TITLE: PERFORMANCE OF RAPIDEC CARBA-NP AT THE DETECTION OF CARBAPENEMASES IN GRAM-NEGATIVE BACTERIA ISOLATED FROM BLOOD CULTURES AT A HOSPITAL IN THE CITY OF SALVADOR - BAHIA

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ABSTRACT: Multiresistant bacteria have been emerged and spread extremely fast all over the world, already being known as a public health issue, since it increases the costs of hospitalization; the patient's length of stay and reduces therapeutic options. Among the multiresistant microorganisms, Gram-negative carbapenemase producers represent a major threat. The rapid detection of carbapenemase producers contributes to a precise and efficient antimicrobial therapy, as well as to the implementation of early measures to control the spread of these microorganisms in the hospital environment. This study aimed to evaluate the perfomance of a rapid test, the RAPIDEC CARBA NP (bioMeriéux) at the detection of carbapenemases in Gram-negative bacteria isolated from blood cultures, comparing the agreement of this method with the molecular technique. The evaluation was performed with Gram-negative bacteria isolated from blood cultures collected from patients hospitalized at Hospital São Rafael (Salvador, Bahia) from March 2015 to March 2016. Positive blood cultures were detected by BacT/ALERT (bioMeriéux), the antimicrobial susceptibility testing were performed by VITEK 2 (bioMeriéux), and the minimum inhibitory concentrations for carbapenems were confirmed by E-test (bioMeriéux). The RAPIDEC CARBA NP was performed on isolates resistant to at least one carbapenem, following manufacturer's standardization. To confirm the presence of carbapenemases, genes that decode these enzymes were screened by PCR (*bla*GES, *bla*OXA-48-like, *bla*KPC, *bla*VIM, *bla*IMP, *bla*NDM, *bla*OXA-23-like). During the study period 170 isolates were recovered from blood cultures, and 18 of those showed resistance to at least one carbapenem. Out of 18 isolates, 7 (39%) and 6 (33%) were RAPIDEC CARBA NP positive and have presence of resistance genes confirmed, respectively. The phenotype test was concordant with the molecular test for five isolates; however, considering PCR as gold standard, it was possible to observe that two false-positive and one false-negative results occurred. When we assessed the sensitivity, specificity and accuracy of RAPIDEC CARBA NP, the values verified were 83.3%, and the positive and negative predictive values were 71.43% and 90.91%, respectively. The evaluation undertaken here showed that RAPIDEC CARBA NP has satisfactory performance measures, that combined with quick and easy method of execution, make it a promising alternative for use in clinical microbiology laboratories.

Keywords: Gram-negative bacteria, carbapenemase, CARBA NP

Development Agency: Fundação de Amparo à Pesquisa do Estado da Bahia