**Empyema Necessitans Due to Streptococcus milleri**

_**Streptococcus milleri**_ has a tendency to cause the formation of abscesses in the abdomen, brain, and joint spaces but is an uncommon cause of empyema [1, 2]. We describe a patient who presented with massive hemoptysis and was found to have empyema necessitans due to _S. milleri_.

A 56-year-old male with emphysema was admitted to the hospital for evaluation of massive hemoptysis. He denied fevers, purulent sputum, or cough. One month before this presentation, he was treated for necrotizing pneumonia with an unknown antibiotic. At that time bronchoscopy revealed purulent material draining from the anterior, apical, and posterior segments of the right upper lobe. During the current presentation, an attempt at bronchoscopy precipitated hypoxemia, which necessitated intubation and mechanical ventilation. He was transferred to our facility for further care.

The patient had a long history of smoking and alcohol abuse. Physical examination revealed that a nasotracheal tube had been placed and that he had poor dentition and diminished breath sounds at the right apex. There was a nonerythematous, fluctuant area (10 cm × 13 cm) over the right posterior hemithorax. The WBC count was 16,700/mm³ with 96% neutrophils. A chest radiograph revealed a cavitary lesion (10 cm × 10 cm) in the right upper lobe and bullous emphysema. CT showed a cavitary lesion in the right upper lobe, destruction of the 7th right rib, and a low-density fluid collection in the extrapleural tissue of the right hemithorax contiguous with the pleural space, consistent with empyema necessitans (figure 1). Percutaneous aspiration of the fluctuant area yielded purulent material. A gram stain showed gram-positive cocci in small chains. Cultures yielded a penicillin-susceptible _Streptococcus_ species identified as _S. milleri_ with the API 20 STREP biochemical identification system (bioMérieux, Vitex, Hazelwood, MO).

The patient underwent open drainage and resection of the 7th right rib and received 24 million units of intravenous penicillin daily; a radiograph showed resolution of the right upper lobe cavity and extrapleural fluid collection. The hemoptysis resolved, and he was successfully weaned from ventilatory support after 21 days. He was discharged with a prescription for oral penicillin (500 mg four times daily) and was doing well 8 weeks after initiation of antimicrobial therapy.
Empyema necessitans results when an empyema dissects from the pleural space into the chest wall [3]. Most cases result from inadequate treatment of an empyema and occur following necrotizing pneumonia or lung abscess [3, 4]. Before the antibiotic era, Streptococcus pneumoniae and Streptococcus pyogenes caused the majority of empyemas [5]. Currently, streptococci other than S. pneumoniae account for <10% of empyemas [4]. Most empyemas are polymicrobial, and up to 75% contain such organisms as Escherichia coli and Pseudomonas species [5]. Hocken and Dussek reported that S. milleri was involved in 25% of cases of empyema in a community hospital in London [6]. However, there have been no reported cases of empyema necessitans associated with S. milleri.

Members of the S. milleri group are viridans streptococci characterized by minute, nonhemolytic colonies dependent on carbon dioxide for adequate growth [6, 7]. The organisms are commensals of the oropharynx, auditory canal, gastrointestinal tract, genitourinary tract, and umbilicus [2, 4]. S. milleri has a propensity to cause the formation of abscesses and is the most likely of the viridans streptococci to cause suppurative abdominal infections, notably appendiceal abscesses [2, 4].

S. milleri usually reaches the lung by aspiration of oral contents but may also be directly implanted during surgery, by extension of a liver abscess, or by hematogenous spread [6]. When recovered, S. milleri usually is isolated in pure culture [6, 8]. The ratio of males to females who develop S. milleri empyema is 5:1 [2, 4, 6]. Factors predisposing to S. milleri empyema include consumption of alcohol, esophageal carcinoma, and mental retardation; patients with these conditions have a tendency to aspirate oral contents [1]. Empyema due to S. milleri usually progresses rapidly and may cause toxic symptoms if not treated quickly [2, 4]. Hemoptysis occasionally is a presenting feature of lung abscess [9]; however, we are unaware of any cases of S. milleri lung abscess or empyema necessitans presenting as hemoptysis.

Treatment entails open or closed drainage to prevent fibrosis of the pleural space [1, 2, 4]. Rib resection facilitates drainage postoperatively, especially when an empyema has a thick fibrous capsule [10]. Penicillin is the antimicrobial of choice [2, 4, 6]; however, susceptibility testing is encouraged because of a few reports of penicillin-resistant isolates [4].

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References