Case Report

Splenic Artery Embolization in Subcapsular Splenic Hematoma Secondary to Dengue Hemorrhagic Fever

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Abstract

Dengue hemorrhagic fever (DHF) is a common syndrome of dengue viral infection but complications such as sub-capsular splenic hematoma leading to capsular rupture in dengue are rare. We report a case of a young male who presented with fever, breathlessness, and acute abdomen. His CT of the abdomen revealed subcapsular splenic hematoma measuring 16.7 cm × 13.0 cm × 11 cm. His laboratory parameters were suggestive of anemia, thrombocytopenia, acute kidney injury, coagulopathy, and hepatopathy because of which instead of splenectomy, splenic artery embolization with ultrasound-guided splenic hemorrhage drainage was performed for his management as his clinical condition deteriorated. This case report sensitizes newer modalities of treatment of subcapsular splenic hematoma with splenic arterial embolization.

Keywords: Case report, dengue hemorrhagic fever, splenic artery embolization, sub-capsular splenic hematoma

Introduction

Dengue hemorrhagic fever (DHF) presenting with sub-capsular splenic hematoma is rare. splenic subcapsular hematoma in DHFis found in 1.5% of DHF cases.[1] The management of splenic subcapsular hematoma is controversial. Early splenectomy is advised to prevent rupture of the splenic subcapsular hematoma and its complications.[2,3] However, few researchers recently found that most of the complications could potentially regress and be managed conservatively with splenic arterial embolization.[4,5] The present case report describes an uncommon complication, large subcapsular splenic hematoma in a case of DHFtreated successfully with splenic arterial embolization and ultrasound (US)-guided percutaneous drainage of splenic hematoma.

Case Report

A 25-year-old male, resident of a rural part of central India without past significant medical illness or tobacco or alcohol addictions, presented with complaints of high-grade fever, breathlessness, and epigastric pain. He hadhigh-grade fever associated with generalized body ache 10 days back, for which he attended primary care at rural hospitals and was treated symptomatically. Four days later, he had breathlessness at rest and sudden onset pain in the upper left abdomen. For which he came to our Emergency Department. Physical examination revealed pulse rate of 100/min regular, temperature of 39°C, blood pressure of 100/60 mm of Mercury. He had pallor and icterus. On abdominal examination, epigastric tenderness, left upper quadrant tenderness, and splenomegaly was observed. On chest auscultation, breath sounds were diminished on the left infrascapular, infraaxillary, and mammary regions. His laboratory parameters were as follows, Hb - 5.7 g %, white blood cell - 17,400 cumm, platelets - 75,000 cumm, total bilirubin - 7.0 mg/dl, conjugated bilirubin - 5.6 mg/dl, aspartate aminotransferase - 1692 IU/L,

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alanine aminotransferase - 750 IU/L, serum creatinine - 2.1 mg/dl, and urea - 101 mg/dl. His International Normalized Ratio (INR) was 1.66. Malarial parasite was not seen in peripheral smear. Dengue Ig M antibodies were positive by the ELISA method. IgM antibodies for Scrub typhus were negative. His serum lipase was 941 mg/dl. Abdominal US showed hepatosplenomegaly with cystic collection in the spleen and ascites. Contrast-enhanced computed tomography of the abdomen revealed subcapsular splenic hematoma collection of size 16.7 cm × 13 cm × 11 cm, moderate ascites, and bilateral minimal basal pleural effusion [Figure 1]**.** Hence, patient was diagnosed as DHF with subcapsular splenic hematoma, patient had low blood pressure of 80 mmHg systolic BP, low hemoglobin (5.7 gm/dl), and platelet count (75,000 cumm). He received three units of packed red cell transfusion. Interventional radiologist's and surgeon's opinion for splenectomy was taken. After brainstorming, due to the presence of multiple conditions such as thrombocytopenia, coagulopathy, hepatopathy, acute kidney injury (AKI), and pancreatitis, ultrasound-guided pigtail catheter was inserted in the spleen to drain subcapsular hematoma, and splenic artery embolization was done [Figure 2a and b]. Splenic aspirate on microscopy showed plenty ofred blood cells and no growth on culture. His symptoms, signs, and laboratory parameters improved with above procedure and management with empiral broad-spectrum antibiotics and supportive intravenous fluids over a period of 12 days. The patient recovered from hepatitis, AKI with normalization of serum creatinine and liver function. His pigtail catheter was removed on 14th day and he was discharged in a vitally stable state on 16th day.

Discussion

In this case report, a large subcapsular splenic hematoma complicating DHF is depicted, which is successfully treated with splenic arterial embolization and US-guided percutaneous drainage of splenic hematoma. Splenectomy was avoided. We used this newer modality of splenic artery embolization for the first time in a complicated patients of DHF.

