Atraumatic splenic rupture secondary to infectious mononucleosis: a case report and literature review

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Abstract

Although splenomegaly is found in approximately two thirds of patients with infectious mononucleosis (IM), splenic rupture is uncommon. However, it constitutes the single largest cause of mortality in this group. True atraumatic splenic rupture is very rare and is seen in only 0.5% of all cases of IM. We present a case of a 22-year-old man with atraumatic splenic rupture associated with infectious mononucleosis and highlight key considerations in diagnosing and managing this potentially fatal complication.

Keywords

Atraumatic splenic rupture; diagnosis; infectious mononucleosis; glandular fever.

Case Report

A 22-year-old man presented to the Accident and Emergency department following collapse. This was associated with vague lower abdominal pain and vomiting. He emphatically denied any trauma to his abdomen. He had recently been treated by his General Practitioner with amoxicillin for a painful right submandibular gland. However, he had developed a macular-papular rash affecting both upper limbs and accordingly the antibiotic was discontinued. On examination he was pale with a heart rate of 120/min and a blood pressure of 90/60 mm Hg. His abdomen was not distended, though generally tender with early signs of peritonism. Blood tests revealed an Hb of 13.0 (g/dl), white cell count of 30.3 (10^9/L) and lymphocytes of 16.0 (10^9/L). A positive heterophil antibody titer (Monospot) confirmed the diagnosis of infectious mononucleosis. The surgical team on-call reviewed the patient and organised a contrast-enhanced computed tomography (CECT) scan of his abdomen and pelvis which revealed a large volume of free fluid/blood within the peritoneal cavity, with the largest collection around an enlarged spleen (Fig. 1). As the patient was requiring increasing fluid resuscitation to maintain his haemodynamic stability, a decision was taken for surgical intervention. Intra-operative findings included a haemoperitoneum with multiple lacerations of the spleen, which was friable. A splenectomy was performed after which the patient made a good post-operative recovery. The spleen measured 20 x 15 cm and weighed 650 g. Microscopically, the normal splenic architecture was preserved.

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but there was prominent expansion of the red pulp within which there was diffuse infiltration of lymphoid cells (Fig. 2).

**Discussion**

Splenic rupture is most commonly associated with trauma. Atraumatic splenic rupture is an extremely rare clinical entity which was first documented in the 19th century. Since then several cases have been reported in the literature as a complication of infectious (e.g. malaria, glandular fever), gastrointestinal (e.g. pancreatitis), haematological (e.g. lymphoma) and systemic (e.g. sarcoidosis) disorders. Haematological disorders such as non-Hodgkin lymphoma and acute and chronic myeloid leukaemia are the most frequently reported causes of atraumatic splenic rupture. As described in this case, infectious mononucleosis is related to atraumatic splenic rupture in 0.1–0.5% of patients. It appears to be more common in males, with a male to female ratio of about 3:1 and occurs almost exclusively in adults.

It has been postulated that there are three pathophysiological factors that may explain atraumatic rupture. The major underlying factor appears to be the splenic parenchymal congestion. Coagulation disorders leading to haemorrhage and splenic infarction are also thought to be involved in the aetiology.

In the absence of trauma, the diagnosis of splenic rupture cannot always rely on the classic symptomatology: abdominal pain, guarding in the left upper quadrant and haemodynamic instability. The development of a macular-papular rash following initiation of treatment with amoxicillin was of great diagnostic value in this case and prompted the consideration of Epstein-Bar virus. Approximately 70-100% of patients who receive a β-lactam antibiotic while infected with the Epstein-Bar virus will develop such a rash. Additionally, left shoulder-tip pain (Kehr’s sign) resulting from intraperitoneal blood causing diaphragmatic irritation is present in approximately 50% of cases. The clinician should have a high index of suspicion in order to diagnose atraumatic splenic rupture, not only because of the rarity of the condition but most importantly due to the gravity of a delayed diagnosis. Clinicians should also recall that atraumatic splenic rupture could initially present as — and be mistaken for — cardiac ischaemia, pulmonary embolism, pneumonia, peptic ulceration or ruptured sigmoid diverticulitis.
The diagnosis is aided by the use of emergency ultrasonography or CECT which can demonstrate the presence of haemoperitoneum and an enlarged/ruptured spleen.[2] CECT has around 95% sensitivity and specificity in detecting splenic injury.[11] Splenectomy is the traditional treatment although conservative management may be adopted in haemodynamically stable patients to avoid the potentially severe septic complications post-splenectomy.[12,13]

**Teaching point**

Classically, though not exclusively, splenic rupture presents with abdominal pain, signs of peritoneal irritation and haemodynamic instability. If any one of these features occurs in the absence of trauma, in conjunction with a known or suspected diagnosis of IM, atraumatic splenic rupture must always be excluded as a priority.

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**References**