Pathologic Splenic Rupture with Mantle Cell Lymphoma

Bryanna Emr*, Rahul Dudhani, Amie Lucia, and Lucy Ruangvoravat

Department of Surgery, SUNY Upstate Medical University, NY

Abstract

There are few reported cases of pathologic splenic rupture in lymphoma patients and only six of them are from mantle cell lymphoma. A case of splenic rupture in a patient with undiagnosed mantle cell lymphoma is presented. The patient was critically ill and required immediate resuscitation and splenectomy for survival. Early recognition of splenic rupture, aggressive resuscitation, and operative management is critical for survival. The clinician must suspect splenic rupture in the unstable patient even without a history of trauma.

INTRODUCTION

Pathologic splenic rupture secondary to malignancy is rare and life threatening. Patients may present in hemorrhagic shock and require urgent resuscitation and operation. The diagnosis is difficult to make without a traumatic incident. Operative options include splenectomy, splenic salvage, or angioembolization. Trauma and acute care surgeons must make clinical judgment as to which approach is most appropriate. Further workup for pathology and staging can be done once the patient is stabilized. The case of a 59-year-old male with pathologic splenic rupture secondary to undiagnosed mantle cell lymphoma is presented below.

CASE PRESENTATION

59-year-old Caucasian male presented to the emergency room from an outside hospital with abdominal distention, pain, and hypotension. Detailed history of illness was difficult to obtain given the acute nature of his presentation and unstable vital signs. A ruptured spleen with active extravasation into the abdomen on computed tomography scan was seen on imaging from the outside hospital. He was resuscitated in the emergency room with blood and surgical consultation was called. His past medical and surgical history was unknown, as the patient did not seek medical attention. He was unemployed and homeless. Review of his imaging revealed a massively enlarged spleen that reached down to the pelvis and crossed the midline with rupture and free intraperitoneal blood. Laboratory exam revealed he was hyperkalemic and treatment was started with insulin, bicarbonate, and calcium. Additionally, there was preoperative concern for lymphoma given his leukocytosis 191K, splenomegaly, and febrile temperature. Although his blood pressure was initially hypertensive, he soon decompensated and became hypotensive. The decision was made to proceed to the operating room.

In the operating room he required massive transfusion of blood products and open splenectomy. The operation was extremely difficult due to the size of the fractured spleen and difficulty controlling the bleed via the hilum. Laparotomy pads were packed in the left upper quadrant and the splenic artery and vein controlled manually while anesthesia continued resuscitation. Once control of bleeding was accomplished and his blood pressure improved, dissection of the splenic ligaments and short gastrics with LigaSure device (Covidien, Boulder, CO) and ties was performed. After this the spleen was freed of all attachments and divided distally from the clamp on the hilum. The pancreas tail was partially resected as it was adherent to the splenic hilum. A Kelly clamp had been placed on the hilar vessels and a running prolene suture was used for ligation. After removal of the spleen, there was still a large amount of coagulopathic ooze from the splenic bed and he was hemodynamically unstable so the surgeons decided to place laparotomy packs in the splenic bed and transfer the patient to the intensive care unit for resuscitation with a temporary abdominal dressing.

On postoperative day two he returned to the operating room for a second look and removal of laparotomy packs. On this visit he had excellent hemostasis and the vessels and pancreas were inspected with no concerns for injury. A gastrojejunostomy tube was placed for long term feeding access given his acute illness and an internal drain was left in the pancreatic bed in case of a pancreatic leak. His abdominal wall layers were closed under no tension.

His final pathology was mantle cell lymphoma. The spleen measured 33 x 21 x 12 cm and weighed 4.4 kg. There were multiple large lacerations in the spleen where the pathologic rupture occurred (Figure 1). Sections from the spleen show white pulp that is expanded by an atypical lymphoid infiltrate and diffusely extends into the surrounding red pulp and perisplenic adipose.
Splenic rupture in the absence of trauma is uncommon but can be life threatening and early recognition is critical [1]. Review of the literature revealed 845 cases of pathologic splenic rupture with a mortality of 12%. 30% of cases were neoplastic, 27% infectious, 20% inflammatory, 9% drug treatment related, 7% mechanical, and 7% idiopathic [2]. Splenomegaly, age greater than 40, and neoplasm were risks for increased mortality. Splenectomy was performed in 84% of cases. The case presented here had all three risk factors for increased mortality. The complications of splenectomy include infection with encapsulated organisms, pneumonia, hemorrhage, thrombocytosis, pancreatitis, and gastric fistula [3].

Extensive literature is available for management of traumatic splenic injuries, however management of pathologic or spontaneous splenic rupture is lacking. The decision for splenectomy or non-operative management must be considered on an individual basis. Trauma surgeons decide to perform splenectomy based on grade of injury, presence of associated injuries, patients’ overall clinical status, and availability of resources. Splenectomy is lifesaving in a hemodynamically unstable patient with ongoing hemorrhage. Patients who require damage control surgery and packing will often require splenectomy given their coagulopathy and hemodynamics. Splenic salvage operations take extra time and delay of resuscitation [4-6]. The patient’s initial operation was damage control because he was acidic, coagulopathic, and hypotensive and required massive blood transfusion while gaining control of the hemorrhage. Second look operations after the patient is stabilized clinically allow for a controlled evaluation of surrounding organs especially the pancreas to prevent missed injuries and ensure hemostasis.

Splenectomy for patients with splenomegaly is technically challenging. Laparoscopy is not recommended even in elective cases with stable patients. In the setting of hemorrhage a large midline incision is the recommended approach. The splenic artery and short gastric arteries must be controlled early to aid in easier dissection. Manual compression of the hilum is the fastest way to achieve control of splenic artery and vein in active hemorrhage. Pancreas and colon injuries are avoidable with lateral dissection and mobilization of the spleen to the superior border of the pancreas. This may also reduce the size of the spleen and aid in dissection if the capsule is injured. Once the spleen is removed the surgeon must decide if a second look operation is needed or if the abdomen can be closed. This decision is best made with anesthesia reviewing the acid base status, coagulopathy, and hemodynamic stability.

CONCLUSION

Early splenectomy for pathologic splenic rupture in hemodynamically unstable patients is critical. Priority should be given to large bore intravenous access, blood resuscitation and operative control of bleeding. Splenic salvage should only be attempted in the stable patient. Early control of the splenic hilum during surgery will reduce blood loss and allow for easier dissection.

ACKNOWLEDGEMENTS

Robert Cooney, MD
REFERENCES


