

TITLE: HIGH PREVALENCE OF *Pseudomonas aeruginosa* CARBAPENEM-RESISTANT FROM A PUBLIC HOSPITAL IN DOURADOS-MS

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ABSTRACT

Pseudomonas aeruginosa is one of the most common bacteria in healthcare-associated infections, usually causing urinary and respiratory tract infections. Carbapenems are often used to treat serious infections caused by multi-drug resistant Gram-negative bacteria, including *P. aeruginosa*. However, the emergence and dissemination of carbapenemases among this group is a serious public health concern as it limits the therapeutic options for bacterial infections. The aim of this study was to identify carbapenem resistance genes in *P. aeruginosa* isolates from a public hospital in Dourados/MS. A total of 30 carbapenem-resistant *Pseudomonas aeruginosa* strains, collected from November/2015 to August/2016 from different body infection sites, were recovered from 27 patients. Bacterial species were identified by BD Phoenix® automated system. The minimal inhibitory concentrations (MICs) of antimicrobials were determined by broth microdilution according to guidelines from the Clinical and Laboratory Standards Institute. All strains with reduced susceptibility to imipenem or meropenem (MIC \geq 8 μ g/mL) were screened for the presence of carbapenem resistance genes by polymerase chain reaction (PCR) with specific primers. Of the strains that were identified, 26 (86,6%) exhibited resistance for both imipenem and meropenem, 2 (6,6%) exhibited resistance only for imipenem and 2 (6,6%) were susceptible. Furthermore, 46,6 % of the identified strains were obtained from tracheal swabs, 36,6% from urine culture, 9,9 % from sputum and 6,6% from catheter. PCR amplification showed that the *bla*_{KPC-2} gene was present only in 4 carbapenem-resistant strains. The presence of *bla*_{OXA-48}, *bla*_{OXA-51}, *bla*_{VIM-1}, *bla*_{IMP-1}, *bla*_{NDM-1}, *bla*_{TEM}, *bla*_{SHV}, *bla*_{GES-1}, *bla*_{CTX-M}, *bla*_{SPM}, *bla*_{SIM}, *bla*_{GIM}, *bla*_{MCR-1} and *oprD* genes was not detected. Thus, production of carbapenemases may not be the main mechanism of resistance in *P. aeruginosa* evaluated in this study. Therefore, different mechanisms as outer membrane protein changes and expression of efflux pumps should be further investigated to evaluate their role in carbapenem resistance.

Keywords: Carbapenemase; hospital-acquired infection; KPC; *Pseudomonas* spp..

Development Agencies: Brazilian National Research Council (CNPq grants 480949/2013-1) and the Support Foundation for the Development of Education, Science and Technology in the State of Mato Grosso do Sul (FUNDECT grants 0077/12 and 0212/12).