PHENOTYPIC AND GENOTYPIC CHARACTERIZATION OF GRAM-NEGATIVE METALLO-BETA-LACTAMASES PRODUCING ISOLATED ON STATE OF RIO GRANDE DO NORTE

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In the past decades, the world has witnessed a great increase of pathogenic bacteria, involved in a variety of diseases, which have multiples antibiotic resistance. Bacterial resistance is a growing public health problem and the spread of antimicrobial resistance genes include a recurring concern worldwide. Into this alarming situation, the Gram-negative bacteria is one of the protagonists in our country not only by the frequency which their strains are isolated, but also by the rapid evolution with respect to antimicrobial resistance, principally when inactivating carbapenems for enzyme production carbapenemases encoding metallo-beta-lactamase type (MβL). During the study there were included 80 bacterial strains belonging to the families of Enterobacteriaceae , *Acinetobacter* spp and *Pseudomonas* spp, isolated from three health centers in Rio Grande do Norte state. Bacteria with standard resistance to carbapenems were analyzed by phenotypic tests - via enzymatic blocking method using EDTA, protocols already established for characterization of MβL production; and genotypic using PCR for the presence of the following genes: IMP-1, NDM-1, VIM-1. Of the 80 samples, 31 were positive in phenotypic tests and in 50 of these samples genotypic tests were performed, obtaining as result 10 positive samples for NDM-1 gene and not being found no positive sample for the other two genes(IMP-1, VIM-1) . Phenotypic methods applied in this study could be supplementary in the standardized routine of a hospital laboratory. Assisting directly in the therapy to minimize possible failures due to the presence of unidentified carbapenemases, thereby reducing the empirical use of antimicrobial agents and unnecessary hospital cost, time hospitalization and antibiotics as well as the techniques that are based on the bacterial DNA analysis provide a much greater discriminatory power than the phenotypic parameters, so the domain of this information facilitates the implementation of barrier measures and can guide the conduct of antimicrobial therapy order to increase their efficiency and reduce the prevalence of resistant clones.

Keywords: Resistance, Gram negative Bacteria, Metallo-beta-lactamase.