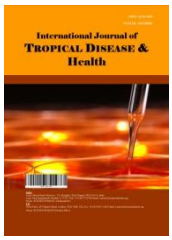

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Atraumatic Spleen Rupture Presenting as Acute Abdominal Pain: A Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Splenic rupture is a potentially life-threatening condition associated with acute abdominal pain. Although rare, atraumatic spleen rupture (ASR) has been reported. It is not usually considered in the differential diagnosis of acute abdomen so often missed in emergency leading to high morbidity and mortality. We present the case of a 38-year-old male who presented with fever and acute abdominal pain, had atraumatic splenic rupture which was diagnosed early resulting in better outcome of patient.

Keywords: Atraumatic spleen rupture; viral infection; splenectomy.

1. INTRODUCTION

Splenic rupture, a potential life-threatening condition generally associated with trauma carries risk of significantly high morbidity and mortality. However, rare cases of ASR have been reported. High index of clinical suspicion is required to diagnose ASR in cases of acute abdominal pain, especially without any trauma history, which makes it challenging to diagnose

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and is often missed leading to high morbidity and mortality. We present the case of a 38-year-old male who presented with acute abdominal pain was detected to have atraumatic splenic rupture and was managed with splenectomy.

2. CASE REPORT

A 38-year-old male, came to ER with complaints of high grade, intermittent fever since 4 days, body ache and retro orbital pain since 3 days. He also had pain in the left upper quadrant of abdomen for 1 day. Abdominal pain was insidious in onset, dull aching, continuous, initially occurring in the left upper quadrant, gradually becoming generalized, associated with episodic vomiting. There was no history of chest pain, breathlessness, burning micturition pain on micturition, rash or eschar, or any neck stiffness. There was no history of any trauma, injury or any accident.

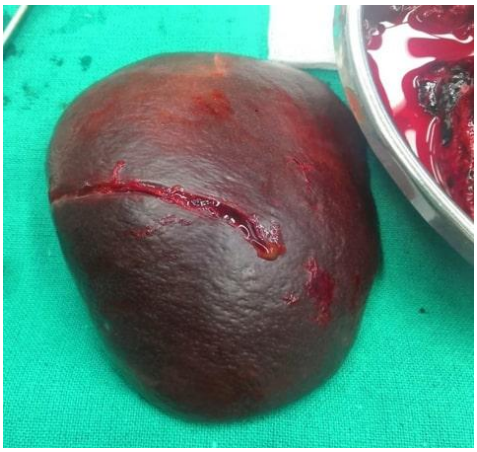

Fig. 1. a large curved lacerated wound of approximately 10 cm over the posterior surface of spleen

Patient was conscious, cooperative and oriented to time, place and person. General examination revealed mild pallor. There was no icterus, cyanosis, edema, clubbing, or any significant lymphadenopathy. His pulse rate was 92/min, regular, low volume, no radio radial or radio femoral delay, all peripheral pulses were palpable, Blood pressure was 80/56 mmHg, left arm supine posture, Respiratory rate was 20/min, Temperature was 99.3^{o}F, Spo_2 was 98% with room air. Systemic examination revealed mildly distended abdomen, superficial tenderness in the left hypochondrium along with presence of rebound tenderness. Percussion note on percussion note there was dull and no shifting dullness was present.

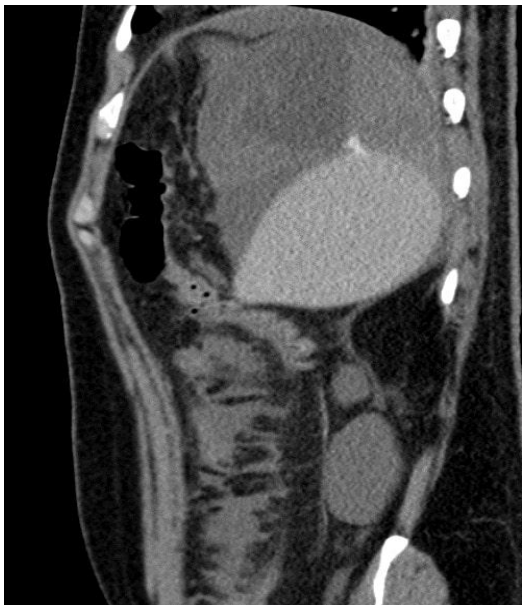

Fig. 2. Active contrast extravasation noted on venous phase images from upper pole

