Spontaneous Splenic Rupture in a Confirmed Case of Infectious Mononucleosis Requiring Emergency Laparotomy: A Case Report

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Abstract

A sixteen-year-old boy presented to his local emergency department in south-east Ireland with general malaise, coryzal symptoms and abdominal pain. He was found to be tachycardic and to have a palpable spleen on examination. A diagnosis of infectious mononucleosis (IM) was made with a positive heterophile antibody screen. A Computed Tomography (CT) scan confirmed an enlarged spleen, with a large subcapsular haematoma and haemoperitoneum. He subsequently became peritonitic and required definitive surgical management involving laparotomy and splenectomy. After an uncomplicated post-operative recovery, he was discharged with vaccinations and prophylactic antibiotics as per post-splenectomy guidelines.

The objective of this article is to demonstrate the risk of splenic rupture following Epstein-Barr virus (EBV) infection and to highlight the importance of prompt diagnosis and appropriate management in these patients.

Keywords: Splenomegaly, Infectious Mononucleosis, Splenectomy

Introduction

IM is an infection usually caused by the Epstein-Barr virus (EBV). It presents predominantly with a triad of fever, sore throat and cervical lymphadenopathy. Most of the patients will have asymptomatic splenomegaly and should avoid physical effort and contact-sport for 4-6 weeks [1].

Infiltration with large numbers of lymphocytes results in stretching of the splenic capsule while diminishing the integrity of local splenic architecture rendering the organ more fragile. In addition, the enlarged spleen is no longer protected by the rib cage leaving it vulnerable to trauma [2].

Splenectomy results in an increased risk of septic complications associated with a high mortality rate, the most serious being the development of Overwhelming Postsplenectomy Infection (OPSI). Preventive strategies including vaccination and education are important for prevention of OPSI [5]. Patient education represents a mandatory strategy for its prevention. Patients should understand the potential severity of OPSI and the possibility of rapid progression. This information can be issued with a form of medical alert, such as a card or a bracelet [6].

Case

A sixteen-year-old boy was admitted to St. Luke’s General Hospital in Kilkenny, Ireland, under the medical team with a one-week history of general malaise with associated coryzal symptoms, vomiting, diarrhoea and abdominal pain. He had no past medical or surgical history. On examination he was tachycardic with pallor and was tender with guarding in the left hypochondrium. There was palpable splenomegaly in the left hypochondrium. He was diagnosed as infectious mononucleosis by a positive heterophile antibody screen. Laboratory tests were notable for a low haemoglobin...
The patient initially underwent an abdominal ultrasound which showed pronounced splenomegaly with evidence of a subcapsular haemorrhage and a large amount of free fluid in the pelvis. These findings in ultrasound and the patient’s clinical status prompted the acquisition of a CT Scan to better delineate the degree of splenic rupture. The CT (Figure 1) confirmed an enlarged spleen, measuring 15 cm longitudinally, with a large subcapsular haematoma and associated haemoperitoneum. He subsequently became peritonitic with a rigid abdomen and developed a drop in Hb to 6.8 g/dL. Given the patients clinical deterioration the surgical team proceeded to emergency laparotomy. Massive haemorrhage protocol was initiated with a transfusion of ten units of red cell concentrate, four units of fresh frozen plasma, two units of fibrinogen and one unit of platelets. A left hockey-stick incision was used to gain access to the abdominal cavity. On inspection, there was complete rupture of the lower pole of the spleen. A laceration was noted stretching to the splenic hilum including the splenic veins. (Figure 2) Extensive haemoperitoneum was visualised extending into the pelvis. Splenectomy was performed with thorough washout of the peritoneal cavity. The patient returned to the ward post operation and remained nil by mouth for 48 hours with a nasogastric tube on free drainage in situ. He was transferred from the intensive care unit to the ward on day 3 after operation. His recovery was uncomplicated, and he was discharged home after 6 days after returning to full diet and gastrointestinal function. Prior to discharge he was vaccinated for meningococcus, haemophilus influenzae and pneumococcus as well as being put on life-long Amoxicillin as per local post-splenectomy guidelines. He has been followed up post discharge and is doing well surgically.

Discussion

IM is the name coined by Sprunt TP and Evans FA in 1920 for an acute infectious disease consisting of fever, cervical lymphadenopathy and pharyngitis accompanied by atypical large peripheral blood lymphocytes. EBV is the most common cause of IM, followed by cytomegalovirus (CMV). To diagnose IM requires an understanding of the clinical features as well as laboratory findings. Heterophile tests are a practical method for confirming the clinical diagnosis of EBV related IM [6]. However, an atypical clinical presentation occasionally results in a lymph node or tonsillar biopsy [7].

Despite being a self-limiting disease, IM can cause serious complications. Splenomegaly is common but spontaneous splenic rupture is a rare and life-threatening complication. Patients may present with tachycardia, hypotension, and pallor. Other findings include tenderness to palpation in the left upper quadrant, generalized peritonitis, or referred pain to the left shoulder (Kehr sign) [8]. CT has become the mainstay of stable patient evaluation [9].

Splenectomy can be divided into two major categories: traumatic and non-traumatic/spontaneous rupture. Traumatic rupture accounts for 93% of all splenic ruptures while the rest is attributed to non-traumatic rupture at 7% [10].

All patients with suspect splenic injury should be assessed, resuscitated, and treated according to Advanced Trauma Life Support principles. Treatment is dependent on the severity and aetiology of rupture, as well as the hemodynamic stability of the patient. The management of traumatic splenic rupture is guided by using The American Association for the Surgery of Trauma (AAST) splenic injury scale [11]. Guidelines in the management of non-traumatic splenic rupture are less clear. Owing to the important immunologic role of the spleen, non-surgical management should be considered in haemodynamically stable patients [12]. Splenic preservation aims to avoid the risks of overwhelming post-splenectomy sepsis, and necessity for prophylactic antibiotics and immunization regimens [13]. Timely surgical intervention in the way of open splenectomy is warranted in those patients with a high likelihood of deterioration despite conservative measures [3].

According to a systematic review of 85 case reports by Bartlett et al, pain was the commonest presenting complaint of splenic rupture, being present in 88%. 32% were successfully managed non-operatively, whereas 67% underwent splenectomy. Overall mortality was 9% [3].

Splenectomy results in an increased risk of septic complications associated with a high mortality rate, the most serious being the development of OPSI. Susceptibility to infection is greatest in the first two years post-splenectomy but persists for life. Post-splenectomy vaccinations are intended to address encapsulated organisms (Streptococcus pneumoniae, Haemophilus influenzae, and Neisseria meningitides). Post-operative antibiotics are usually continued for life [14].
Conclusion

Spontaneous splenic rupture secondary to infectious mononucleosis is a rare but deadly complication.

Optimum treatment is aimed at splenic preservation and conservative management, however in instances of haemodynamic instability splenectomy is often warranted.

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References