Lung Abscess Presenting as Tension Pyopneumothorax in a Gastrointestinal Cancer Patient

Riki Okita, MD, PhD,1,3 Yoshihiro Miyata, MD, PhD,1 Yoichi Hamai, MD, PhD,2 Jun Hihara, MD, PhD,2 and Morihito Okada, MD, PhD1

We report a surgical case of tension pyopneumothorax in a patient who was receiving chemotherapy for esophageal cancer. A 68-year-old man who had undergone total gastrectomy with splenectomy for gastric cancer and was receiving chemotherapy for esophageal cancer was presented to our hospital with dyspnea. Left tension pyopneumothorax was diagnosed, and he received left lower lobectomy after pleural drainage. His postoperative course was uneventful, and he is alive without any cancer recurrences 5 years after the lobectomy. Once tension pyopneumothorax has developed from lung abscess, emergent lobectomy may be a useful option to prevent lethal aspiration pneumonia.

Keywords: lung abscess, pyopneumothorax, lobectomy, splenectomy, chemotherapy

Introduction

Tension pyopneumothorax is an emergency disease and a very rare complication of pneumonia or subpleural abscess.1) The common treatment strategy for this disease is pleural drainage with intravenous antibiotics therapy,2) however, it takes a long time to be cured and may result in aspiration pneumonia, weakening the general condition in some patients, as well as necessitate cessation of anticancer therapy in cancer patients. Here, we present a case of tension pyopneumothorax in a patient who was successfully treated with emergent lobectomy.

Case Report

A 68-year-old Japanese man who had received total gastrectomy with splenectomy for gastric cancer 2 years before presentation was found to have cervical esophageal cancer (cT2N0M0 Stage II). After six courses of weekly 5-fluorouracil (250 mg/m², days 1–5) and docetaxel (7.5 mg/m², day 1) with concurrent radiotherapy (2 Gy/day, total 66 Gy),3) the primary chemoradiotherapy resulted in partial remission. He was then given maintenance treatment with 6-weekly S-1 monotherapy (50 mg/m², days 1–28). He developed cough with chest pain, and after 5 days, he suddenly experienced dyspnea and was admitted to our hospital.

His blood pressure, heart rate, respiratory rate, and body temperature were 60/44 mmHg, 98/min, 28/min, and 36.0°C, respectively. Chest radiography (Fig. 1A) and high-resolution computed tomography (Fig. 1B and 1C) showed mediastinal shift, an air-fluid level in the left thoracic cavity, and a cavity lesion of 5.0 × 3.8 cm diameter in the left lower lobe of the lung. Ruptured lung abscess was limited in the left lower lobe, and there were...
no other abscess in the remaining lung. A thoracostomy tube was immediately placed in the left thoracic cavity because of the diagnosis of tension pyopneumothorax due to ruptured lung abscess. Air with white purulent fluid was successfully drained, and bacterial cultivation of the fluid showed Klebsiella oxytoca and α-Streptococcus. His vital signs improved immediately after the thoracic drainage; however, because of continuous air leakage, his left lung collapsed and he developed subcutaneous emphysema a day after the drainage (Fig. 1D). To avoid aspiration pneumonia, additional surgical procedures for removing ruptured lung abscess were considered. Left lower lobectomy with decortication of the left thoracic cavity was performed without any event a day after the drainage. Macroscopically, ruptured cavity lesion was detected in his lower lung lobe (Fig. 2A and 2B). Histologically, the lung lesion was diagnosed as lung abscess (Fig. 2C and 2D). He was weaned off from the ventilator a day after the surgery. The drainage tubes were removed 10 days after the surgery, as there were no signs...
of surgical site infection and air leakage. Left upper lobe was well expanded (Fig. 1E) and laboratory data was quickly improved after the surgery (Fig. 3). Although, he did not have the strength to walk by himself after the operation, physical rehabilitation rapidly improved his physical condition and he was discharged from our hospital 25 days after the operation. Although, he has not received any chemotherapy after the operation, he is alive without any recurrences of both cancers 5 years after the lobectomy.

**Discussion**

Tension pyopneumothorax is a rare complication of pneumonia and lung abscess eroding into the thoracic cavity.\(^1,2\) Because of gastric cancer, this patient had received splenectomy, which is known to increase the risk of life-threatening bacterial infections.\(^4,5\) Furthermore, he was under chemotherapy for esophageal cancer. Once tension pyopneumothorax has occurred, the common treatment strategy is pleural drainage.\(^1,2\) We chose an early surgical intervention to remove the infected focus in this patient because prolonged and insufficient
drainage may cause aspiration pneumonia, which is a lethal complication. The prolonged drainage period also necessitates cessation of chemotherapy in a cancer patient. In this case, the tension pyopneumothorax developed from a lung abscess since the pathological examination revealed no malignant cell around the lung abscess. Sublobar resection was preferable to reserve pulmonary function; however, lobectomy was mandatory in this case because of the large abscess formation.

**Conclusion**

From our experience, lobectomy after emergent pleural drainage is a useful option to avoid additional complications in selected patients with pyopneumothorax due to ruptured lung abscess.

**Disclosure Statement**

All authors have no conflict of interest.

**References**