**TITLE:** First Report of NDM-Producing *Pseudomonas aeruginosa* in Brazil

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**ABSTRACT:**

NDM-1-producing *Pseudomonas aeruginosa* isolates were first reported in 2011, with two strains recovered from Serbia. In 2012, a single NDM-1-producing *P. aeruginosa* was isolated in France from a patient previously hospitalized in Serbia. More recently, NDM-1-positive *P. aeruginosa* isolates were recovered in India, Italy, Egypt, Slovakia. To date, no reports have emerged from Latin America. This report describes the first detection of NDM-1-producing *P. aeruginosa* strain in Brazil. In January 2019, one carbapenem-resistant *P. aeruginosa* strain was recovered from urine sample from a patient hospitalized in an intensive care unit in a tertiary care hospital located in Porto Alegre, Rio Grande do Sul, Brazil. Empirical therapy was initiated with cefepime. Susceptibility to amikacin, gentamicin, ciprofloxacin, ceftazidime, cefepime, piperacillin-tazobactam, imipenem and meropenem was tested by disk diffusion method according to BrCAST-EUCAST guidelines. Polymyxin B susceptibility was evaluated using the broth microdilution method and Brazilian’s Committee on Antimicrobial Susceptibility Testing breakpoints. Carbapenemase production was assessed using the Blue-Carba test. Phenotypic screening test for metallo-β-lactamase expression was performed by combined-disk test comparing the inhibition zones of imipenem (10µg) and meropenem (10µg) and imipenem and meropenem plus EDTA (100 mM). The presence of *bla*KPC, *bla*NDM, and *bla*OXA-48-like genes was determined by real-time PCR. For *bla*NDM the primers and probes used were NDM-F 5´CTATCTCGACATGCCGGGTTT, NDM-R 5´CGCCATCCCTGACGAT and NDM-S-VIC-MGB 5´TCGTTTCCAACGGTTT. The isolate was resistant to all antimicrobial agents tested, except for polymyxin B (MIC equal to 1 µg/ml). The Blue-Carba and the phenotypic test using combined-disk with EDTA were positive. The *bla*KPC and *bla*OXA-48 carbapenemase genes were not present; however, the *bla*NDM gene was detected in the isolate.

The introduction of the *bla*NDM gene in the *P. aeruginosa* in Brazil is worrisome and the active national surveillance studies are required to determine the real prevalence of *bla*NDM in *P. aeruginosa* isolates.

**Keywords:** *Pseudomonas aeruginosa*, carbapenemase, *bla*NDM

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