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ATRAUMATIC SPLENIC RUPTURE: A RECONDITE COROLLARY TO DENGUE FEVER

General Surgery

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ABSTRACT

Splenic rupture can be divided into 3 main categories: traumatic, Atraumatic and true spontaneous.1 Atraumatic splenic rupture is a rare but dramatic occurrence and deciphering the etiology can be challenging with many cases remaining unclear despite full investigation.2 In these patients, making a firm diagnosis of splenic rupture and investigating the cause of rupture can present challenges.1 Its diagnosis is most often established with ultrasonography or computed tomography (CT) abdominal imaging.2 We discuss here the case of a 19 yr. old male patient with acute abdominal pain and prostration, with a background of intermittent fever of 4-5 days. He showed severe pallor, tachycardia, and tachypnea, generalized tenderness over abdomen without any guarding or rigidity. Ascites was present with no hepatosplenomegaly. The subsequent radiological and blood investigations showed a splenic laceration with positive IgM antibodies and negative IgG antibodies against dengue. The patient was counseled to undergo splenectomy in view of his hemodynamic status.

KEYWORDS

Case Report, Dengue Fever (DF), Atraumatic Splenic Rupture (ASR).

INTRODUCTION

ASR is uncommon but not exceptional. The incidence, mechanisms, treatment guidelines, and prognosis are poorly defined due to heterogeneity and limited availability of comprehensive reviews.[3] The diagnosis of ASR can be made with the Orloff and Peskin criteria, which states that ASR can be diagnosed when these four criteria are met:

1) Thorough history reveals no antecedent trauma,
2) No evidence of disease in organs other than the spleen that can cause rupture;
3) No perisplenic adhesions or scarring consistent with trauma or past rupture; and
4) Normal spleen on gross and histological examination. [4]

The causes of atraumatic splenic rupture include chiefly neoplasia and infections.[2] Among infections Dengue fever (DF) is characterized by a spectrum of clinical features that ranges from asymptomatic infection to severe illness (dengue hemorrhagic fever [DHF]/dengue shock syndrome).[5] We report a non-fatal case of atraumatic splenic rupture in a young patient with dengue fever with no cutaneous or mucosal bleeding tendencies, but with features of circulatory collapse due to visceral bleed.

CASE REPORT

A 19-year-old male with an acute abdominal pain and prostration with a background of intermittent fever of 4-5 days. On examination, severe pallor, tachycardia (pulse 120/min), tachypnea and a blood pressure of 90/60 mm of Hg, generalized tenderness over the abdomen with no guarding or rigidity. Ascites present without hepatosplenomegaly. Other systemic examinations were non-contributory.

The ultrasound findings were suggestive of a possible large hematoma at the upper pole of normal sized spleen with haemoperitoneum. A CECT-abdomen showed a large heterogeneous area (HU70-80) involving left sub diaphragmatic, gastro-splenic and left lumbar region, measuring approx.14 cm × 10 cm × 15.5 cm suggestive of hematoma with extravasation of contrast into hematoma. There was also gross free fluid (HU-35-50) in abdomen and pelvis suggestive of haemoperitoneum (Figure 1).

These findings were consistent with splenic rupture with intra- and peri-splenic hematoma. Initial investigations revealed, hemoglobin (Hb)-5 g/dl, total leukocyte count-7.1 × 10^9/l, platelet count -51 × 10^9/l; Prothombin Time -17 sec, International normalized ratio was 1.2, rest all routine blood investigations were normal. He had positive IgM antibodies and negative IgG antibodies against dengue. He was seronegative for malaria dual antigen, Widal test and human immunodeficiency virus.

He was resuscitated with crystalloids and blood transfusions (2 units of packed cells; 4 units FFP and 4 units of platelets) pre and intraoperative. He underwent splenectomy in view of the hemodynamic status. The surgical procedure was uneventful. There was no fever or bleeding tendencies in the post-operative period. 2 more units of packed cells were transfused postoperatively. His follow-up hemogram improved on the POD2 onward- from Hb 7.6 g/dl, platelet 92 × 10^9/l to Hb-12.2gm/dl & Platelet-121×10^9/l on POD4. He was discharged after 12 days of in-patient stay.

