Non-small Cell Lung Cancer Causing Atraumatic Splenic Rupture Without Splenic Metastasis

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Background

Atraumatic splenic rupture (ASR) is a rare occurrence, but an important clinical entity. Although trauma is the most common cause of splenic rupture, there is limited literature on ASR. Neoplasm-associated ASR carries a significant mortality risk, with the majority being secondary to hematological malignancies. However, a small portion of the neoplastic causes include solid tumors that are rarely reported in literature. This report discusses a case of tension hydrothorax and ASR secondary to non-small cell lung carcinoma (NSCLC).

Case Description

A 59-year-old woman presented to the emergency department with concerns over three days of respiratory distress. One month prior, the patient was diagnosed with stage IV adenosquamous carcinoma of the lung, with metastases to the liver, right cerebral hemisphere, and right adrenal gland, requiring right hemicraniectomy and intracranial tumor resection. Upon current presentation, the patient was afebrile, normotensive, tachypneic at 22 breaths-per-minute, and tachycardic at 132 beats-per-minute; she was lethargic and in severe respiratory distress with markedly diminished lung sounds over the left hemithorax. Chest X-ray and CT pulmonary angiography revealed a massive left-sided pleural effusion with mediastinal shift. A chest tube was inserted that immediately drained serosanguinous fluid. During further workup in the ED, a CT scan of the chest, abdomen and pelvis revealed hemoperitoneum and a possible splenic laceration. The patient then decompensated from a hemodynamic standpoint and subsequently taken to the operating room for emergent splenectomy. An exploratory laparotomy revealed hemoperitoneum and a ruptured spleen in which a splenectomy was subsequently performed. During her hospital course, she underwent left video-assisted thoracoscopic surgery for evacuation of a loculated hemothorax, adhesiolysis, and pleural biopsy due to persistent malignant pleural effusion. Due to the advanced nature of her illness, the medical oncology service determined optimal therapy would consist of radiotherapy and immunotherapy. Her hospital course was complicated by pulmonary embolism and thrombosis of the inferior vena cava. The patient expired three months after her initial presentation.

Clinical Images

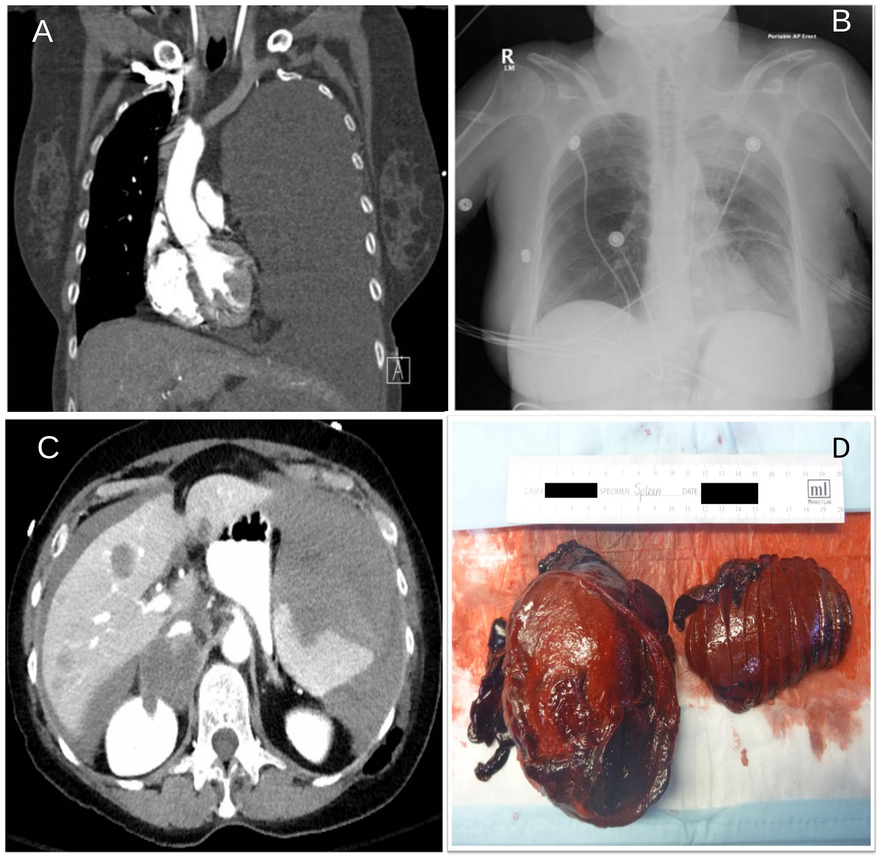

Figure 1. (A) CT angiography of the chest showing massive pleural effusion with mediastinal shift. (B) Upright AP chest XR demonstrating left-sided pleural effusion. (C) CT abdomen showing liver metastases and ruptured spleen with extravasation into the peritoneum. (D) Macroscopic pathology showing of splenic rupture

Discussion

ASR can be subdivided into true rupture or pathological rupture corresponding to normal versus pathological appearances of the spleen on examination, respectively. Overall, the incidence of ASR in the setting of secondary splenic tumors remains low. To our knowledge, the current case report is only the second report in the literature describing spontaneous pathologic ASR in the setting of lung malignancy, without evidence of metastatic disease within the spleen itself. The underlying pathophysiology of ASR secondary to lung cancer, in the absence of splenic metastasis, chemotherapy, or G-CSF therapy, remains unclear. The overall ASR-related mortality rate, irrespective of etiology or treatment modality, is 12.2%. 21.4% of this mortality is attributable to neoplastic disorders. Patients with ASR of malignant etiology should undergo immediate total splenectomy, although transcatheter arterial embolization may be used as a temporary stabilizing measure in some cases

Conclusions

ASR secondary to metastatic NSCLC is a rare occurrence; though, failure to detect it may be fatal. Pathologic ASR may be an occult presentation of lung malignancy and in the presence of confirmed NSCLC may portend a poor prognosis. This case's unique presentation highlights the importance of assessing splenic status in patients with disseminated NSCLC.

References

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