CASE REPORT

PYOPNEUMOTHORAX CAUSED BY PREVOTELLA INTERMEDIATA: AN INTERESTING CASE REPORT

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Prevotella species are usually seen in the intestinal tract including oral cavity as commensal bacteria and can lead to periodontal infections in immunocompetent patients. However, in patients who are immunocompromised, Prevotella can cause infections at other sites. A 35-year-old gentleman presented with 1-month history of high-grade fever and right sided pleuritic chest pain. On examination, he was in discomfort due to pain, with temperature 103 ºF, pulse 104 beats per minute, blood pressure 130/90 mmHg, respiratory rate 22 breaths per minute and O2 saturation 94% on room air. Oral cavity revealed poor hygiene with left lower carious incisor. There was reduced chest expansion in right sub-scapular region with reduced vocal fremitus, dull percussion note, absent breath sounds and reduced vocal resonance. WBC count was raised at 43,600 per cm. X-ray followed by HRCT chest demonstrated peripheral opacifications with air-fluid level in right lower zone due to loculated pyopneumothorax and pleural thickening. Ultrasound guided chest tube thoracostomy in the loculated pyoneumothorax aspirated 1200 ml of foul-smelling reddish-tinged pus which revealed growth of anaerobic gram-negative rods of Prevotella Intermediata on culture, which was sensitive to amoxicillin-clavulanate and metronidazole. Work up of immunosuppressive causes was negative. The patient responded well to treatment and was asymptomatic at follow-up after 6 weeks.

Keywords: Prevotella Intermediata; Pyopneumothorax; HRCT Chest; Tube Thoracostomy; Amoxicillin-Clavulanate; Metronidazole

Citation: Samad A, Naz F, Butt NI, Sarwar S, Ghoauri MSA, Zahid A. Pyopneumothorax caused by Prevotella Intermediata: an Interesting Case Report. J Ayub Med Coll Abbottabad 2024;36(3):670–3.

DOI: 10.55519/JAMC-03-13178

INTRODUCTION

A group of anaerobic gram-negative rod-shaped bacteria, Prevotella species are usually seen in the intestinal tract including oral cavity where they reside as commensal bacteria.[1] Prevotella can lead to periodontal infections in immunocompetent patients.[2] However in patients who are immunocompromised, Prevotella can cause infections at other sites including liver abscess, infective endocarditis, meningitis, iliopsoas abscess and very rarely lung abscess, empyema and pyothorax.[3–5] The presence of frank pus in pleural space, termed empyema or pyothorax, is usually seen as a complication of lung pneumonia, thoracic trauma or invasive chest procedures. Pyothorax, if not timely diagnosed and treated, can lead to significant morbidity and mortality.[6] Therefore identification of the causative organism is of vital importance so that specific antibiotic therapy may be provided. In cases where causative organism may not be identified, broad-spectrum empirical antibiotic therapy is usually given, and in severe cases tissue debridement or pleural decortication through tube thoracotomy, VATS or open surgery may be required.[5,6] Herein we present the case of a young immunocompetent man presented with 1-month history of high-grade fever and right sided pleuritic chest pain caused due to right sided loculated pyopneumothorax. Aspiration and culture of the pus revealed growth of anaerobic gram-negative rods of Prevotella Intermediata and the patient was treated successfully with amoxicillin-clavulanate and metronidazole.

CASE PRESENTATION

We report the case of a 35-year-old gentleman who presented with 1-month history of fever and right sided chest pain. The fever was of sudden onset, high-grade documented up to 102 ºF, partially relieved by paracetamol and antibiotics prescribed by local GP, associated with evening rise and night sweats. The right sided chest pain was initially mild in severity but gradually worsened to moderately severe intensity at current presentation. It was non-radiating, associated with mild-to-moderate dyspnea on exertion, exacerbated by deep breathing, coughing and exertion, and was partially relieved by analgesics and rest. He gave history of intermittent dry cough but did not expectorate any sputum. Although there was history of urolithiasis requiring surgical intervention in 2018, no past history of tuberculosis or any respiratory illness was reported. He was married with 3 children and worked as a laborer. He did not smoke cigarette, use alcohol or illicit drugs, and deny extramarital sexual contact.

