Ethiopian Journal of Medical and Health Sciences
2025, Volume 5, Issue 2
https://journals.hu.edu.et/hu-journals/index.php/ejmhs

Open Access
ISSN (online): 2789-7087

Case report

Spontaneous Splenic Rupture without Underlying Disease in a Nigerian Child: A Case Report

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Abstract

Background: Spontaneous splenic rupture is a rare clinical condition that is potentially life-threatening in the absence of prompt diagnosis and surgical intervention. It is an extremely rare condition in children with limited documented cases.

Case Presentation: We report the case of a 4-year-old boy with no underlying splenic disease that presented with clinical features of generalized peritonitis and had laparotomy with intra-operative diagnosis of splenic rupture. He underwent splenectomy and had an uneventful recovery.

Conclusion: This case highlights the need to consider spontaneous splenic rupture as a differential diagnosis in patients presenting with generalized peritonitis for better planning and management.

Keywords: Generalized peritonitis, splenic rupture, splenectomy

Introduction

Spontaneous splenic rupture is defined as the rupture of the spleen in the absence of trauma (1). It is a rare entity with significant diagnostic and therapeutic challenges. It has an incidence of 0.1% to 0.5 % (1). Though the exact mechanism for spontaneous splenic rupture remains unclear, several theories have been suggested, including microtrauma, increased splenic pressure, vascular anomalies and idiopathic factors (2) . It has been linked to malignancies, hematological diseases, and infectious diseases (3).

Spontaneous splenic rupture poses significant diagnostic challenges due to its rarity. However, the advent of imaging studies has helped in the preoperative diagnosis (4). The clinical presentation is variable and ranges from left upper abdominal pains, anemia, hypotension, and rarely peritonitis (5). The treatment options in patients with spontaneous splenic rupture include non-operative management and splenectomy. The choice of treatment is

dependent mainly on the hemodynamic status of the patient (6).

We herein report the case of spontaneous splenic rupture in a 4-year-old boy who presented with generalized peritonitis that was treated with splenectomy. This case highlights the need of considering spontaneously ruptured spleen as a differential diagnosis in patients with peritonitis. This case is reported according to the Surgical Case Report (SCARE) 2023 guideline.

Case Report

Patient information:

A 4-year-old boy with no significant medical history presented with the complaints of abdominal pains of 1- week duration. There was associated abdominal distension, vomiting and subsequent fever of 5 days duration. There was no preceding history of trauma. He had no other symptoms.

Clinical findings:

Clinically, he was conscious, temperature was 37.9-degree Celsius, respiratory rate was 30cycles/minute, and a pulse rate of 115/ minute. His abdomen was distended with minimal respiratory movement, without abrasion or ecchymosis. There was generalized tenderness and guarding. The bowel sound was hypoactive and the rectal examination was unremarkable.

Diagnostic assessment:

The laboratory parameters were as follows; Hemoglobin, 11g/dl; white blood cell count, 5 x 109/L; The serum electrolyte profile showed hypokalemia of 2.9 mmol/litre that was corrected. Other laboratory parameters that included malaria parasite test were essentially normal.
Pre-operative imaging was not done due to established peritonitis warranting emergency exploration. A preoperative diagnosis of generalized peritonitis from suspected typhoid perforation was made. The patient underwent emergency laparotomy with intra-operative findings of hematoma with minimal purulent collection and an enlarged spleen with multiple areas of rupture. There was no active bleeding. He was offered splenectomy (Fig. 1 and 2).

He received pneumococcal vaccination and antibiotic prophylaxis, and the post-operative follow-up was uneventful. The histopathological report confirmed splenic rupture with no background disease.

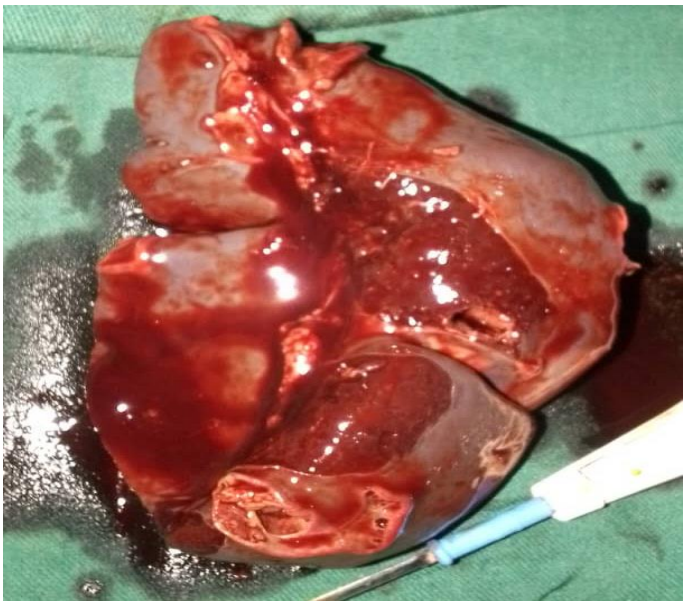

Figure 1: Multiple areas of rupture on the visceral surface of the spleen

Discussion

Blunt abdominal trauma is the most frequent cause of splenic rupture globally (4). Spontaneous splenic rupture is also referred to as atraumatic splenic rupture and constitutes a minority of cases, approximately 0.1% to 0.5% (1).

