

# Atraumatic Spontaneous Splenic Rupture

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## Abstract

A spontaneous splenic rupture is one of the rarest encounters in our field. It is a potentially fatal condition if not diagnosed early and treated promptly. Moreover, several preexisting diseases contribute to the occurrence of spontaneous splenic rupture, which includes hematological disease, infectious, malignancy, and immune-compromised disease. In our case, we report a 37-year-old male with a known case of diabetes mellitus who presented with generalized abdominal pain and was diagnosed with spontaneous splenic rupture. He was treated with splenic artery embolization and discharged with a good outcome. Despite the rarity of the disease, it is important to keep it in mind when a patient presents to you with abdominal pain.

## Keywords

Splenic Rupture, Atraumatic, Unknown Etiology

## 1. Introduction

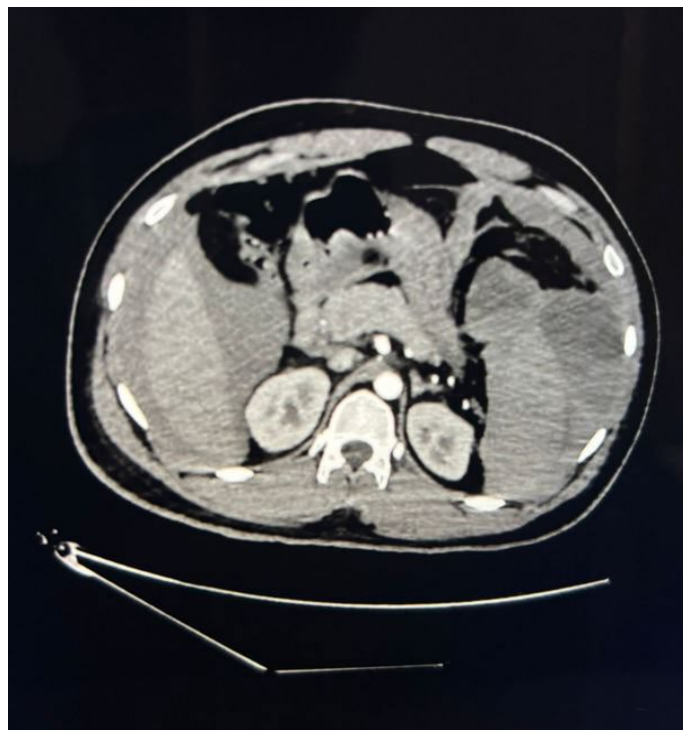
Although trauma is one of the most common causes of splenic rupture, spontaneous splenic rupture (SSR) is one of the rarest and most lethal causes. The incidence rate for spontaneous splenic rupture is around 0.5% [1], and the mortality rate for spontaneous splenic rupture is approximately 12% [2]. Such cases demand high suspicion from physicians to diagnose and treat them urgently. The pathophysiology is attributed to three possible mechanisms: either by infraction due to vascular occlusion, muscle contracting during sneezing or defecation and cell hyperplasia, which lead to increase in intrasplenic tension. [3]. The etiologies behind it vary from malignancy, coagulopathy, inflammatory, and idiopathic to infection [3]. Ultrasound can be used initially to help diagnose spontaneous splenic rupture (SSR) and can be confirmed with a computed tomography scan [3]. Management is consistent with a conservative approach or surgical approach based on the stability of the patient [3]. This case report aims to raise awareness of spontaneous

splenic rupture.

