Case 5706

CT diagnosis of spontaneous rupture of spleen as the initial manifestation of infectious mononucleosis

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Patient: 24 years, male

Clinical History:

A 24 year old male presented with an acute onset left sided chest pain. The pain occasionally radiated to the right side and appeared to worsen on deep inspiration. As well as this, he complained of some discomfort in the abdomen but had no other symptoms of note.

Imaging Findings:

A 24 year old male presented with an acute onset left sided chest pain. The pain occasionally radiated to the right side and appeared to worsen on deep inspiration. As well as this, he complained of some discomfort in the abdomen but had no other symptoms of note. A week prior to this, he did present to his GP complaining of a sore throat and on examination was found to have lymphadenopathy in the left posterior triangle. On examination he was alert and orientated. He was found to have tenderness and guarding in the epigastric area and left iliac fossa. Respiratory, cardiovascular and neurological examination was unremarkable. His vital parameters remained stable. Investigations at this time revealed a slightly low Hb (12.4 g/dL), an elevated WBC (15.8 x 10^3) with a lymphocytosis (10.24 x 10^3). The remainder of his blood results, were within normal limits. A blood film to rule out EBV and CMV was also requested. He was reviewed by the surgical on call team who felt that an urgent ultrasound scan was warranted to rule out intra-abdominal pathology. The scan demonstrated an abnormally enlarged spleen with a sizeable intraparenchymal and sub capsular haematoma. A small splenunculus is also noted at the hilum of spleen. There was also a large amount of free fluid in the peritoneal cavity. A subsequent CT scan revealed a large splenic rupture with extravasation.

Discussion:

Although Epstein- Barr virus infection resulting in infectious mononucleosis is a relatively common disorder, spontaneous rupture of the spleen is seen in only a small percentage of patients\(^1\). The mortality of this rare complication is estimated to be around 30%, generally because of the failure to establish the diagnosis at an early stage\(^2\). The mechanism of splenic rupture in infectious mononucleosis is not completely understood. Splenomegaly appears to be a common accompaniment of splenic rupture in this disorder as seen in our case. Edema, increase in cell size and lifting of the splenic capsule would suggest that stretching of the capsule may result in spontaneous hemorrhage. An intense inflammatory reaction, vasculitis and the rapidity of splenic enlargement may also contribute \(^3\). Relatively minor trauma like turning over in bed, coughing, vomiting and the increased intraabdominal pressure during defecation have also been implicated as causative factors\(^2\). Four criteria are essential to establish the
diagnosis of splenic rupture due to infectious mononucleosis: 1) recent clinical symptoms consistent with infectious mononucleosis; 2) confirmatory haematologic and serologic data; 3) splenic histopathology consistent with infectious mononucleosis; and 4) no history of recent trauma. Clinically, patients with spontaneous rupture of the spleen present with sudden onset abdominal pain, which may be associated with left or occasionally right shoulder pain because of diaphragmatic irritation (Kehr’s sign) caused by the presence of free intraperitoneal blood. Signs of hypovolemia and shock are less frequent but may also be seen on presentation. On examination, a palpable mass in the left upper quadrant of the abdomen and abdominal tenderness with or without signs of peritonism, abnormal vital signs and anaemia are the most frequent findings. The serological confirmation for the presence of Ebstein-Barr virus in the blood is confirmed by the Monospot test. There are cases described in the literature where the immunological response became apparent after a splenectomy was performed with late seroconversion.

Histological findings include a congested spleen with lymphocytic and atypical lymphoid cells in the red pulp and focal subcapsular haemorrhages with an essentially normal white pulp. Blaivas et al. emphasised on rapid evaluation of the patient with spontaneous rupture of spleen by rapid ultrasound examination at the bedside, thus enabling prompt institution of treatment. The main CT findings of a ruptured spleen include lacerations with subcapsular and/or intraperitoneal haemorrhages. Spontaneous rupture usually has an additional characteristic of splenomegaly. Presence of high density fluid in the abdomen or pelvis as in our case is also indicative of haemoperitoneum. Important other causes of spontaneous rupture of spleen should also be considered in the differential diagnosis, Malaria being the commonest. Acute leukemias, HIV infection, viral hepatitis, typhoid, haemophilius, amyloidosis, gauchers disease and metastatic carcinoma should also be considered. Splectomy is considered the treatment of choice for most of these patients. A subset of haemodynamically stable patients can apparently be successfully managed nonoperatively with close clinical and CT monitoring and blood transfusions.

**Differential Diagnosis List:** Spontaneous rupture of spleen in infectious mononucleosis

**Final Diagnosis:** Spontaneous rupture of spleen in infectious mononucleosis

**References:**