Figure-1: Oral cavity showing poor hygiene and left lower carious incisor

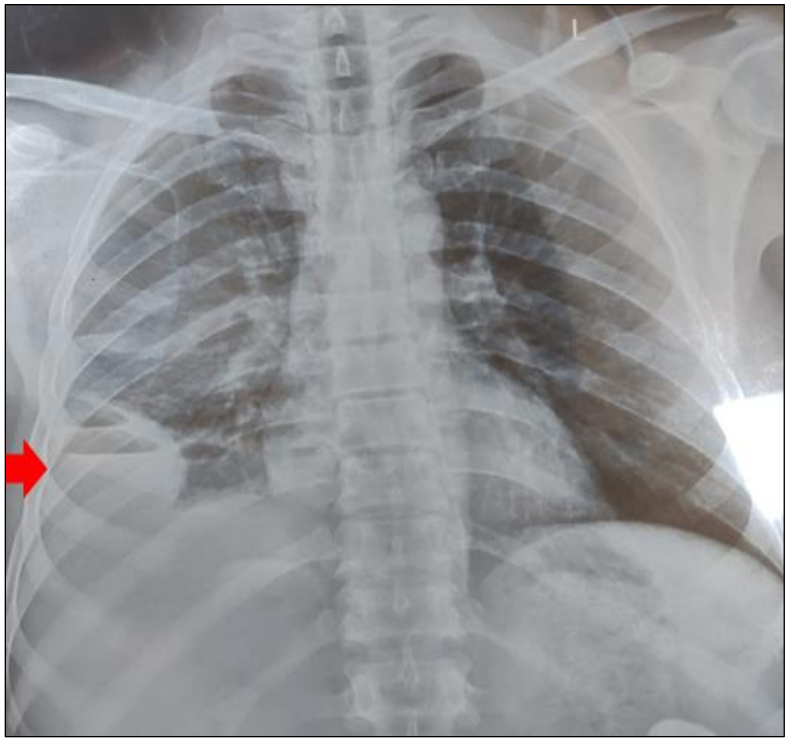

Figure-2: Chest X-ray showing opacifications and air-fluid level in right lower zone

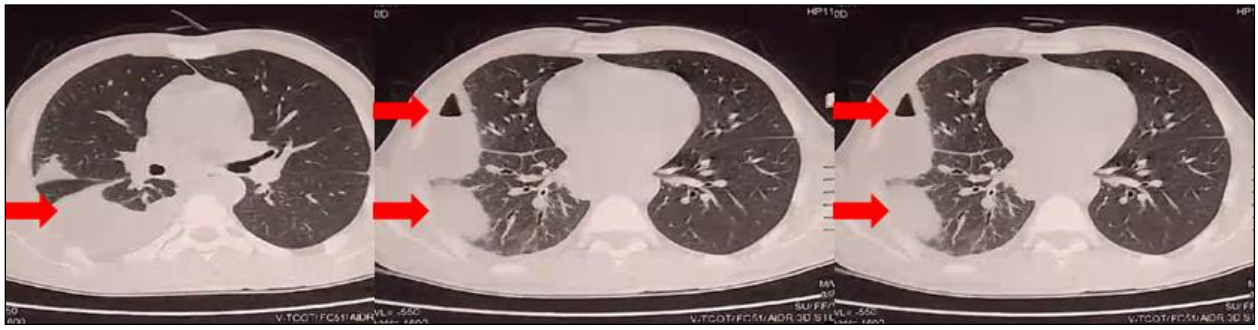

Figure-3: Chest HRCT showing two peripheral based well-defined pleural opacities, one with air-fluid level and thickened pleura