Macroscopic examination of the specimen showed a longitudinal rupture from the upper pole of spleen to the center of the hilum, causing dehiscence of the splenic capsule all through the course along with overlying hematomas. Histopathology of the spleen showed normal architecture with no evidence of hyperplasia, cellular infiltrates, or hematological malignancy.

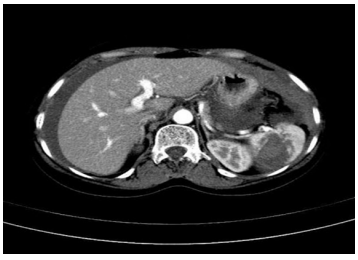

FIGURE 1: A CECT-abdomen showed a large heterogeneous area (HU70-80) involving left sub diaphragmatic, gastro-splenic and left lumbar region, measuring approx.14 cm × 10 cm × 15.5 cm suggestive of hematoma with extravasation of contrast into hematoma. Gross free fluid (HU-35-50) is seen in the abdomen and pelvis suggestive of haemoperitoneum

DISCUSSION

Most common cause of splenic rupture is trauma[2] but this does not negate the possibility of Atraumatic splenic rupture (ASR).

Atraumatic splenic rupture is of two types-pathologic or spontaneous. ASR rarely occurs in a histologically proven normal spleen, and in

such cases, is called a spontaneous rupture. ASR usually occurs in a diseased spleen and is called a pathologic rupture.[6] Spontaneous splenic rupture is caused by lymphoproliferative diseases, connective tissue disorders, solid neoplasm, aneurysm, pancreatitis and various infective disorders.[7,8,9]

Infections associated with ASR include dengue, malaria, typhoid etc.[3] DF is a rare cause of spontaneous splenic rupture and hemoperitoneum.[10] In case of Dengue the pathogenesis behind this serious complication is probably congestion of spleen and thrombocytopenia or both.[11] The survival observed in these cases should be attributed to timely diagnosis and management rather than the natural course of splenic rupture, which is expected to be poor if the diagnosis is missed.[10]

The choice of treatment is, just as for traumatic splenic injuries, determined by the hemodynamic stability, the amount of blood product used, the degree of haemoperitoneum and the extent of the splenic injury as described by the AAST classification[12,13]. For ASR, further consideration must be given to the underlying pathology, which may be limited to the spleen or have a systemic element. Patients with ASR of malignant etiology should generally undergo immediate total splenectomy, although in some circumstances transcatheter arterial embolization may be used as a temporary stabilizing measure.

Patients with ASR of non-malignant etiology might be treatable by organ-preserving surgery or a non-surgical approach, with or without trans catheter arterial embolization. It is self-evident that further risk factors, such as advanced age or anticoagulant treatment (for example, for a mechanical heart valve), need to be taken into consideration. Even if all preconditions for non-operative management are met, however, the relatively high failure rate must not be forgotten. Finally, there are patients with ASR of unknown etiology for whom the standard treatment should probably be total splenectomy. [14]

The principle of performing a total splenectomy, even in haemodynamically stable patients, can be justified for three reasons. First, histological examination of the spleen will establish the etiology of the ASR as well as any underlying systemic disease[15]. Second, a significant number of malignant diseases may cause ASR, thereby prohibiting any organ-preserving approach. Third, the splenic function might already be compromised by a pathological alteration or infiltration of the splenic parenchyma, resulting in functional hyposplenism[16.17]. In such circumstances the removal of a non-functional spleen is justified and will not increase the risk of an overwhelming post-splenectomy infection.

We went for splenectomy in our patient to which he responded with a good outcome.

CONCLUSION

ASR is a very rare, but grave manifestation of dengue fever that needs a high index of suspicion for diagnosis. Using ultrasonography or CT scan, and peritoneal aspiration of fresh blood may assist in the diagnosis of ASR. Rapid diagnosis, aggressive resuscitation, and timely surgical intervention can lead to a successful outcome in patients with ASR[7], as it did in this case.

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