Tension pyopneumothorax

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DESCRIPTION

A 59-year-old man presented with a 2-day history of fever and dyspnoea. He has Parkinson's disease and previously underwent frequent treatment for aspiration pneumonia. On admission, physical examination revealed a pulse rate of 160 beats/min, blood pressure of 80/62 mm Hg and oxygen saturation below 88% with a non-rebreather mask at 10 L/min. Chest radiograph showed complete left lung collapse, and accumulation of liquid and air in his left thorax with rightward displacement of the mediastinum (figure 1A). Emergency thoracotomy revealed massive air leakage. We drained a total of 2000 mL of purulent exudate. CT scan revealed extensive consolidation involving almost the entire left upper lobe, and formation of subpleural cysts and left lower lobe atelectasis (figure 1B). The culture of pleural fluid grew *Prevotella* and *Wolinella* species. We diagnosed tension pyopneumothorax associated with thoracic empyema with pleural fistula. The patient underwent surgical treatment, drainage and decortication. During surgery, we found a large amount of purulent exudate, thick pleural peel, extensive lung parenchymal necrosis and several bronchopleural fistulas. Antibiotic therapy (3.0 g sulbactam/ampicillin four times per day) and pleural drainage were begun, and the patient's condition improved according to CT images. He is currently making steady recovery and undergoing regular follow-up.

Tension pyopneumothorax is a rare and life-threatening complication of pneumonia, lung abscess and empyema. It is caused by a large amount of air and effusion entrapped in the thorax, resulting in displacement of the mediastinum.[1] Causes of tension pyopneumothorax are considered to be a rise of intrathoracic pressure caused by gas-forming pyogenic or check valve mechanism due to pleural fistulisation.[2] In the presently reported case, pleural fistulation causing tension pyopneumothorax was suspected from the operative findings. We considered that pyopneumothorax was caused by pleural fistulation resulting from repeated aspiration pneumonia. Treatment of pyopneumothorax comprises antibiotic therapy and pleural drainage.[1] Emergency lobectomy has been reported to represent good clinical efficacy for infection and air leakage control in patients with pyopneumothorax caused by ruptured lung abscess.[3] Pulmonary resection is considered to be a useful option in patients with pyopneumothorax due to localised lung lesions, such as lung abscesses. If pyopneumothorax is due to multiple-point pulmonary perforation caused by extensive lung parenchymal necrosis, we suggest improvement of the pyopneumothorax by one-time surgical treatment will be difficult. CT scan is a necessary tool after lung re-expansion by thoracotomy for detection of the cause of pyopneumothorax, irrespective of whether the lesion is localised.

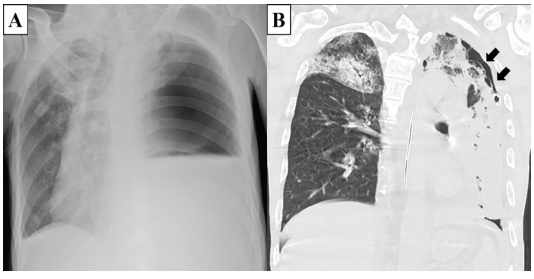

Figure 1 (A) Chest radiograph shows complete left lung collapse and accumulation of liquid and air in the left thorax with rightward displacement of the mediastinum and trachea. (B) CT scan revealed consolidation and subpleural cystic changes in left upper lobe (arrow point).

Learning points

- Tension pyopneumothorax is a rare and life-threatening complication of pneumonia, lung abscess and empyema.
- Pulmonary resection is considered to be a useful option in patients with pyopneumothorax due to localised lung lesions; however, if pyopneumothorax is due to multiple-point pulmonary perforation, we suggest improvement of the pyopneumothorax by one-time surgical treatment will be difficult.
- CT scan appears to be useful tool after lung re-expansion by thoracotomy for detection of the cause of pyopneumothorax, irrespective of whether the lesion is localised.

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