CASE REPORT

A Rare Case of *Haemophilus parahaemolyticus* Pneumonia

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ABSTRACT

Pneumonia is a common lung infection. Common bacterial cause of this serious lung infection includes *Streptococcus pneumoniae, Haemophilus influenzae* and *Mycoplasma pneumoniae*. *Haemophilus parahaemolyticus* pneumonia is an uncommon cause of bacterial pneumonia, occurring mainly as an opportunistic pathogen in immunocompromised patients as in this case, diabetes mellitus. Therefore, this case report will look at a case of 49-year-old man who was diagnosed with this uncommon pathogen which was successfully eradicated with antibiotics. This case report will look at a case of 49 years old who was diagnosed with this uncommon pathogen which was successfully eradicated with antibiotics.

Keywords: Pneumonia, *Haemophilus parahaemolyticus*, Good clinical acumen, Uncommon

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INTRODUCTION

Pneumonia is a common lung infection having an incidence numbering millions of cases per year, with 3 million cases in United States of America alone. Common pathogens for community acquired pneumonia include *Streptococcus pneumoniae, Haemophilus influenzae* and *Mycoplasma pneumoniae, Legionella* species and respiratory viruses (1).

A rare cause of bacterial pneumonia in human will be *Haemophilus parahaemolyticus*, which is a commensal bacterium of the upper respiratory tract. It can occasionally cause pharyngitis and very rarely subacute endocarditis (2,3). It as an opportunistic pathogen occurring mainly in immunocompromised patient.

Literature about *Haemophilus parahaemolyticus* as a cause of bacterial pneumonia is scarce and therefore one such rare case of this will be reported here.

CASE REPORT

A 49-year-old man with underlying well controlled type 2 diabetes mellitus (latest HbA1c 6.2 % taken one month ago) and dyslipidaemia presented with dry cough for two weeks associated with low grade fever at a government health clinic. There was no sore throat or runny nose. Appetite was reduced which was accompanied by a weight loss of 2kg over the last two weeks. He had seen a private general practitioner one week ago where he was offered symptomatic treatment. However, his cough has worsened in severity especially at night, leading to his visit to the government health clinic.

Physical examination including vital signs were normal. Respiratory examination showed the presence of crepitation over his right lower lung without any rhonchi. There were no enlarged lymph nodes. Abdominal examination was normal. Full blood count showed an increased white blood cell count of 17 x 10^9/L with raised neutrophil count of 11 x 10^9/L. Random blood sugar was 6.3 mmol/L. Chest X-ray showed consolidation over right lower zone as indicated by the arrow (Figure 1). A diagnosis of right lung lobar pneumonia was made. He was started on oral cefuroxime 250mg twice a day for 10 days. A few investigations were ordered including sputum for acid fast bacilli, sputum culture and sensitivity (including for *Mycobacterium tuberculosis*), Mantoux test and erythrocyte sedimentation rate. The sputum sample collection was done according to the guidelines as recommended by World Health Organisation including the first sample of day, non-touch technique and making sure that the sample collected was sputum and not saliva, among others. He was given an appointment in one week where

all investigations were found to be normal except for sputum culture and antibiotic sensitivity test which showed the growth of *Haemophilus parahaemolyticus* that was sensitive to cefuroxime, amoxicillin and clavulanic acid combination, and ampicillin. Other findings in the sputum culture and sensitivity test were the presence of epithelial cells (<10/lpf) and pus cells (25/lpf). Clinically, his cough has resolved with no fever. He was asked to complete his antibiotic and given another appointment in two weeks. At this appointment, his chest X ray displayed remarkable resolution of the pneumonia as indicated by the arrow (Figure 2).

Figure 1 : Chest X ray showed consolidation over right lower zone

Figure 2 : Chest X ray on follow up after completion of antibiotic

DISCUSSION

Cases of prolonged cough of two weeks or more merits a careful search for its source especially in immunocompromised or ill patients. Illnesses that will require definite workup and urgent treatment includes pneumonia, tuberculosis and other lower respiratory tract infections such as bronchitis. Other causes, albeit less severe and requiring only symptomatic and lifestyles intervention will include gastro-oesophageal reflux disease and postnasal drip.

