

**TITLE:** Prosthetic joint infection caused by an imipenem-resistant *Mycobacterium senegalense*

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**ABSTRACT:**

Periprosthetic joint infection (PJI) is one of the most common complications of total knee arthroplasty (TKA). Although mainly caused by *Staphylococcus aureus* and other Gram-positives, occasionally, commensal or environmental bacteria such as nontuberculous mycobacteria (NTM) are reported to cause these infections. This study aims to report a case of PJI caused by imipenem-resistant *Mycobacterium senegalense*. A 75-year-old male patient underwent TKA with prosthesis. After presenting clinical signs such as edema and secretion, even after antibiotic therapy, samples were collected for microbiological culture. The bacterial isolate was submitted to mass spectrometry and gene the hsp65 sequencing. Additionally, the antimicrobial susceptibility profile was determined. The mass spectrometry analyses and sequencing of the hsp65 gene allowed the identification of the clinical isolate as Complex *Mycobacterium fortuitum* (99%) and *M. senegalense* (98.93%), respectively. Additionally, the phylogenetic analysis of likelihood was performed through the inference of Kimura 2-parameters. The antimicrobial susceptibility profile showed resistance to imipenem. After 11 months of clarithromycin, levofloxacin and amikacin therapy, the patient presented complete remission of the infection. The number of cases of NTM infections increased in the last decades; which may be associated with the advancement of microbiological methods and the increasing performance of invasive medical procedures, especially with the use of medical devices, such as prostheses. Given the antimicrobial resistance commonly observed in these microorganisms and the difficulties inherent to laboratory identification, the diagnosis and treatment of these infections are still considered challenging. In this sense, the use of laboratory methods that promote the rapid and assertive identification of NTM, as well as the investigation of antimicrobial susceptibility, are determinant for the planning and success of treatment, especially in cases of patients at high risk for severe opportunistic infections, such as the elderly undergoing surgical procedures.

**KEYWORDS:** *Mycobacterium* infections; surgical site infection; molecular biology; bacterial resistance to antibiotics; *Mycobacterium senegalense*.