Routine investigation revealed low Hb (10.3 mg/dl) with low platelet count (120 x 10^9/L) and normal leucocyte count (TLC 5.98 x 10^9/L). Liver function test showed elevated transaminases (SGOT 963, SGPT- 813, ALP 67, GGT 89). Renal function test profile was normal (urea 34.3 mg/dl, creatinine 1.0 mg/dl). Further workup including fever profile (Typhidot, dengue NS1 and serology, Malaria antigen and smear, Leptospira antibody, Scrub typhus IgM) and viral markers were inconclusive. Blood and urine culture were sterile and serum procalcitonin was normal. Chest X Ray view was normal. USG whole abdomen revealed increased echogenicity of liver, splenomegaly, moderate amount of free fluid with internal echoes and few septations in the peritoneal cavity in peri splenic and perihepatic region. He was started on injectable parenteral ceftriaxone, antipyretics, intravenous iv fluids and other supportive measures. Repeat blood count was done the following next day and the Hb conc there was drop in His hemoglobin dropped to 5.3 gm/dl for which PRBC transfusion was done. CT triple phase angiography abdomen was suggestive of active extravasation of contrast from superolateral aspect of spleen suggestive of active bleed with peri splenic hematoma and hemoperitoneum (Figs. 2, 3, 4, 5). Exploratory laparotomy with urgent Splenectomy was done under general

anesthesia revealing frank blood in the peritoneal abdominal cavity along with large blood clots with a large wedge-shaped clot, of size 6 cm x 4 cm x 4 cm observed in the peri splenic fossa and a large curved lacerated wound, of approximately 10 cm over the posterior surface of spleen (Fig. 1).

Post operatively, he received PRBC and FFP transfusion. Haemophilus influenzae b (HIB), Pneumococcal and meningococcal vaccines were given. Vaccination were done. He made gradual but sustained improvement improved gradually and was discharged. He was stable and doing good on his last follow up 3 months after surgery.

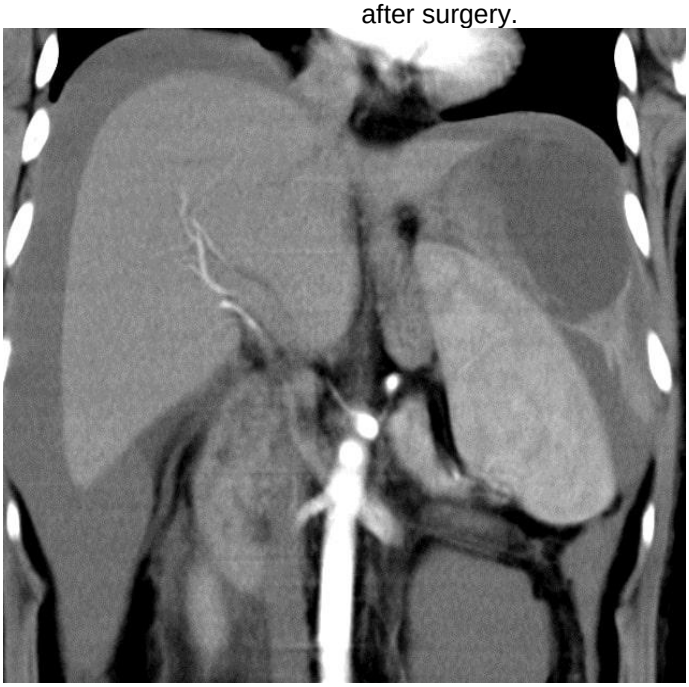

Fig. 3. Coronal MIP images (arteriral phase): Loculated perisplenic haematoma noted Hyperdense fluid noted in perihepatic region suggestive of haemoperitoneum

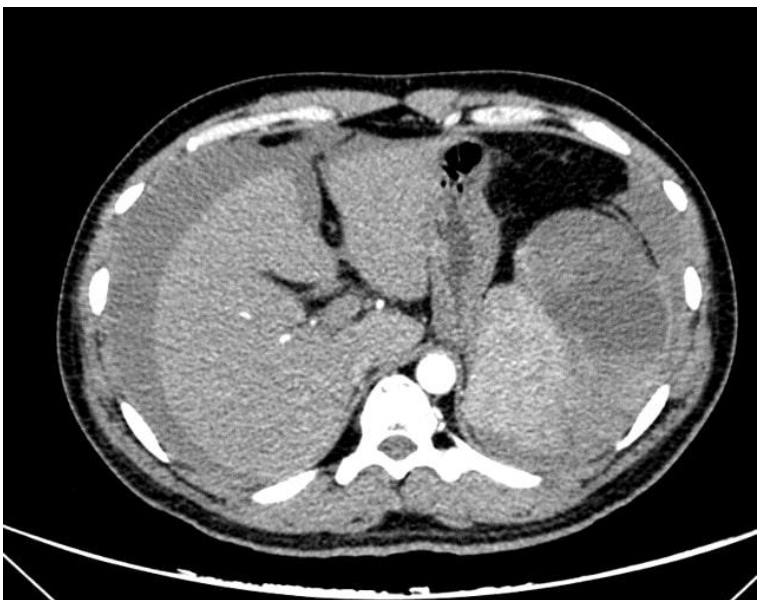

Fig. 4. Arterial phase images (Axial): Heterogeneous, perisplenic haematoma noted, with layered hyperdense content