On examination, he was a young male conscious and cooperative but in discomfort due to pain, with temperature 103 ºF, pulse 104 beats per minute, blood pressure 130/90 mmHg, respiratory rate 22 breaths per minute and O2 saturation 94% on room air. Oral cavity revealed poor hygiene with left lower carious incisor as shown in Figure 1. There was no cyanosis, clubbing, pallor, pedal edema, raised JVP or palpable lymph nodes in cervical, axillary or inguinal regions. There was reduced chest expansion in right sub-scapular region with reduced vocal fremitus, dull percussion note, absent breath sounds and reduced vocal resonance. Trachea was central. Cardiac, abdominal and neurologic examinations were normal. Chest X-ray done at presentation demonstrated opacifications and air-fluid level in right lower zone as shown in Figure 2. He was started on empirical intravenous antibiotics and analgesics.

On further investigation, his CBC revealed a raised WBC count at 43,600 per cmm with normal hemoglobin (14.1 g/dl) and platelets (250,000 per cm). HRCT chest revealed two peripheral based well-defined pleural opacities, one with air-fluid level and thickened pleura as shown in Figure-3. Ultrasound guided chest tube thoracostomy was done in the loculated pyoneumothorax and 1200 ml of foul-smelling reddish-tinged pus was aspirated. Culture of the pus revealed growth of anaerobic gram-negative rods of Prevotella Intermediata which was sensitive to amoxicillin-clavulanate and metronidazole. Work up of immunosuppressive causes including diabetes mellitus, liver and renal failure, HIV/AIDS, HBV, HCV and syphilis were negative. He was diagnosed with pyopneumothorax due to Prevotella intermidiata and his treatment with intravenous amoxicillin-clavulanate and metronidazole was continued for 2 weeks, followed by oral preparations for further 4 weeks. The patient responded well to treatment, did not suffer any adverse effects and was asymptomatic at follow-up after 6 weeks.

DISCUSSION

In the present case report, we present an immunocompetent patient with pyopneumothorax due to anaerobic bacteria which is a rare atypical occurrence. Being an oxygen-rich organ, lungs are usually not affected by anaerobic bacterial infections as the pulmonary aerobic environment is unfavorable for growth and multiplication of anaerobic bacteria such as Prevotella species. Furthermore, it should be noted that Prevotella is usually a commensal bacteria causing orodental infections in immumocompetent patients but may cause invasive infections in patients with immunosuppression.[2,3] Only a few reports of lung infections due to Prevotella are available and occurrence of empyema and pyopneumothorax in setting of immunocompetent status is even more rare.[4,5]

Empyema or pyothorax, defined as the presence of frank pus in the pleural space, can lead to significant morbidity and mortality.[6] Treatment is based on identification of the causative organism and its specific antibiotic therapy. Drainage of the pleural pus collection needs to be done on basis of antibiotic treatment but difficulties may arise in cases of encapsulations, loculations and septations.[7] In severe or non-improving cases tissue debridement or pleural decortication through tube thoracotomy, Video-assisted thoracic surgery (VATS) or open surgery may be required.[5,6] Up to 65% patients may require thoracotomy or VATS.[8] Under guidance of an imaging technique such as ultrasound, placement of chest tube placement is recommended as it provides best drainage in presence of loculations and septations.[9] In our patient, ultrasound guided tube thoracostomy was done and the aspirated pus showed that Prevotella was sensitive to amoxicillin-clavulanate and metronidazole on culture growth. Our patient took antibiotic therapy for 6 weeks and did not require surgical intervention.

In conclusion, a young immunocompetent man presented with 1-month history of high-grade fever and right sided pleuritic chest pain caused due to right sided loculate pyopneumothorax. Aspiration and culture of the pus revealed growth of anaerobic gram-negative rods of Prevotella Intermediata and the patient was treated successfully with amoxicillin-clavulanate and metronidazole. The present case highlights the occurrence of pyopneumothorax secondary to Prevotella intermediate in an immunocompetent patient.

Conflict of interest: None
Funding sources: None
Consent: Detailed informed consent was taken from the patient and his attendant prior to data collection and manuscript writing.

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Submitted: March 29, 2024	*Revised: June 15, 2024*	*Accepted: June 15, 2024*

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