S. intermedius Leading to Empyema and Lung Abscess:
A Case Report and Review of the Literature

Mary Magner, MD, Domenic Termine, MD, Jessica Marino, MD
Stamford Hospital Department of Family Medicine

Case

- 89-year-old male
- PMHx: Acute right inferior cerebellar stroke in 11/20, A fib on Eliquis, Prostate Ca 1996, HTN, HLD, former smoker
- HPI: Presented with worsening shortness of breath over the previous 3 to 5 days associated with cough productive of yellow-green sputum, wheezing, rhinorrhea, sore throat and anorexia. No sick contacts. Hospitalized ~ 3 months prior for CVA at Stamford Hospital and then at VMR with course complicated by agitation and delirium at night. Had witnessed fall onto face 3 weeks prior to CVA.
- Emergency Department: Afebrile in A fib with RVR and SpO2 of 82% on RA. Lab work revealed leukocytosis of 40.5 with left shift, CRP 283, ESR 59, LA 3.7 and procalcitonin of 1.02. CXR revealed complete opacification of the R hemithorax. Received sepsis bundle and a thoracotomy with total decortication, Open thoracotomy with total decortication, Open decortication and open drainage of lung abscesses.
- Hospital Course: Pleural fluid culture grew streptococcus intermedius. Unable to wean beyond 6 L NC. A CT-guided chest tube was placed and the CT imaging revealed a partially loculated pleural effusion with areas of pneumonia and mediastinal lymphadenopathy, cannot rule out early abscess formation.
- Surgical Procedure: VATS pleural biopsy, R thoracotomy with total decortication, Open drainage of R lung abscess
- Postoperative Course: Complicated by hypotension likely secondary to sepsis requiring I/MV and pressors in the ICU. Extubated and transferred out of ICU on POD#3.
- Assessment: 89-year-old male with a large right empyema and lung abscess unresponsive to tube thoracostomy drainage and instillation of fibrinolytic therapy improved with total decortication, Open drainage of lung abscesses and thoracic empyema.
- Future Plan: Continue with ceftriaxone via PICC line for 15 days.

Imaging

Streptococcus Anginosus Group (SAG)

- Normal microbiota found at various mucosal sites
- Clinically relevant given ability to produce invasive suppurative infections, most often in brain and liver abscesses and thoracic empyema
- Streptococcus intermedius is a member of SAG
- β-hemolytic Gram-positive facultative anaerobic coccus

Complications of Pneumonia

- Uncomplicated parapneumonic effusion = sterile pleural effusion adjacent to pneumonia (ANTIBIOTIC)
- Complicated parapneumonic effusion = infected pleural effusion adjacent to pneumonia (+ DRAINAGE)
- Empyema = frank pus within pleural space

Incidence

- Substantial increase in incidence of parapneumonic empyema hospitalizations in the US, speculated to be secondary to antibiotic resistance

Bacteriology of empyema

- Streptococcus anginosus group (SAG) accounts for 13-50% of all cases of pulmonary abscess and/or empyema and is emerging as the most common causative community-acquired microbial pathogen
- S. anginosus
- S. intermedius
- S. constellatus
- Wide range of microbes implicated with S. pneumonia, MSSA, and Enterobacteriaceae group common

Background

S. intermedius Spectrum of Disease

- Mostly associated with CNS infections, particularly brain abscesses, but also isolated from the liver, CSF, blood, esophagus, heart, lung, etc.
- Despite SAG being a common cause of empyema, there are few documented cases involving S. intermedius
- A review of all S. intermedius case reports regardless of site revealed average age of 44.8 (5-83) with male predominance (63%) and major risk factors including dental manipulation (18.8%), sinusitis (11.9%) and DM (7.9%)³
- 98% of infections associated with abscess formation

Discussion

- Possible explanations of S. intermedius empyema:
  - Aspiration event in elderly male who suffered a recent stroke complicated by hospital-acquired delirium
  - Active odontogenic disease resulted in hematogenous spread to visceral pleura or adjacent lung parenchyma that was more susceptible to S. intermedius infection as a result of minor trauma to chest (witnessed fall prior to CVA)⁴
  - Morbidity and mortality remain high in those treated with chest tubes and fibrinolitics alone
  - S. intermedius infections of the lung almost always requires operative management given its tenacious nature
  - Operative care has been shown to shorten hospitalization stay and decrease mortality

References


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