

Title: PRODUCTION OF OXA-CARBAPENEMASES AND DETECTION OF CHDL ENCODING GENES IN CLINICAL ISOLATES OF *Acinetobacter spp* IN THE HOSPITAL UNIVERSITÁRIO DE LONDRINA, PARANÁ, BRAZIL

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Abstract:

An increasing in prevalence and mortality of multidrug-resistant *A. baumannii* associated infections in health care settings poses a great threat to public health. Carbapenem resistance due to OXA-type carbapenemases seriously limits the therapeutic options to these infections. This study aimed to investigate the production of carbapenemases and the presence of Carbapenem-Hydrolyzing class D β -Lactamases (CHDLs) genes in clinical isolates of *Acinetobacter spp* recovered from Hospital Universitário de Londrina (HU), Paraná, Brazil. Were studied three hundred ten Carbapenem/Ceftazidime Non-Susceptible *Acinetobacter spp* (CCNSA) isolated at the Clinical Microbiology Laboratory of HU between June 2012 and May 2014. Identification and antibiotic susceptibility testing were performed by Vitek-2[®] (BioMerriex) and interpreted as recommended by the CLSI. Screening of carbapenemase producer isolates was performed by using the modified Hodge test (HT). CHDL genes were investigated by Polymerase chain reaction (PCR) and sequencing. The clinical isolates showed high rates of resistance to carbapenems (96.5 % and 96.2 % to imipenem and meropenem, respectively). Among 310 *A. baumannii* studied, 302 (97.4 %) were carbapenemase producers by HT. The *bla*_{OXA-51} gene was detected in 307 isolates (99.0 %) and 292 (94.2 %) carried the *bla*_{OXA-51} and *bla*_{OXA-23} genes simultaneously. The *bla*_{OXA-143} gene was detected in six isolates (1.9 %) and sequencing these amplicons revealed similarity to *bla*_{OXA-231} gene. The results showed that maintenance of *bla*_{OXA-23} gene has been increasingly observed in carbapenemase producers isolates. It has also been found an increase in frequency of *Acinetobacter spp* carrying *bla*_{OXA-231} gene: an isolate obtained in 2011 to six in 2014. The carbapenem resistance appears to be strongly associated with the presence of CHDL genes in the *Acinetobacter spp* studied. These findings clarify the importance of surveillance and monitoring of the spread these determinants of resistance to optimize the treatment of infections caused by this pathogen in HU.

Keywords: *Acinetobacter spp*, carbapenems, carbapenemases

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