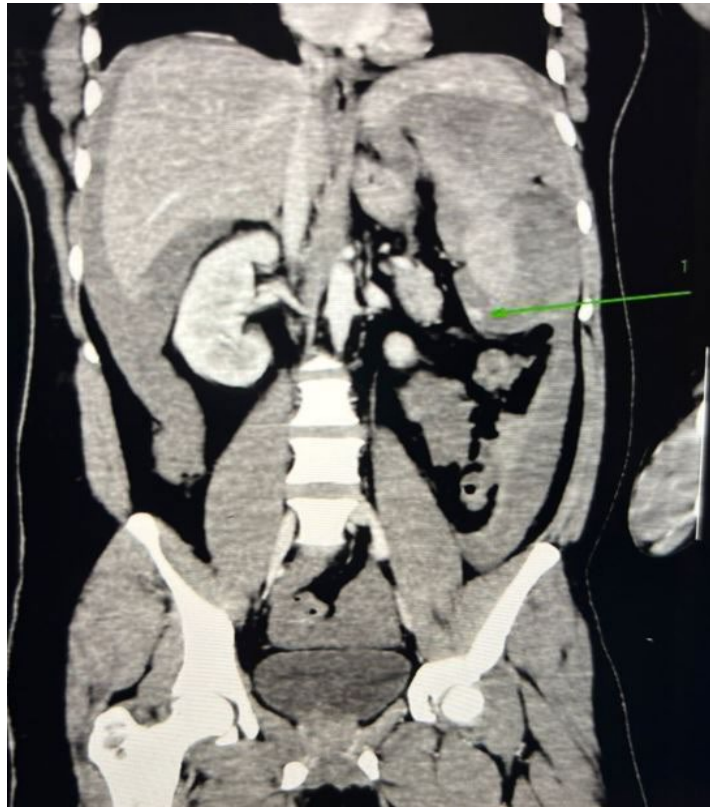
## 2. Case Presentation

A 37-year-old Bangladeshi male with a known case of diabetes mellitus presented to the emergency department complaining of abdominal pain for 7 days. He reported that the pain was generalized and increased in the last 2 days. It was associated with vomiting and constipation. Denied any history of recent trauma, travel, recent infection, no history of hematological diseases, no history of weight loss, night sweats, fever, or anorexia; surgical history, family history, and social history are all unremarkable. Upon examination, he was conscious, alert-oriented, and in pain, and his vital signs were: temperature: 37.8, heart rate: 119, blood pressure: 93/58, respiratory rate: 25 and saturation: 96% on room air. Upon examination of the abdomen, it was distended and had generalized tenderness, no rigidity, no guarding, and hyperactive bowel motion. Per rectum examination, it showed soft stool, no blood, and no melena. The patient was resuscitated with IV fluid. Laboratory findings showed white blood cells: 43.99 (4500 to 11,000 cells/mcL), hemoglobin: 9.5 (14 to 17.5 gm/dl), and platelet: 144 (135 billion to 317 billion/L).

CT Abdomen was done, which represented a Spontaneous splenic rupture with hemoperitoneum. The distal segment of the splenic artery is slightly attenuated, however, there is a focal contrast blush/vessel noted in the inferior-medial aspect of the spleen appreciated in the portal-venous phase only may suggest a suspicion site active bleeding (**Figure 1** and **Figure 2**). The patient was then admitted as a case



