Empyema necessitans secondary to bronchial stenting

Carine J Moezinia, Hwei Ming Choo, Hussein Chreif, Yasser Madani

A 62-year-old man presented to the emergency department with a 2-day history of dyspnoea and fever. Two weeks prior, he had undergone bilateral bronchial stent insertion for squamous cell carcinoma of the lung, which had been compressing and occluding both main bronchi, more so on the left. The lung cancer had recently been diagnosed and a week prior to presentation the patient had received his first dose of pembrolizumab.

A chest radiograph and subsequent CT chest scan showed multiple new left-sided lung cavities and an ipsilateral hydropneumothorax (figure 1). The CT scan showed the bronchial stents in both main bronchi were patent; however, disease progression of the underlying lung cancer was noted. Intravenous broad-spectrum antibiotics were initiated and a chest drain was inserted, which drained frank pus. Soon after insertion, the chest drain spontaneously migrated out and the patient later developed extensive subcutaneous emphysema. A large bore chest drain was subsequently inserted. Pleural fluid cultures later grew *Staphylococcus aureus*, *Streptococcus anginosus* and *Streptococcus constellatus* and blood cultures grew *S. aureus*. His antibiotic cover was changed accordingly. The patient soon developed a subcutaneous collection and persistent leakage of frank pus from the skin at the same site of his initial chest drain, indicating empyema necessitans (figure 2). His case was discussed twice with the thoracic surgeons who felt that surgical intervention would not be the best course of action as his condition was not amenable to surgery.

After 4 weeks of inpatient intravenous antibiotics, a multidisciplinary team, including the Respiratory, Microbiology and Palliative Care teams, decision was made in keeping with the patient’s wishes to be managed in an outpatient ambulatory setting, as the patient had been in hospital for 4 weeks and wanted to be with his wife who was suffering from terminal breast cancer. He was discharged with the large bore chest drain connected to a Heimlich valve with weekly reviews in the Pleural Clinic for the next 4 weeks until cessation of drainage, whereupon the patients...
A repeat CT chest scan showed resolution of the subcutaneous collection, pneumothorax and subcutaneous emphysema with adequate lung reinflation but a residual pleural collection (figure 2). He sadly passed away 7 months later.

Empyema necessitans is a rare complication of empyema that is characterised by extension of purulent fluid through the parietal pleura into the chest wall. This can result from inadequate treatment of empyema and can occur after a necrotising pneumonia or pulmonary abscess. Bronchial stents are associated with and can be complicated by bacterial colonisation and pulmonary infections. S. aureus is reportedly the most commonly identified pathogen.

The presumed sequence of events in this patient is that at least one of the peripheral lung cavities, caused by bacterial colonisation of the bronchial stent, ruptured into the pleural space causing empyema and pneumothorax. We present, to our knowledge, the first published case report of empyema necessitans occurring secondary to bronchial stenting.

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REFERENCES