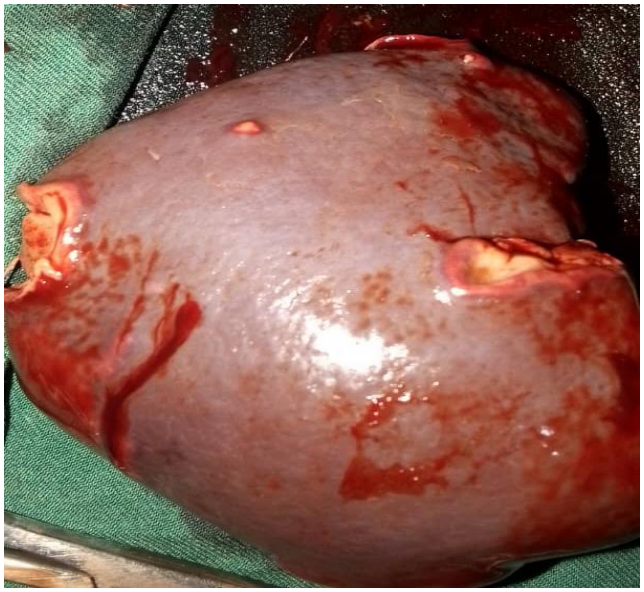

Figure 2: Multiple areas of rupture on the diaphragmatic surface of the spleen

Spontaneous splenic rupture is a rare, potentially life- threatening, with mortality rate estimated at 12-20% (3,7). It is predominantly a male condition with majority of the patients in their fifth decades of life, whereas our patient was a 4-year-old boy (6,7) . Its occurrence in children is extremely rare with limited documented cases (1).

Preoperative clinical diagnosis of spontaneous splenic rupture in the absence of imaging studies poses a significant diagnostic dilemma (4). Clinical presentation is nonspecific and variable. An abdominal pain is the most predominant symptom (1). The pain is usually in the left hypochondrium and may be associated with hemodynamic instability of the patient. Kehrs' sign, which is left shoulder tip pain arising from diaphragmatic irritation, is observed in 50% of cases (8).

The mechanism underlying spontaneous splenic rupture is currently unknown. Increased splenic pressure, vascular anomalies, microtrauma idiopathic factors may trigger spontaneous rupture (2). In malaria endemic region like ours, malaria induced spontaneous splenic ruptured has been reported (9).

Abdominal ultrasonography scan [USS] and computerized tomography scan [CT-Scan] are the imaging modalities for the preoperative diagnosis of spontaneous splenic rupture. CT-Scan is the preferred imaging of choice due to its high sensitivity and has a better delineation than abdominal USS. It can help in making diagnosis as well grading of the extent of the injury (8). The most common findings on CT-Scan include splenomegaly, splenic lacerations, and subcapsular or intra-peritoneal bleeding (10).

The management of spontaneous splenic rupture is dependent on several factors. These include the hemodynamic status of the patient, grade of the splenic rupture and pre-morbid state of the spleen. Conservative management is reserved for patients who are hemodynamically stable, having grades 1-3 splenic rupture and in whom the kidneys are not diseased (8). Splenectomy is the preferred treatment option for patients that are hemodynamically unstable, having grades 4 -5 splenic rupture as well as those with premorbid disease of the spleen (7-10).

Splenic -conserving techniques are increasingly been adopted due to the important immunological function of the spleen (11). Patients who undergo total splenectomy require appropriate vaccinations and antibiotics on a long-term basis to minimize the risk of overwhelming post-splenectomy infection.

Conclusion

Spontaneous rupture of the spleen is a rare and potentially life-threatening surgical emergency. It poses diagnostic challenges due to its rarity and varied clinical features. A high index of suspicion is required for timely diagnosis and surgical intervention. Spontaneous splenic rupture should be considered in the differential

diagnosis of children presenting with acute abdominal conditions.

Consent for Publication

Written informed consent was obtained from the patient for the publication of this manuscript.

Acknowledgements

We acknowledge the Department of Surgery for their support during the management of the Index patient and manuscript preparation.

Ethical considerations

Written informed consent was obtained from the parents for the publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Data availability statement

Not applicable.

Conflicts of interest

The authors declared that they have no competing interest.

Funding statement

The authors received no financial support for the research, authorship, and publication of this manuscript.

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