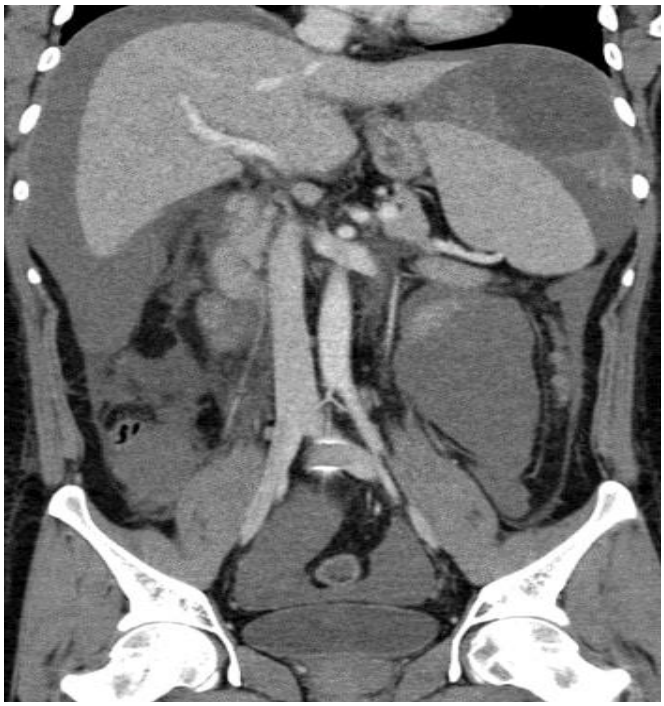

Fig. 5. Coronal MIP images-extensive hemoperitoneum

3. DISCUSSION

Splenic rupture is a potentially life-threatening condition presenting as acute abdominal pain with high morbidity and mortality rates. Splenic rupture can be traumatic or ASR. ASR is a rare condition with incidence of 1% and mortality rate of 12.2% [1, 2]. ASR is a rare cause of acute abdominal pain and is rarely considered as differential diagnosis in absence of history of trauma. Rokitansky and Atkinson described first documented case of ASR in 1861 and 1874 and Weideman defined spontaneous splenic rupture [3], with more than 90% cases being related to pathological spleen, which was renamed as atraumatic-pathological splenic rupture and atraumatic-idiopathic splenic rupture, according to etiology and pathological changes in spleen [2,4].

The exact mechanism of idiopathic atraumatic splenic rupture is not understood however, there are few hypothetical mechanisms proposed including parenchymal engorgement and vascular occlusion due to hyperplasia of intrasplenic cellular or reticuloendothelial cells or abdominal muscle compression during activities like sneezing, coughing or defecation [5].

Orloff and Perkins gave diagnostic criteria for Idiopathic splenic rupture viz., 1) absence of any history of trauma 2) absence of any pre-existing splenic disease 3) absence of adhesions or scarring in the spleen, 4) grossly normal spleen, macroscopically and histologically, [6] with addition of 5th criteria of full virological studies of acute phase and convalescent sera showing no significant rise in viral antibody titre by Crate and Payne [7].

Upper or left sided abdominal pain, tenderness was the most common initial presentation followed by hypovolemic shock and peritonitis in later stage [1]. Kehr's sign i.e., a sharp radiating pain to the left shoulder, is found in 20% cases [8]. Diagnosis of ASR is a diagnosis of exclusion and CECT abdomen plays an important role [9].

Many viral infections affecting the spleen have been recognized which affect the spleen, but histological findings develop later. So, it is possible in our case that a subclinical viral infection was responsible for splenic rupture however, it is extremely difficult to confirm this test and the result obtained would have had no change on the management of the patient.

Management outcome is based on hemodynamic stability, amount of blood product required, degree of hemoperitoneum and splenic injury extent as classified by American Association for the surgery of Trauma (AAST) grades of splenic

injury [10]. Prompt surgical splenectomy is required to stabilize the patient with high grade injuries, similar to our case.

4. CONCLUSION

Splenic rupture is a rare condition, and not commonly a differential diagnosis for acute abdominal pain in cases with no history of trauma, hence diagnosis is so often missed in ER, which leads to significantly high morbidity and mortality rates. Its possibility of being a It should be kept as a differential diagnosis, even in absence of any history of trauma and other splenic pathology should always be considered. CECT abdomen is essential for diagnosis and management is based on aggressive treatment of shock and Splenectomy, depending on hemodynamic status.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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