

Case Report

Complication after Lobectomy: Report of Case

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Abstract

Rupture of the spleen is a common event associated with trauma, infectious, neoplasia and many systemic disorders affecting the reticuloendothelial system. A rare subtype of rupture occurring spontaneously and arising from a normal spleen was recognized as a distinct clinicopathologic entity. It has been reported in association with trivial insults such as vomiting and coughing. We report a case of a patient with spontaneous rupture of a normal spleen observed after severe coughing on the 3rd postoperative day following bronchoplastic left lung lower lobectomy combined with S4, S5 segmentectomy.

Keywords: Lobectomy; Neoplasia; Perisplenic; Segmentectomy; Trauma; Lung

Introduction

Traumatic rupture of a normal spleen is a common result of high velocity trauma. A pathologic spleen rupture is also frequently encountered secondary to reticuloendothelial system diseases (Epstein-Barr virus, cytomegalovirus, hepatitis, malaria) and neoplasia (lymphoma, leukemia). However, spontaneous rupture [1] (in the absence of either trauma or disease) can also occur following trivial insults such as vomiting [2,3] and coughing [4,5].

Spontaneous rupture of the normal spleen has been subject of controversy since the first case reported by Atkinson (1874). Wright, Prigot (1939) found it misleading stating, 'there is no such clinical entity as spontaneous rupture of the normal spleen' [6]. Later, Orloff, Peskin [7] (1958) identified criteria for the diagnosis of spontaneous spleen rupture:

- 1) There should be no history of trauma or of unusual effort, which conceivably could injure the spleen.
- 2) There should be no evidence of disease in organs other than the spleen which is known to affect the spleen adversely and no evidence of perisplenic adhesions or scarring of the spleen that suggests that it had been traumatized or had ruptured previously.
- 3) Other than the findings of hemorrhage and rupture, the spleen should be normal on both gross inspection and histological examinations.

In addition, blood-clotting test should be normal and acute-phase and convalescent sera should not show any significant rise in viral antibody titers suggestive of recent infection with viral types associated with spleen involvement. These include Epstein-Barr virus, cytomegalovirus and hepatitis viruses [8].

To our knowledge, only two cases of spontaneous rupture of a normal spleen after coughing have been reported, but none was related to left lung lobectomy.

Case Presentation

A 66-year-old female patient with cancer of the vulva was treated by local surgical excision and adjuvant therapy six years ago and again at recurrences three and four years ago. She presented to us with a

solitary left lower lobe lung metastasis amenable to surgical excision.

A standard muscle sparing lateral thoracotomy through the 4th intercostals space and a Burford-Finocchio rib retractor were used to enter the chest. The metastasis was found to invade the lingular branches of the pulmonary artery, vein and bronchi. A bronchoplastic left lung lower lobectomy combined with anatomic resection of the lingular segments (S4 and S5) and sleeve resection of the left upper lobe bronchus was therefore performed. Pulmonary vein was reconstructed by end-to-end anastomosis and the culminal bronchus anastomosed to the left main bronchus.

The remaining lung was well perfused and well ventilated. As there was sufficient lung parenchyma left, no additional procedures, such as pneumoperitoneum or techniques of temporary phrenic paralysis were contemplated. The chest tube was draining moderate amounts of serous fluid and the postoperative blood hemoglobin concentration was 107g/l.

On postoperative day, three she suddenly developed signs of acute respiratory distress, which later progressed into a state of hemorrhagic shock. She complained of slight abdominal discomfort and her blood hemoglobin concentration dropped to 59g/l.

Ultrasound of the abdomen showed a large hematoma around the spleen and an increasing amount of free fluid.

Urgent laparotomy revealed the presence of fresh blood in the peritoneal cavity. The spleen was ruptured beyond repair and therefore a splenectomy was performed. No other abnormality and no adhesions were identified in the abdomen. Before and during the procedure she received 10 units of packed red blood cells and fresh frozen plasma. Her postoperative hemoglobin level was 127g/l.

Pathologic examination of the spleen revealed a normal sized spleen with a laceration at the upper pole that extended into the splenic parenchyma. Microscopically, the spleen contained normal red and white pulp.

The postoperative period was complicated by a pneumonia managed successfully with antibiotics. At bronchoscopy, the bronchial anastomosis was healing normally. The patient made an uneventful recovery and was discharged home in a stable condition

three weeks following hospital admission.

On further detailed questioning, no history of significant trauma, either recent or in the remote past was found. Epstein-Barr virus, cytomegalovirus and hepatitis infections were excluded later by serological test.

Discussion

Violent coughing occurs frequently in the early postoperative period following lung resections. During the act of coughing, abdominal muscles contract forcefully, pushing abdominal organs and the diaphragm upward and the ribs inward and downward. A sudden and forceful Valsalva maneuver can result in the lack of coordination of the different muscles used in expiration. Squeezing of the spleen with subsequent tear of its capsule can explain the etiology of the spontaneous rupture of a normal spleen.

Slight bleeding from the bronchial stumps while suturing and the bronchial anastomosis by itself may induce heavier postoperative coughing than a standard stapled lobectomy.

Major resection of the left lung with the corresponding loss of the left lung volume also causes elevation of the left diaphragm [9]. Slight repositioning of the spleen with possible tension to its hilum may be a contributing factor for spontaneous rupture of a normal spleen.

Since our thoracotomy site was relatively high (4th intercostals space) with no additional manipulation of the rib retractor or tension to the diaphragm used at any time during the procedure, we ruled that out as a possible cause.

The diagnosis of spontaneous rupture of the spleen was difficult to make and was not suspected until a substantial blood loss has already occurred. The patient's lower postoperative blood hemoglobin level (107g/l) contributed to a faster development of the hemorrhagic shock.

Fortunately, the patient's spleen ruptured while she was still in the ICU where the development of hemorrhagic shock and sudden abdominal pain were promptly recognized and treated. Otherwise, the consequences of delayed diagnosis and treatment of this condition may have been grave.

We would like to state that:

- The material has not been previously published or submitted elsewhere for publication.
- There are not conflicts of interest of any of the authors.

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