A CASE REPORT OF METHYLOBACTERIUM RADIOTOLERANS BACTEREMIA IN A HAEMODIALYSIS PATIENT SUCCESSFULLY TREATED BY COMBINATION THERAPY OF LEVOFLOXACIN AND MEROPENEM

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ABSTRACT
Central venous catheters (CVCs) play an important role in replacement therapy for patient with renal diseases. Secondary infections due to central venous access are responsible for 48-73% bacteremia in haemodialysis patient and important cause of morbidity. Here we describe a patient with hospital-acquired bacteremia caused by Methylobacterium radiotolerans which was successfully treated by combination therapy of levofloxacin and meropenem.

KEYWORDS: Central venous catheters, bacteremia, Methylobacterium radiotolerans.

INTRODUCTION
Methylobacterium species are fastidious, pink-pigmented, gram-negative bacilli and are normally distributed in environmental sources. The genus was first proposed by Patt et al in 1976 and consists of more than 20 species. Usually most Methylobacterium infections develop in immunocompromised patients.
with malignancy, organ transplant, HIV infection, renal failure or alcoholism.\[^{2,3}\] Central venous access-related infections are responsible 48-73% bacteremia in hemodialysis and represent an important cause of morbidity and increased health care costs.\[^{4,5}\] Here we describe a rare case of bacteremia caused by Methylobacterium radiotolerans in a female patient with central venous catheter for hemodialysis.

**CASE REPORT**

A 60 years old female patient with chronic obstructive pulmonary disease was admitted in our tertiary care setup for haemodialysis with end stage renal failure. At presentation she was anemic with Hb 6gm%. Her blood urea and Creatinine levels were 79mg% and 6mg% respectively. Tests for tuberculosis, malaria, and HIV were all negative. After two dialysis procedures the patient developed bacteremia. The diagnosis of bacteremia was based on clinical and bacteriological investigation. Blood culture specimen was inoculated into Bactec PLUS culture bottles using the Bactec 9240 system (Becton Dickinson, Sparks, MD). Subculture from blood culture bottle on Sabouraud dextrose agar incubated at 30\(^0\)C showed confluent pink coloured colony (Fig-1). Isolates that grew gram-negative vacuolated rods (Fig-2) producing pink colonies which were positive for iodophenol oxidase, catalase, urease and which reduced nitrate were identified as Methylobacterium species.

![Fig-1 Colony of Methylobacterium](image1)

![Fig-2 Gram stain appearance of M.radiotolerance radiotolerance on SDA slope](image2)

The isolates were further identified using the API 20NE system (bioMerieux Vitek, Marcy l'Etoile, France). Bacterial DNA was extracted and amplified by PCR using universal primer for bacterial 16S. Amplification by PCR was performed on the sample and the subsequent sequencing led to the identification of the microorganism of interest as belonging to the
Methylobacterium radiotolerans. The susceptibility of the isolated organism was determined by routine disc diffusion method (FIG-3) and interpreted in accordance with the Clinical and Laboratory Standard Institute (CLSI) criteria for Pseudomonas aeruginosa.\textsuperscript{[5]}

![Fig-3 Sensitivity testing of M.radiotolerance](image)

Sensitivity reports revealed that the isolate was resistant to β-lactum antibiotics with exception of cefoperazone. In addition M.radiotolerans was susceptible to amikacin, netilmicin, gentamicin, levofloxacin, piperacillin+tazobactum combination and meropenem. A combination therapy of levofloxacin and meropenem was started and continued for 10 days. After removal and replacement of CVCS and antibiotic therapy and strict application of infections management protocol, there were no more fever episodes or culture positive for M.radiotolerans.

**DISCUSSION**

In this case report M.radiotolerans isolate caused a catheter related infection in a 60 year old COPD female undergoing haemodialysis. There are few reported cases of M.radiotolerance mediated haemodialysis related infection one in Italy and another in bone marrow recipient patient.\textsuperscript{[7,8]} The patient had recovered completely after receipt of antibiotic therapy according to susceptibility study. The presentation and favorable outcome in our case was similar to those reported previously in a study in Italy, which indicate low pathogenicity of this rare pathogen. In vitro sensitivity testing showed that isolated strain was resistant to β-lactum group of antibiotics and sensitive towards aminoglycosides and fluroquinolone group of antibiotics. This finding is in accordance with previous study conducted elsewhere.\textsuperscript{[3]} Despite the difficulty in drawing inferences about optimal antibiotic treatment based on this limited
experience, our data suggest that clinical microbiology laboratories have the ability to identify these unusual bacteria to species level as because different Methylobacterium species have different drug susceptibility patterns.

In conclusion, although Methylobacterium species rarely cause human disease, clinicians should be aware of the possibility of catheter related infection caused by Methylobacterium spp. In this study, we demonstrated the clinical significance of Methylobacterium radiotolerans. Therefore accurate identification with molecular methods including 16SrRNA sequence analysis is imperative for the understanding of this type of unusual pathogen.

REFERENCES