining. Primary cysts can be further subdivided into non-parasitic and parasitic cysts, while secondary cysts, which are composed of fibrous tissues, can be classified as traumatic, infectious, or resulting from prior infarction [2, 3]. Congenital cysts tend to present in young people. Hydatid cysts should be considered in differential in patients from endemic areas as the spleen is the third most common organ involved in hydatid disease [4]. Patients usually do not present with specific symptoms if the cyst is small. When the cyst is large they have non-specific abdominal symptoms such as pain, nausea, or a palpable mass usually in the left upper quadrant [3]. We herein present the rare complication of a traumatic rupture of a haemorrhagic splenic cyst in a young patient.

Case Report

A 20 year old male of French New Caledonian descent presented with 24 hour history of worsening left upper quadrant abdominal pain. Preceding the presentation, the patient had suffered a mechanical fall after slipping off a step and falling onto his back a day prior. He had also noticed 4-month history of a gradually increasing palpable left upper quadrant abdominal mass associated with 2 months of unexplained lethargy and anorexia. There was no significant past medical history, apart from a recent cosmetic surgery for male gynecomastia six months prior. On presentation, the patient had normal vital signs and was initially observed at emergency department, however, over the following 4 hours the patient clinically deteriorated with increasing left upper quadrant abdominal pain with signs of localised peritonism on serial abdominal examination and with increasing tachycardia up to heart rate of 110 beats per minute. The decision was made to perform a contrast-enhanced computed tomography (CT) scan of the abdomen and pelvis to further investigate.

On CT abdomen and pelvis, there was an enlarged spleen containing a large 10x12x14 cm capsulated cystic lesion of low attenuation (18 Houndsfield Units) with 6 mm linear wall calcification and posterior splenic capsule wall defect associated with large volume free fluid within the abdominal cavity, in keeping with splenic rupture. The patient was subsequently taken to operating theatre for an emergency laparotomy where a ruptured spleen containing a large haemorrhagic cyst was removed.
Incidentally, there was also an atrophied left lateral segment of the liver that had been severely attenuated by the chronic mass effect of the spleen. This thin atrophied sliver of the liver was deemed non-functional, stapled off and resected.

The peri-operative course was unremarkable and the patient made a full recovery. The patient was subsequently discharged 4 days following the operation. The operative histopathology revealed an enlarged, ruptured spleen containing multiple benign splenic epithelial cysts, with the largest 120mm cyst associated with haemorrhage and rupture. There was no evidence of malignancy, and the resected left lateral lobe of the liver showed severe atrophy in keeping with mechanical compression effect. At three-month follow up, the patient had made a full recovery. The patient was placed on the national splenectomy registry and was compliant with low dose lifelong oral amoxicillin (Figure 1, 2 and 3).

**Discussion**

Splenic cysts tend to be relatively asymptomatic and slow growing. They only become symptomatic when they reach a size large enough to exert pressure effect on adjacent organs such as the stomach, oesophagus, chest cavity, and the abdominal wall. Although extremely rare, splenic cysts have been documented in the literature to grow to as large as 32cm in size [8]. Due to their extremely rare incidence (0.07% based on a large autopsy series) and relatively non-specific presentation, rupture of a large splenic cyst can be difficult to diagnose in a timely manner, particularly when they occur in young patients with good physiological reserve [5]. Hydatid cysts should always be considered in the differential diagnosis in every patient from endemic areas such until proven otherwise as they can present as a simple cyst without the classical serological and imaging features, and can lead to life-threatening complications such as anaphylaxis [4].

CT is an useful modality in the detection of splenic cyst and is the most commonly used with a 95% sensitivity [7]. Other imaging modalities include abdominal ultrasound (US) which is useful for detecting cystic structures, septations and large volume free fluid in the case of rupture, and MRI which is best in delineating different makeup of splenic cysts with cholesterol, protein and blood-containing cysts having high signal intensity on T1-weighted MRI, and simple cystic fluid having high signal intensity on T2-weighted MRI [3]. In patients with hydatid disease but negative serology and indeterminant US and CT, MRI is useful at differentiating between parasitic, nonparasitic or traumatic cyst by demonstrating a low-signal intensity rim – or so-called “rim sign” that is characteristic of hydatidosis, best seen in the T2-weighted sequence [4].

A watch and wait approach is suitable for asymptomatic and small splenic cysts less than 5cm found incidentally on imaging [1, 6]. Splenic cysts that become symptomatic or larger than 5cm....
should be managed with surgical excision to avoid complications (e.g., rupture, peritonitis, abscess formation and pleural effusion or empyema) later on and prevent recurrence [2, 7]. Classically, the surgical treatment for hydatid and epidermoid cysts had been total splenectomy. However, since the 1970-80s recognition of the important role of the spleen in immunological function and risk of developing post-splenectomy infection, more conservative approaches were popularised [9]. In the case of traumatic splenic cystic rupture, prompt surgical intervention with laparoscopic or laparotomy with total splenectomy is indicated with or without splenic artery embolisation [10]. In our case, a conservative approach was not possible due to the haemodynamic instability of the patient and we opted to perform a laparotomy with total splenectomy.

Conclusion

In conclusion, we describe a rare case of traumatic haemorrhagic splenic cyst rupture in a young male at a Tertiary Victorian Hospital. Diagnosis of large splenic cysts can be difficult without imaging due to their rarity and the non-specific symptoms they produce at presentation. Rupture of large splenic cysts can result in significant morbidity and mortality if not recognised early. History should focus on any recent trauma. Prompt resuscitation and definitive surgical intervention should be the standard of care once diagnosis is established via imaging modality such as CT.

References