

TITLE: CHARACTERIZATION OF NOSOCOMIAL MULTIDRUG-RESISTANT *ACINETOBACTER BAUMANNII* AND DIVERSITY OF OXA GENES

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ABSTRACT:

Acinetobacter baumannii is among the most challenging Gram-negatives to treat due to high virulence, increasing resistance, and few available antibiotics with activity. In Brazil it is particularly problematic due to its high prevalence and multiresistance, with carbapenemases type OXA representing the main mechanism responsible for this resistance. The aim of this study was to characterize nosocomial multidrug-resistant *A. baumannii* (MDR-AB) isolated from patients at Santa Casa de Misericórdia de Sobral-CE, to describe the clinical evolution and to identify the genes responsible for the production of carbapenemases. The research was approved (CEP/UVA-1,843,504/2016). Epidemiological data regarding the frequency and antimicrobial susceptibility profile of *A. baumannii* nosocomial isolates were collected from reports generated by the VITEK® 2 automated system. Amplification of OXA genes, *bla*_{OXA-23}, *bla*_{OXA-24}, *bla*_{OXA-51} and *bla*_{OXA-58}, were performed by PCR. Seventy-five isolates collected from June to November 2016 were analyzed. Bloodstream was the most frequent site of isolation (n = 32; 42.7%), followed by surgical wound secretion (n = 20; 26.7%) and tracheal aspirate (n = 6; 8.0%). Most of the specimens were isolated from the Intensive Care Units (n = 44; 58.7%) and the remaining from the clinical infirmaries (n = 31; 41.3%). Of the total number of patients infected, 31 (41.3%) died. The highest rates of resistance to carbapenems, meropenem and imipenem (n = 51, 68.0%), cefepime (n = 51, 68.0%), ciprofloxacin (n = 53, 70.6%) and gentamycin (n = 42, 56.0%) were observed. In contrast, all isolates were susceptible to colistin and 99% to tigecycline. The *bla*_{OXA-23} gene was the most frequent (n = 41; 54.6%) and its occurrence was significantly associated (p <0.001) with MDR-AB, followed by *bla*_{OXA-24} gene (n = 9; 12.0%). The gene *bla*_{OXA-58} was not found in any isolates. Therefore, such data could contribute substantially to epidemiological surveillance, which is related to the basic principles that monitoring should be the basis for the implementation of measures to combat hospital infections, and may also assist in the implementation of therapeutic protocols, improving the quality of assistance to hospitalized patients.

Keywords: *Acinetobacter baumannii*, carbapenemases, genomic diversity, nosocomial infection, multidrug-resistant.

Development Agency: Santa Casa de Misericórdia de Sobral-CE.