Spontaneous Splenic Rupture in a Patient with Pneumonia and Sepsis.

RJ Athey, LL Barton, LF Horgan & BH Wood

Abstract

We present the case of a patient who presented with evidence of pneumonia, sepsis and anaemia but no significant abdominal signs. A routine abdominal ultrasound scan revealed evidence of spontaneous splenic rupture. He underwent splenectomy but passed away subsequently from respiratory complications. The many associations of spontaneous splenic rupture are discussed. The diagnosis should be considered in any patient presenting with shock and non-specific abdominal signs and in those with pre-existing conditions known to cause splenomegaly.

Key points

- Spontaneous splenic rupture is rare but probably under diagnosed. The presentation is ommonly insidious.
- The entity of spontaneous splenic rupture may in some cases represent rupture following minimal trauma in a pathologically enlarged spleen.
- Associations of spontaneous splenic rupture include physiological strain, a variety of infections, haematological conditions and patients receiving anticoagulation.

Case Report

An 84-year-old man was admitted with a five-day history of shortness of breath, dizziness, cough and purulent sputum production. He gave a three-month history of weight loss, anorexia, altered bowel habit and colicky lower abdominal pain. He had undergone no previous gastrointestinal investigations. There was no history of recent trauma.

On examination his heart rate was 160 beats per minute, irregular, and blood pressure was stable at 130/90. Body temperature was raised at 38.1 degrees Celsius. He was tachypnoeic with an oxygen saturation of 88% on air. Auscultation of the chest revealed decreased air entry at the left base. Abdominal examination was unremarkable with no abdominal tenderness or bruising noted. There was no evidence of melaena or fresh blood on digital rectal examination.

Initial investigations revealed the patient to be anaemic with a haemoglobin of 7.0 and a MCV of 86. He had a raised white cell count and urea. Liver function tests were normal except for an ALT of 71. An ECG confirmed atrial fibrillation at a rate of 160. Chest X-ray showed consolidation and a pleural effusion at the left base (Figure 1).

The initial clinical impression was of left lower lobe pneumonia, new onset atrial fibrillation and a suspicion of an underlying gastrointestinal malignancy with possible gastrointestinal haemorrhage. The patient was stabilised with intravenous fluids and antibiotics, loaded with digoxin and transferred to the medical admissions unit. His condition remained stable overnight.

The following day an abdominal ultrasound scan was organised to investigate the abnormal liver function tests. This unexpectedly revealed evidence of splenic rupture with haematoma formation but no other significant abnormality. On repeated examination the patient now demonstrated abdominal tenderness and guarding in the left upper quadrant. His haemoglobin had dropped to 5 and he was transfused.

He was transferred to the operating theatre where an emergency splenectomy was performed. At surgery there was evidence of fibrosis between the spleen and the diaphragm consistent with a previous undiagnosed rupture.

As suggested on the ultrasound scan a massive recent splenic bleed had also occurred.



Figure 1. Chest x-ray showing evidence of left lower lobe consolidation and an effusion at the left base.

Dr. Richard Athey
MRCP (UK)
Specialist Registrar in General Medicine and Elderly Care.

Dr. Lorna Barton
MB BS
Second Year Foundation Doctor.

Mr. Liam Horgan
FRCS
Consultant General Surgeon.

Dr. Brian Wood
MRCP(UK)
Consultant Physician in General Medicine and Elderly Care.

Correspondence:
Dr. Richard Athey
MRCP (UK)
Specialist Registrar in General Medicine and Elderly Care.
Departments of General Medicine and General Surgery.
North Tyneside General Hospital.
North Shields.
Tyne & Wear.
NE29 8NH
Phone: +44(0)1912596660
Fax: +44(0)1912932709
Email: richardathey@doctors.org.uk

Spontaneous Splenic Rupture in a Patient with Pneumonia and Sepsis.

Histology demonstrated an organising ruptured sub capsular haematoma of the spleen. There was no evidence of malignancy.

His recovery was complicated by respiratory failure secondary to an ongoing severe pneumonia and pleural effusion and he passed away one-month post operatively on the intensive care unit.

Discussion

Spontaneous rupture of the spleen is a rare but probably under diagnosed event in clinical practice. It should be considered in any critically ill patient with abdominal pain and evidence of circulatory collapse.

By far the commonest cause of splenic rupture is following blunt trauma to the upper abdomen or the left lower ribs, not uncommonly seen in the victims of road traffic accidents. Splenic trauma is also an occasional complication of upper abdominal surgery and is not uncommonly seen in patients who have undergone cardiopulmonary resuscitation. The presentation may be delayed and apparent spontaneous splenic rupture can be seen several weeks following the episode of trauma.

While traumatic splenic rupture is well recognised, doubt remains as to whether the normal spleen may actually rupture spontaneously. It has been suggested that this phenomenon is more likely to represent rupture with minimal trauma in a pathologically enlarged spleen, not infrequently as the first presentation of disease in a previously asymptomatic subject.[1] Nonetheless, cases of apparent spontaneous splenic rupture have been reported in which no underlying pathology has been identified.[2]

The associations of apparent spontaneous splenic rupture include many conditions known to cause splenomegaly. It has been postulated that spontaneous rupture might be precipitated in the normal spleen by the physiological strain of pregnancy, labour, coitus or defecation in otherwise healthy individuals.[3]

There are several reported cases of spontaneous splenic rupture in patients with infectious mononucleosis.[4] This is potentially the most serious complication of infectious mononucleosis and is reported in up to 0.5% of cases. In one case the patient had no signs or symptoms of infectious mononucleosis but was positive on blood tests for the condition. Splenic rupture is thought to occur in up to 2% of cases of Falciparum malaria. It is often under diagnosed in malaria and should be considered in seriously unwell patients with abdominal pain, particularly in regions where malaria is prevalent.[5] Spontaneous splenic rupture has also been described in patients with viral infections including CMV infection and hepatitis A. An association has been described between spontaneous splenic rupture and pneumonia,[6] particularly affecting the elderly and disease in the lower left lung. This association carries a high mortality rate and legionella and Q fever are among the pathogens implicated.