Splenic hematoma is an unusual complication of DHF as compared to non-traumatic pathogenic spleen rupture. As the exact cause of splenic hematoma in DHF is unknown, various hypotheses had been put forward that may explain subcapsular splenic hematoma: First hypothesis is, dengue virus infection causes immune thrombocytopenia and coagulation factor deficiency resulting in either splenic hematoma or splenic rupture.[4,6] Second hypothesis is Dengue virus invading splenic endothelium.[7,8] Third hypothesis is dengue infection caused liver damage and AKI causing decrease in coagulation factors.[9] In the present case, patient had thrombocytopenia, increased INR of 1.6, and acute hepatitis as well as AKIwhich led to subcapsular splenic hematoma.

Patients with pain in the left upper quadrant and hypotension should be suspected to have splenic complications.[7] Hypotension is the only clinical sign predicting probable splenic hematoma in a patient with suspected dengue presenting with abdominal pain. These clinical signs can be misdiagnosed, as hypotension is frequently associated with DHF and Dengue Shock Syndrome, which may delay the clinician for the diagnosis of splenic hemorrhage. Hence, it is imperative to perform early abdominal US focussing on splenic hematoma in a patient with suspected dengue fever presenting with abdominal pain and hypotension, irrespective of the presence of signs of plasma leak.[6-8,10]

Treatment of subcapsular splenic hematoma in DHF is controversial, due to its rareness, and presence of multiple comorbidities such as dengue hepatopathy, AKI, coagulopathy, and pancreatitis. Some reports have encouraged aggressive management with early splenectomy to avoid splenic rupture.[6-8,10] Out of total five dengue-related splenic hematoma, three patients recovered after splenectomy, but two patients died due to multi-organ dysfunction.[6-8,10] Researchers suggested that the treatment of splenic hematoma should be a splenectomy to prevent continuing blood loss and potential rupture. However, some authors promote a conservative approach. Padyana *et al*.[4,5] reported a case of splenic rupture in DHF managed with endovascular surgery and favorable outcome, in which the computed tomography scan showed the marked resolution of the hematoma after 1 month. This approach was considered as a safe management in hemodynamically unstable patients. As our patient had multiple comorbidities, as a part of conservative approach, percutaneous drainage of the hematoma, with splenic artery embolization was performed and patient improved dramatically. The major advantages of percutaneous drainage with splenic artery

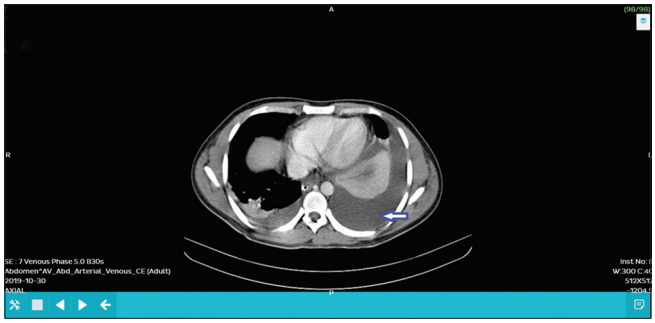

Figure 1: Computed tomography scan of the abdomen suggestive of a large subcapsular splenic hematoma

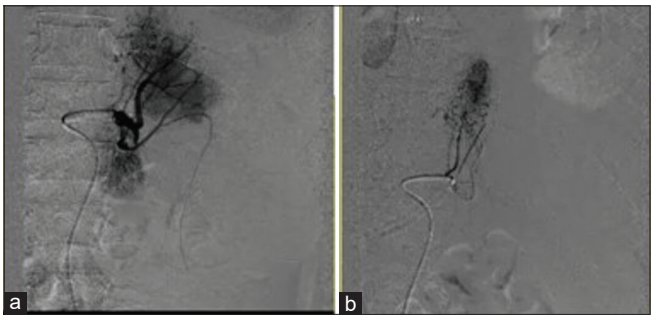

Figure 2: (a) Preembolisation and (b) postembolisation procedure of splenic artery

embolization are rapid recovery of symptoms, a short hospital stay due to prompt relief, prevention of splenic rupture, and the morbidity and mortality associated with splenectomy.

In conclusion, the definitive management of a subcapsular splenic hematoma complicating DHFis not yet established. In unstable patients splenectomy may be a therapeutic option, but with increased mortality rate and morbidity. US guided percutaneous drainage of subcapsular splenic hematoma and splenic artery embolization can be another reasonable safe effective and achievable option to prevent splenic rupture and its complications.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Research quality and ethics statement

The authors followed applicable EQUATOR Network ("http://www.equator-network.org/) guidelines, notably the CARE guideline, during the conduct of this report.

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Conflicts of interest

There are no conflicts of interest.

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