Empyema Caused by Mycoplasma salivarium

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Mycoplasma salivarium infections outside the oral cavity are rare. We describe a 49-year-old man with laryngeal cancer and right pleural space infection with M. salivarium. To our knowledge, this is the first report of empyema due to Mycoplasma salivarium.

CASE REPORT

A 49-year-old white male presented with several weeks of cough and sputum production and mild shortness of breath not associated with fever, chills, or weight loss. The patient was a type 2 diabetic with hypertension and a 30-pack/year smoking history who had consumed 1 bottle of vodka weekly for the past 5 years. He was found poorly responsive at home and unable to follow commands. Initial evaluation at another hospital showed academia with an arterial pH of 6.96 and a blood glucose level of 610 mg/dl with ketonuria. He was intubated and transferred to our hospital for additional care.

After arrival at Geisinger Medical Center, he continued to require mechanical ventilation and was treated with single doses of vancomycin and cefepime for presumed right lower lobe community-acquired aspiration pneumonia with a small associated effusion. When beta-hemolytic streptococcus, not group A, was isolated from a bronchial lavage specimen, treatment with ceftriaxone (8 days duration) and levofloxacin (5 days duration) was initiated. His diabetic ketoacidosis (DKA) resolved with medical treatment, and he was extubated and transferred to the medical floor.

On day 9 of hospitalization, he developed sepsis with fever and acute respiratory distress. An enlarging right pleural effusion and associated area of consolidation were found, and a chest tube was placed. Pleural fluid analysis revealed a pH of 6.87, lactate dehydrogenase (LDH) level of 641 U/liter, glucose level of <2 mg/dl, and white blood cell (WBC) count of 11,840 cells/µl with 96% neutrophils. Piperacillin-tazobactam (6 days duration) and vancomycin (4 days duration) were initiated for loculated pleural effusion and possible empyema. A right-sided video-assisted thoracoscopic (VATS) decortication was performed on hospital day 11.

Following extubation, he complained of dysphagia and dysphonia; direct laryngoscopy showed squamous cell carcinoma of the vocal cord. A percutaneous endoscopic gastrostomy (PEG) tube was placed.

Five days following the VATS procedure, an organism suggestive of Mycoplasma species (small pinpoint colonies that did not Gram stain) grew from the pleural fluid specimen. Similar growth was detected from a pleural fluid specimen collected 2 weeks later. Growth from both cultures was detected on day 5 of anaerobic incubation on anaerobic blood agar (CDC formulation) (Remel, Lenexa, KS). Both pleural fluid specimens were negative for other bacteria, fungi, and mycobacteria. The patient was treated with doxycycline for 14 days. A follow-up CT scan several weeks later showed resolution of infiltrates and effusion. The organism that grew from pleural fluid was identified as Mycoplasma salivarium by partial 16S rRNA sequencing at the Mayo Clinic using primers 5′-TGGAGAGTTTGATCCTGGCTCAG-3′ and 5′-TACGGCCGG CTGCTGGCAC-3′. DNA was prepared for PCR using PrepMan Ultra (Applied Biosystems, Foster City, CA) and subsequently amplified and bidirectionally sequenced using the 50 BigDye Terminator method. The generated 482-bp sequence was compared to the National Center for Biotechnology Information (NCBI) GenBank database and found to differ by either no or one base pair (due to an unclear sequence read) from M. salivarium GenBank no. AF125583 (6) (Fig. 1). Two sets of BacT/Alert FA/FN blood cultures collected at the time of the initial pleural fluid culture were negative.

Mycoplasma species are normal inhabitants of the oral cavity, found in the oral cavity of up 97% of healthy subjects, with M. salivarium, Mycoplasma orale, and Mycoplasma hominis isolated from 64, 30, and 1% of subjects, respectively (9). Because routine bacterial culture media and incubation conditions and times are not always adequate for the recovery of Mycoplasma species, it is likely that Mycoplasma infections often go undetected. The use of molecular techniques, especially PCR, has led to a better recognition of the role of such organisms in neurologic, cardiac, dermatologic, and bone and joint infections (1, 4). Indeed, it may be prudent to consider molecular-based detection methods for Mycoplasma species when culture results are negative in a clinical presentation suggestive of infection.

While Mycoplasma pneumoniae is a common cause of community-acquired pneumonia in adults and children (5, 7), to our knowledge there are no prior reported cases implicating M. salivarium as a pulmonary pathogen. Isolated cases of M. salivarium infections have been reported in HIV-infected patients (2), as a cause of submasseter abscess (3), and as a cause of arthritis in a hypogammaglobulinemic patient (8). This case serves to expand the microbiology of empyema to include M. salivarium and demonstrates the continued role for traditional culture methods as...
well as the expanding role of molecular diagnostics in the isolation of fastidious organisms.

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REFERENCES


FIG 1 Phylogenetic tree based on partial 16S rRNA gene sequences of the isolated organism (shown as “unknown isolate”) and related organisms in GenBank. The reported isolate’s sequence is shown with one base pair difference from GenBank no. AF125583.