Haemophilus influenzae is the most recognizable pathogen in the Haemophilus genus that cause infections in human in various organ systems (2). In 1953, Haemophilus parahaemolyticus was distinguished from *Haemophilus haemolyticus* due to its requirement of factor V for growth unlike the latter organism which required factor X for growth (2).

Formerly more recognized as the normal flora of the oral cavity and respiratory tract, Haemophilus parahaemolyticus has been recently recognised as a causative orhganism of serious infections in human such as pneumonia, meningitis, endocarditis, and non-gonococcal urethritis (3). The importance of recognising this infection lies in the fact that it is capable to also cause life-threatening infections such as gallbladder empyema, cryptogenic brain abscess as well as septic shock (2). Therefore, infection due to haemophilus parahaemolyticus is rarely suspected as the preliminary cause of infection due to its commensal nature. It should be more or less be considered as an opportunistic pathogen in ill patients (2). Therefore, Haemophilus influenza type B infection has always been regarded as a serious cause of meningitis and pneumonia and prophylaxis against it is given as part of the compulsory paediatric immunisation in most countries. In addition. Haemophilus parahaemolyticus was also unlikely to be identified in most clinical samples to difficulty in getting an accurate phenotypic identification. Therefore, the pathogenicity potential of this bacterium warrants further investigation for its identification and specific antibiotic sensitivity testing especially in ill patients.

Diagnosis of this rare disorder i.e. *Haemophilus parahaemolyticus* pneumonia can be achieved by eliciting symptoms of lower respiratory tract infection supported by clinical lung findings of crepitation, decreased air entry or dullness to percussion. Full blood count and sputum-based investigations namely culture and antibiotic sensitivity can be ordered to detect the presence of this bacteria and its antibiogram pattern. In certain cases, PCR or gene sequencing would further strengthen the diagnosis of this infection (2). However, in view that patient was improving following appropriate antimicrobial therapy, these tests was not ordered. Equally important would be the sputum

sample collection technique including the first sample of day, non-touch technique and making sure that the sample collected was sputum and not saliva, adequate storage and use of transport medium, if applicable, as recommended by the World Health Organisation.

The nature, severity and location of the treatment will determine the antibiotic to be given. For less serious infection and depending on favourable susceptibility testing, oral cephalosporins (except for 1st-generation cephalosporins such as cephalexin), amoxicillin/clavulanate and macrolides are recommended (4). Going back to literature, amoxycillin/clavulanic acid is usually the first choice for mild community acquired pneumonia that can be treated on outpatient basis of which Haemophilus spp. are common identified causes. A suitable alternative would be another broad-spectrum antibiotic such as cefuroxime that was given to this patient (4). For invasive diseases, intravenous cefotaxime or ceftriaxone is recommended especially for meningitis and endocarditis (4). There is no literature available on the sensitivity of antibiotic towards this microorganism per se but a case report of a patient who developed septic shock after aspiration pneumonia that identified this organism as the opportunistic organism had reported that the strain hd showed susceptibility to ampicillin/clavulanate, ceftriaxone, rifampicin, gentamicin, and ciprofloxacin indicating that many antibiotics are effective against this bacteria including cephalosporins (2).

This case report highlights the fact of the pathogenic capability of normal commensals of the upper respiratory tract such as *Haemophilus parahaemolyticus*. Furthermore, published information on this bacterium is limited, and reported cases include those with significant morbidities (2,5). Therefore, information from this case report contributes to the surveillance which includes the antimicrobial profile, course of disease and potential outbreaks.

CONCLUSION

In conclusion, this was a rare case of *Haemophilus parahaemolyticus* pneumonia in which empirical antibiotics strategy helped in obliterating the infection and preventing further complications.

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