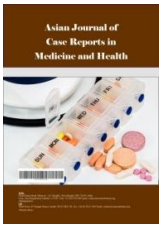

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A Case of Ventilator Associated Pneumonia Caused by *Pannonibacter phragmitetus*

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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Case Report

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ABSTRACT

Pannonibacter phragmitetus is an environmental pathogen that can occasionally cause serious infections in humans. While positive cultures for this organism in an otherwise asymptomatic person likely represent contamination, this microbe should not be ignored in patients who show signs of sepsis. This is the first report of a ventilator associated pneumonia caused by this organism.

Keywords: Pathogen; rhizomes; inorganic; pneumonia; subdural hematoma; hypertension.

1. INTRODUCTION

Pannonibacter phragmitetus is an emerging bacterium that is being increasingly recognized as a cause of sepsis in different parts of the world. This multidrug resistant gram-negative motile rod thrives in a humid environment around vegetations like decomposing rhizomes near lakes [1]. It is a facultative anaerobe that can survive in alkaline and warm habitats; it grows optimally at 37°C on media containing arsenate [2]. Recently, it has gained popularity in the world of environmental microbiology where it is used in the bio-removal of metals like chromium and lead from polluted water; moreover, it appears to be highly efficient in the elimination of inorganic nitrogen from aquaculture water [3,4]. Inadequate infection prevention and control

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measures can sometimes result in nosocomial infections from this pathogen. This case report aims to raise awareness about this organism.

2. CASE REPORT

An 84-year-old lady with a past medical history of diabetes mellitus, hypertension, atrial fibrillation and subdural hematoma, was admitted at our hospital after choking on a piece of meat. She went into cardiac arrest in our Accident and Emergency Unit; after cardiopulmonary resuscitation, return of spontaneous circulation was achieved and she was intubated and ventilated.

Cefotaxime and metronidazole were initiated to treat an aspiration pneumonia. Blood culture was positive for *Bacillus sp.* which most likely represented a contaminant. A culture of endotracheal secretions taken on day 4 of her admission was positive for a carbapenem-resistant *Acinetobacter sp.* (CRAB) and she was treated empirically with intravenous colistin for a ventilator associated pneumonia. A culture from her central line taken on day 22 of her admission after she went into septic shock was positive for a carbapenem resistant *Pseudomonas aeruginosa* (CRPA); her central line was removed given the suspicion of a central line associated bloodstream infection.

By day 32 of her admission, she developed infected sacral ulcers; blood cultures were positive for carbapenem resistant *Klebsiella sp.* Colistin was continued. On day 37, she went back into septic shock and her chest x-ray showed worsening infiltrates; a repeat endotracheal culture was positive for *Pannonibacter phragmitetus* (identified through the use of Matrix Assisted Laser Desorption/Ionization – MALDI-TOF); this organism was susceptible to co-trimoxazole, ciprofloxacin and piperacillin-tazobactam, of intermediate susceptibility to cefotaxime and co-amoxiclav, and resistant to ampicillin, cephalexin, ceftriaxone, ceftazidime, gentamycin, amikacin, imipenem, meropenem and colistin. She was treated with a combination of piperacillin-tazobactam and ciprofloxacin for another ventilator associated pneumonia with initial improvement in her symptoms.

However, on days 57 and 64, blood cultures were positive for *Enterococcus sp.,* CRAB and CRPA. She passed away on day 69 from complications of septic shock.

3. DISCUSSION

Unfortunately, our institution does not offer emergency bronchoscopy with bronchoalveolar lavage nor protected specimen brushings for culture and sensitivity on a regular basis. This would have been important to ensure that the organisms identified were not contaminants. All organisms in her blood cultures were grown using a high-quality BACTEC automated blood culture system while tracheal secretions were inoculated on blood agar. At our institution, difficult-to-identify gram negative rods are analyzed using MALDI-TOF. Susceptibility testing is carried out using the Kirby Bauer method while the minimum inhibitory concentration is determined via the E-test, which is a well-established technique. Hence, it is implausible that there was any error in the identification process. Given that *Pannonibacter sp.* was the only organism identified at the time the patient's pulmonary function was deteriorating, it is likely that it was the culprit organism leading to her sepsis.

Pannonibacter phragmitetus used to be designated as *Achromobacter* groups B and E [5]. This is the sixth case of human infection and the first report of a pneumonia caused by this organism in the literature: one person developed infective endocarditis, 3 patients had septicemia and another case report described a liver abscess due to *Pannonibacter phragmitetus* [6-9].

4. CONCLUSION

The identification of such organisms is likely to become more common thanks to the increasing use of MALDI-TOF worldwide, especially in tropical and humid parts of the world. Clinicians should be aware of the pathogenicity of *Pannonibacter sp.* and its ability to be resistant to multiple antibiotics.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

This case report formed part of a study which received approval from the local Ethics Committee.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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