Empyema Necessitans due to Actinomycetes Odontolyticus

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Background

Thoracic empyema can evolve into empyema necessitans when the collection of purulence extends into the soft tissue of the chest wall. Incidence reported from literature shows 1:300,000, with men three times more likely to develop empyema necessitans than women. Actinomyces odontolyticus, is a rare Actinomyces subtype with low virulence. There are few reported cases actinomyces odontolyticus causing thoracopulmonary disease.

Case Presentation

69-year-old male presented with right upper chest discomfort and swelling, cough with clear sputum for 2 weeks. He also endorsed fever, chills, night sweats, and unintentional weight loss of 30 lbs over 6 months.

Past Medical History
- Asthma, history of chronic pulmonary abscess, former tobacco use (10 pack year), prostate cancer in remission s/p radiation, and recently diagnosis rectal cancer

Physical Exam
- Tenderness and swelling at the right upper chest wall with mild erythema
- Right sided rhonchi, rales, and reduced breath sounds over right upper and middle lobes
- Poor dentition without clinical signs of oral abscess or infection

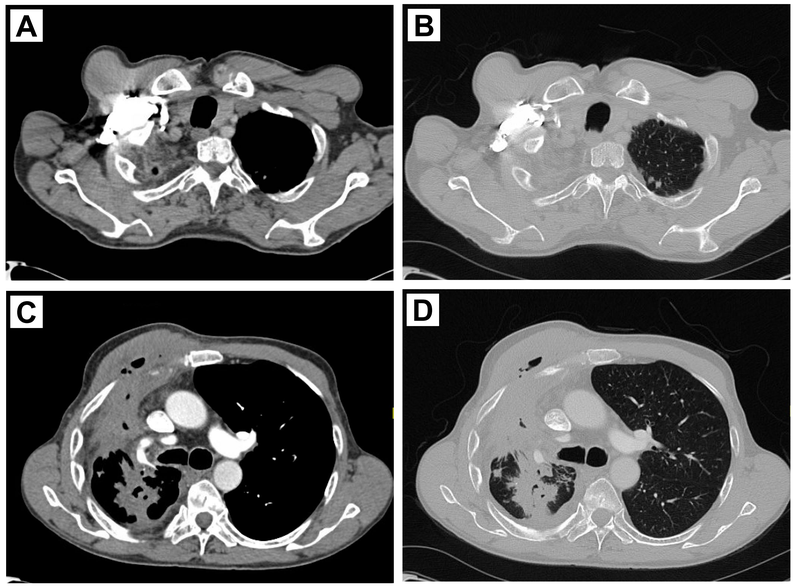
Lab Values
- WBC: 7.5
- CRP: 22.57
- ESR: 112

Imaging
- CTA demonstrated no chronic cavitary pneumonia in the right lung with new extension throughout the anterior pleural space with fistulous connection to subpectoral soft tissue

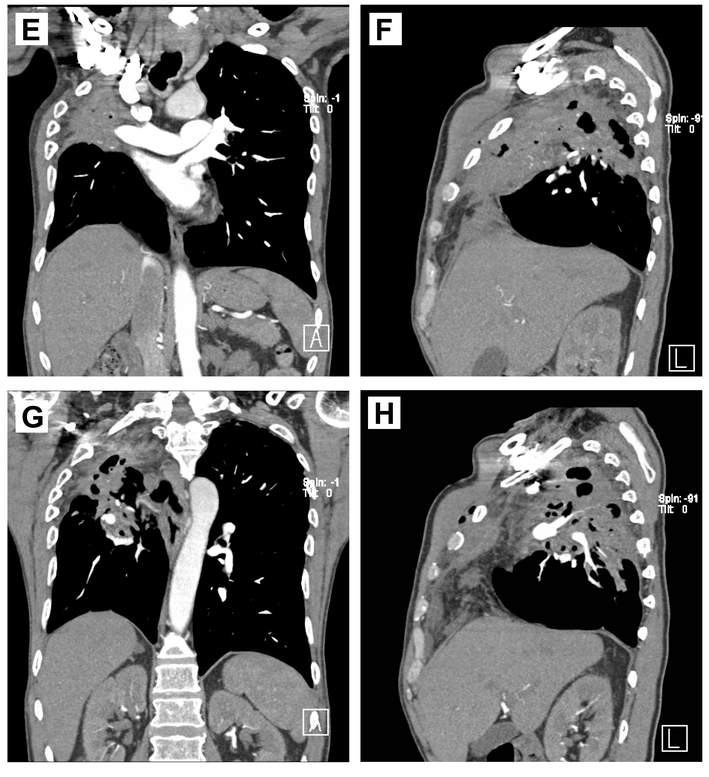
Antibiotic Therapy

Hospital Day 1	azithromycin 1x, vancomycin 1x, ceftriaxone 1x broad spectrum coverage continued with vancomycin and cefepime
Hospital Day 2	ID modified broad spectrum coverage to imipenem/cilastatin & amikacin
Hospital Day 4	micafungin added for mold on BAL
Hospital Day 6	imipenem/cilastatin, amikacin, & micafungin discontinued and was transitioned to penicillin G for actinomyces on respiratory culture
Hospital Day 8	Penicillin G transitioned to Ceftriaxone
Discharge	Discharged with continued outpatient IV Ceftriaxone

Imaging



CTA Chest imaging illustrating right sided cavitary pneumonia. Axial views above (**A & B**) and coronal views below (**E & G**) demonstrating consolidation and cavitation in right upper lung field. Axial views above (**C & D**) and sagittal views below (**F & H**) demonstrating extension through the right anterior plural space into subpectoral soft tissue.



Clinical Course

Patient underwent bronchoalveolar lavage (BAL) of the right upper and lower lung and specimens were sent for cytology and culture. On hospital day 2 the patient's clinical status worsened and imipenem-cilastatin and amikacin were started to expand broad spectrum antibiotic coverage. Micafungin was added on hospital day 4 for growth of mold in BAL cultures. Final BAL cultures resulted on hospital day 5 and revealed growth of Actinomycetes odontolyticus.

General and cardiothoracic surgery were consulted during the hospital course. After thorough review of the patient's case and imaging surgical intervention was differed in the setting of his extensive history of malignancy and immunosuppressed state. There was insufficient fluid collection to undergo CT guided drainage of his empyema. His antibiotic therapy was transitioned to IV ceftriaxone for continued conservative treatment of empyema necessitans.

Conclusion

This case illustrates the disease process of a rare infectious agent, actinomycetes odontolyticus. A low virulent pathogen found in the oral flora and mostly often associated with poor oral hygiene with dental caries. Few cases have been reported to cause thoracopulmonary disease. Due to the rarity of this pathogen and the ability of Actinomycetes to mimic other diseases such as lung cancer, tuberculosis, and lung abscess the overall disease process could be prolonged if a culture is not obtained.

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This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA or any of its affiliated entities.