**Figure 1.** Suspected contrast blush.

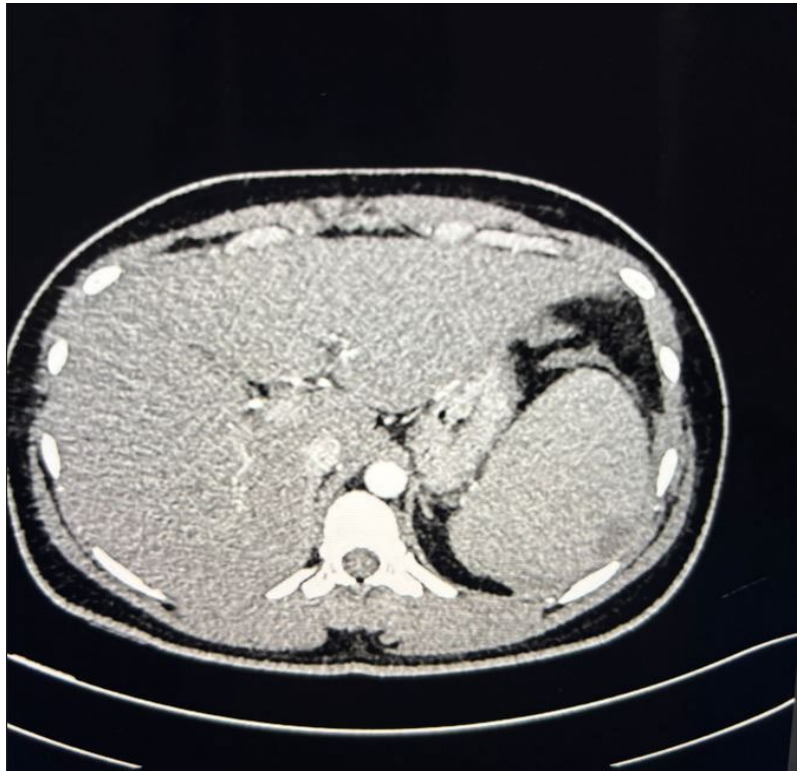


**Figure 2.** Arrow on suspected contrast blush.

of spontaneous splenic rupture and underwent emergency splenic artery proximal embolization then shifted to intensive care unit (ICU) to optimize his condition. The next day, the patient had a drop in hemoglobin level from 9.6 to 6.3 he was feverish at 38.7 c and respiratory rate of 21, heart rate of 133 blood pressure 124/74, and saturation 99% on the face mask. He was in severe abdominal pain mainly in the left upper quadrant area. US abdomen done showed Spleen is mildly enlarged and measured 14 cm with laceration at the lower pole with Intra-abdominal turbid fluid noted. He then was resuscitated and Received 3 units of packed RBC and 3 units of fresh frozen plasma and was further investigated and found to be malaria-positive on peripheral blood smear and the rest of the cultures were negative. He was managed with antimalarial medication. A few days after close observation, the patient was shifted to the ward to continue his treatment. The rest of his hospital course was not significant apart from the follow-up CT (**Figure 3**) before his discharge, which showed interval improvement with a significant decrease in hemoperitoneum and residual content visible at the pelvis. Splenomegaly post embolization, with stigmata of the previous capsular rupture with no sign of active bleeding. The patient was discharged home in stable condition after receiving prophylactic vaccination.

### 3. Discussion

Although the most frequent cause of splenic rupture is trauma, a minority of the



**Figure 3.** Improvement of hemoperitoneum.

cases reported were related to spontaneous splenic rupture, accounting for 0.5% [1]. The mortality rate of SSR if overlooked reached 12% [2]. It is more common in males than females 2:1 ratio [3]. Which applied to our case. Moreover, the risk factors that contribute to spontaneous splenic rupture are infections, neoplasm, inflammation, and idiopathic [4]. Other preexisting diseases that might play a role as well is diabetes mellitus and hypertension, which increase the risk of thromboembolism leading to splenic infarction [4].

However, in this case, the patient did not have any history of neoplasm, no history of trauma, no hypertension. The patient had a history of diabetes mellitus and was newly diagnosed with malaria. In a retrospective study, all patients who had splenic infarction had one or more of the risk factors linked to thromboembolism such as diabetes mellitus, which accounts for 40% of all the cases [4]. Moreover, an international review study was done showed that malaria-related splenic rupture is widely known in acute infection [5]. The pathological events behind it are still not clear yet it might be related to 1-cellular hyperplasia and venous-sinusoidal congestion. 2-vascular occlusion of the reticuloendothelial cells leads to ischemic episode 3-elevated intraabdominal pressure, which all aid in increasing pressure on the fragile spleen, leading to a tear in it's capsule and eventually splenic rapture [5].

The management approach of spontaneous splenic rupture mainly depends on the stability of the patient. A hemodynamically stable patient can be treated conservatively through IV fluid resuscitation, blood transfusion, bed rest and serial

abdominal examination. Another non-operative approach is agio-embolization in a stable patient. There is no doubt that In case of unstable patient surgical approach is the treatment of choice by either splenectomy or splenorrhaphy (to preserve the splenic function if possible) [6].

#### 4. Conclusion

Spontaneous splenic rupture is a rare entity. The difficulty of keeping Spontaneous splenic rupture in mind as a differential diagnosis despite the absence of trauma is there. However, the result of missing the diagnosis during evaluation in the emergency department when patient is first present could have a drastic fatal result.

#### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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