

MOLECULAR DIVERSITY OF CARBAPENEM NONSUSCEPTIBLE *KLEBSIELLA PNEUMONIAE* IN DIFERENT HOSPITALS IN THE MIDWEST REGION OF BRAZIL

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ABSTRACT:

Currently, there are limited therapeutic options available for the treatment of infections caused by multidrug-resistant *Enterobacteriaceae*. Carbapenem resistance due to *Klebsiella pneumoniae* carbapenemase (KPC)-producing *K. pneumoniae* has been extensively reported. The aim of this study was to compare the genetic similarity between carbapenem nonsusceptible *Klebsiella pneumoniae* isolated from patients admitted to intensive care units (ICUs) between March 2013 and March 2014 at three teaching hospitals of Campo Grande city, located in Midwest region of Brazil. A total of ninety seven *K. pneumoniae* were studied, 52 of Hospital Santa Casa, 28 of the Hospital Universitário Maria Aparecida Pedrossian (HUMAP) and 17 of the Hospital Regional of Mato Grosso do Sul (HRMS). Carbapenemase production was detected using the disc diffusion method with phenyl boronic and polymerase chain reaction (PCR). Pulsed-field gel electrophoresis (PFGE) technique was used to compare the genetic similarity among the bacteria. *K. pneumoniae* were isolated from different clinical specimens such as urine (43.3%), tracheal aspirate (22.7%), blood (15.46%), catheter tips (7.2%) and others (11.3%). Among carbapenem nonsusceptible *K. pneumoniae* isolates, 63(64,9%) were positive for KPC on the phenotypic test using imipenem and 77(79,4%) using meropenem. A Total of 86 (88.7%) *K. pneumoniae* carried the *bla*_{KPC} gene. Genetic polymorphism analyses showed 27 different pulsotypes designated from “A to Z”, displaying >80% similarity within each type. Four pulsotypes were dominants: “Z”(n=10) and “Y”(n=7) from Hospital Santa Casa and “O”(n=12) and “X”(n=5) from HUMAP. The pattern “W” was found in all the hospitals. Ten pulsotypes were detected in two hospitals. Of 13 *K. pneumoniae* with profile “O”, 12 were isolated in the HUMAP and of these, 7 were founded between April and August of 2013. Six isolates of “Z” genotype were recovered between April and May 2013. All isolates of clones O and Z carried the *bla*_{KPC} gene. The results obtained show dissemination of *K. pneumoniae* belonging to the same clone in different hospitals of the same region. We believe that this dissemination has contributed to the high carbapenem resistance rates among *Klebsiella pneumoniae* isolates.

Keywords: Drug resistance, *Klebsiella* infections, Carbapenems, Molecular epidemiology

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