Spontaneous splenic rupture is strongly associated with a number of haematological conditions in which splenomegaly is commonly seen. Cases have been described of splenic rupture as the first presentation of both acute[7] and chronic[8] myeloid leukaemia. It has also been described in relation to non-Hodgkin's lymphoma,[9] multiple myeloma,[10] idiopathic thrombocytopaenia purpura,[11] sickle cell anaemia[12] and AL Amyloidosis.[13]

Some other conditions which have been associated with spontaneous rupture of the spleen include systemic lupus erythmatosus, vasculitidies such as Wegener's granulomatosis, acute pancreatitis and with metastatic abdominal carcinoma.

Anticoagulation and thrombolysis are well-recognised risk factors for spontaneous haemorrhage and spontaneous splenic rupture has been described in such subjects.[14] Rupture was seen in a patient who had received a single dose of enoxaparin and in another case in a subject on intravenous heparin for unstable angina. One review of seventeen cases suggested a mortality of over 50% in patients with spontaneous splenic rupture following thrombolysis but only 10% in those on long-term anticoagulation.[15] In many such cases the presentation tended to mimic that of acute myocardial infarction and cardiogenic shock. Management should include swift reversal of the anticoagulation.

The presentation of splenic rupture in the absence of trauma is often non-specific and the diagnosis is difficult. It should be considered in any patient with left upper quadrant abdominal pain and evidence of shock or falling haemoglobin. Patients may have evidence of peritonitis and in some cases the spleen may be palpable. The bleeding may be intracapsular and confined to the spleen itself or fully intraperitoneal. Both CT scanning and ultrasound are said to have better than 90% accuracy for the diagnosis of splenic rupture but CT is more specific.

Spontaneous splenic rupture is managed in the same way as traumatic rupture. In stable cases a cautious conservative approach may be appropriate. If laparotomy is necessary efforts can still be made to preserve what remains of the spleen with enough spleen being salvageable in 30-50% of cases.[3] There is a better chance of preserving the spleen in children. In many cases however splenectomy will be necessary with its subsequent implications for infection control in the patient.

The subject in this case had pneumonia and sepsis but no history or evidence of trauma. While the patient was undoubtedly unwell, the diagnosis of apparently spontaneous splenic rupture was made incidentally on a routine ultrasound scan of the abdomen done to investigate abnormal liver function tests. Spontaneous splenic rupture should be considered in unwell patients with shock, non-specific signs such as abdominal pain and evidence of bleeding and in those with existing pathology known to cause splenomegaly. Nonetheless this condition is probably under recognised and its diagnosis remains difficult.

References:

1. Kumar S, *et al.* Spontaneous Rupture of Normal Spleen – An enigma recalled. *Brit J Clin Pract*. 1992; **46(1)**: 67-8
2. Paulvannan S, *et al.* Spontaneous Rupture of a Normal Spleen. *Int J of Clinl Pract* 2003; **57(3)**: 245-6
3. The New Aird's Companion in Surgical Studies. 2nd edition. *Churchill Livingstone*. 1998pp. 969-996
4. Rothwell S, *et al.* Spontaneous Splenic Rupture in Infectious Mononucleosis. *Emerg Med*. 2004; **13(3)**: 364-6
5. Yagmur Y, *et al.* Spontaneous Rupture of the Malarial Spleen: Two case reports and a review of the literature. *Critical Care* 2000;. **4(5)**: 309-13
6. Domingo P, *et al.* Spontaneous Rupture of the spleen associated with Pneumonia. *Eur J Clin Microbiol Infect Dis* 1996; **15(9):** 733-6
7. Rajagopal A, *et al.* Acute Myeloid Leukaemia presenting as Splenic Rupture. *J Assoc Phys India* 2002. **50**: 1435-7
8. Lashley PM, *et al.* Spontaneous Rupture of the Spleen. *West Indian Med J*. 1998; **47(4)**: 172-3
9. Torricelli P, *et al.* Spontaneous Rupture of the Spleen: Report of two cases. *Abdominal Imaging* 2001; **26(3)**: 290-3.
10. Sherwood P, *et al.* Spontaneous Splenic Rupture in uncomplicated Multiple Myeloma. *Leukaemia and Lymphoma*. 1996; **20(5)**: 577-9
11. Winslet MC, *et al.* Spontaneous Rupture of the Spleen in association with Idiopathic Thrombocytopaenia Purpura. *Postgrad Med J*. 1993; **69(815)**: 744-6
12. Shoemaker MT, *et al.* Acute Splenic Rupture in an adult with Homozygous Sickle Cell anaemia treated with chronic transfusions. *Journal of Paediatric Haematology and Oncology* 2004; **26(12)**: 849-51
13. Oran B, *et al.* Spontaneous Rupture of the Spleen in AL Amyloidosis. *American Journal of Haematology* 2003; **74(2)**: 131-5
14. Burg MD, *et al.* May 01 Rupture of a previously normal spleen in conjunction with enoxaparin: An unusual case of shock. *Journal of Emergency Medicine*. 2001; **20(4)**: 349-52
15. Blankenship JC, *et al.* Spontaneous Splenic Rupture complicating anticoagulant or thrombolytic therapy (Review). *American Journal of Medicine*. 1993; **94(4)**: 433-7