

Título: MOLECULAR TYPING OF CARBAPENEM-RESISTANT *ACINETOBACTER BAUMANNII* FROM HOSPITALS IN THE STATE OF SAO PAULO, BRAZIL

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Resumo:

Carbapenem-resistant (CR) *Acinetobacter baumannii* (Ab) is a well-recognized pathogen implied in healthcare infections. Resistance to carbapenem in Ab is mainly mediated by class D oxacillinases, such as OXA-23-like, which is often flanked by ISAb₁. OXA-23-producing Ab is considered endemic in certain geographic regions. For epidemiological purposes, pulsed-field gel electrophoresis (PFGE) remains as the most discriminatory technique for typing Ab, but *bla*OXA-51-like subtyping was shown also to discriminate Ab strains due to its correlation with multi locus sequence typing. The aim of this study was to determine the clonal relatedness of CRAb strains circulating in hospitals from the State of São Paulo, Brazil. 73 CRAb strains isolated from clinical specimens of patients admitted to different hospitals between 2009 and 2013 were investigated. The *bla*OXA-23-, *bla*OXA-24-, *bla*OXA-51-, *bla*OXA-58-, *bla*OXA-143-like genes were screened by PCR. ISAb₁ was also detected by PCR. Species identification was confirmed by ITS sequencing. *bla*OXA-51-like gene was sequenced for determination of its subtyping. Apal-PFGE was carried out to determine the clonal relatedness. Clusters were defined based on a 70% cutoff (tolerance and optimization 1%). Out of 73 CRAb strains, 67 presented *bla*OXA-23-like/ISAb₁, and were further investigated. *bla*OXA-23-like/ISAb₁ strains were isolated from 61 different hospitals, in 23 cities. Among these 67 strains, *bla*OXA-24-, *bla*OXA-58-, or *bla*OXA-143-like genes were not detected. OXA-51-subtyping identified 4 major variants (OXA-65, OXA-132, OXA-69, OXA-64). Three strains could not have their OXA-51-subtype determined. PFGE typing revealed 6 clusters: cluster A comprised 19 strains, all presenting the OXA-65 subtype; cluster B included 21 strains, all of them presenting the OXA-132 subtype; cluster C also included 21 strains, but with OXA-69 subtype; cluster D comprised only 3 strains, all of them presenting OXA-64 subtype. Clusters E and F presented 2 and 1 strains including the strains with OXA-51-like. The presence of a small number of clusters comprising most of the strains indicate the presence of clones of *bla*OXA-23-like/ISAb₁ carbapenem-resistant *Acinetobacter baumannii* circulating in the State of Sao Paulo. Furthermore, concordant results between both OXA-51-like subtyping and PFGE provide another option for epidemiologists implement control measures to contain dissemination of carbapenem-resistant *Acinetobacter baumannii*.

Key-words: *Acinetobacter baumannii*, carbapenemases, molecular epidemiology, OXA-23

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