



INFECTION CAUSED BY MOELLERELLA WISCONSENSIS IN AN ELDERLY PATIENT- A RARE CASE REPORT

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ABSTRACT

Moellerella wisconsensis formerly designated as Enteric group 46 is a nonmotile, facultative anaerobic gram-negative bacillus. It is a rare pathogen that is infrequently observed in clinical settings but has been isolated from stools, urine, blood culture, infected gallbladder, biliary aspirates, peritoneal exudates, bronchial aspirates. *M. wisconsensis* is increasingly recognized for its opportunistic pathogenic potential and emerging antimicrobial resistance. The resistance acquired by this bacteria to multiple classes of antibiotics is a matter of growing concern as it markedly reduces the efficacy of available antimicrobial therapies. We present a case of infection due to *M. wisconsensis* which was isolated from the urine sample of an elderly patient who was diagnosed with urosepsis.

KEYWORDS : *Moellerella wisconsensis*, rare pathogen, urosepsis

INTRODUCTION

Moellerella wisconsensis formerly designated as Enteric group 46 is a nonmotile, facultative anaerobic gram-negative bacillus that belongs to the family Enterobacteriaceae^[1]. It was named by Hickman-Brenner et al. in 1984 after 6 of the 9 strains were isolated from patients with diarrhoea in Wisconsin, USA^[2]. It is a rare pathogen that is infrequently observed in clinical settings, though several reports have documented its presence in clinical samples such as human stool, bile, blood, bronchial aspirate, urine and wound swab^[3]. Herein, we report a case of infection due to *M. wisconsensis* which was isolated from the urine sample of an elderly patient who was diagnosed with urosepsis.

Case Presentation

A 74-year-old male presented to the medicine OPD with chief complaints of fever, burning micturition and pain abdomen for the past 3 days. He was a known case of hypertension, benign prostatic hypertrophy and chronic obstructive pulmonary disease with cor pulmonale on treatment. Diagnosis of urosepsis with acute kidney injury was made. Empirical treatment with injection ceftriaxone 1gm BD was started but no clinical improvement was observed. Laboratory investigations revealed elevated Total Leucocyte Count, creatinine and urea. Urine microscopy showed 12-14 red blood cells, 7-8 pus cells and 3-4 epithelial cells. On ultrasonography few cysts were found in left kidney, largest measuring 2.5cm and right kidney was normal. Urine sample was sent to microbiology laboratory for culture and sensitivity. The sample was plated on CLED agar and incubated overnight at 37°C. On culture, lactose fermenting colonies were isolated. On Gram-staining, gram negative bacilli were seen and further biochemical tests were done to identify the organism. The isolate was positive for Methyl red, Citrate and Mannitol test. Since the bacteria was suspected to be *E. coli* variant, BD Phoenix™ M50 Automated System was used to accurately identify the isolate. The organism was identified as *Moellerella wisconsensis* by the automated system. Sensitivity test showed MIC values within susceptible range for ampicillin-sulbactam, nitrofurantoin and fosfomycin. The patient was put on tablet fosfomycin and on follow up showed signs of improvement.

DISCUSSION

Moellerella wisconsensis was initially misidentified as an

unclassified enteric group in the 1980s. However, through biochemical profiling and DNA-DNA hybridization, it was distinguished as a novel genus and species based on its unique phenotypic characteristics^[2]. *Moellerella wisconsensis* has been isolated from animals, water and human food^[4]. Its potential to be pathogenic in humans remains unproven though it has been isolated from stools^[2], blood culture^[4], infected gallbladder^[5], biliary aspirates^[6], peritoneal exudates^[7] and bronchial aspirates^[8].

Although rarely isolated, *M. wisconsensis* is increasingly recognized for its opportunistic pathogenic potential and emerging antimicrobial resistance. In a case reported by Ahmad N et al. it was found that *M. wisconsensis* strain which caused infection in NICU patient, harbored plasmid containing resistance genes *bla*_{NDM-1} and *bla*_{VIM-1}^[9]. These resistance mechanisms significantly limit the treatment options available and pose a challenge to infection control measures. Accurate identification of *M. wisconsensis* remains a hurdle and strains of this microorganism may have been misidentified on several occasions as *Escherichia coli* or *Klebsiella pneumoniae* subsp. *ozaenae*^[7].

The antibiotic susceptibility profile of this microorganism exhibits several characteristics commonly observed among members of the family Enterobacteriaceae. It is susceptible to tetracyclines, aminoglycosides, β-lactams (except oxacillin and benzylpenicillin), fluoroquinolones, chloramphenicol and nitrofurantoin and resistant to oxacillin and benzylpenicillin, macrolides, streptogramins, lincomycin, rifampicin, fusidic acid, glycopeptides, oxazolidinones and colistin^{[2],[3],[7]}. The resistance acquired by this bacteria to multiple classes of antibiotics is a matter of growing concern as it markedly reduces the efficacy of available antimicrobial therapies and complicates clinical management. It also heightens the risk of widespread transmission of multidrug resistant strains.

In the above case, isolate was resistant to 2nd and 3rd generation cephalosporins, fluoroquinolones, aminoglycosides and tetracycline. It was sensitive to nitrofurantoin, fosfomycin and ampicillin-sulbactam. The probable cause of infection in this case is due to the immunocompromised state of the patient caused by multiple comorbidities.

CONCLUSION

This case highlights that clinicians should be aware that *M. wisconsensis* though a rare pathogen can cause life-threatening infections in immunocompromised and elderly patients. Multidrug resistance can make management of these infections challenging. Therefore, healthcare providers should keep this in mind when treating patients with such uncommon microorganisms, in order to achieve a favorable outcome for their patients. Detailed investigation and reporting of such cases are essential to expand the limited existing literature and to improve understanding of the organism's pathogenic profile and clinical relevance.

Consent Of Patient

Written informed consent has been obtained from the patient or family to publish this paper.

Conflict Of Interests

The authors declare no conflict of interest.

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