

TITLE: MONITORING AND ANALYSIS OF PERSISTENCE AND MICROBIOLOGICAL FEATURES OF MULTIDRUG-RESISTANT *CORYNEBACTERIUM STRIATUM* IN A NOSOCOMIAL UNIT IN RIO DE JANEIRO METROPOLITAN AREA (2010-2017)

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ABSTRACT

Corynebacterium striatum has been associated with an increasing number of cases of health-care associated infections (HAIs). In a previous study, a nosocomial outbreak caused by *C. striatum* of four pulsed-field gel electrophoresis (PFGE) profiles, including two multidrug-resistant (MDR) predominant related clones (PFGE I and II) was verified in a university hospital located in the metropolitan area of Rio de Janeiro, during the period of Jan 2009 - April 2010. *C. striatum* was mostly isolated from tracheal aspirates of patients undergoing endotracheal intubation procedures. Therefore, monitoring and analysis of persistence and microbiological features of *C. striatum* strains from this nosocomial unit during the period of May,2010-March,2017 was currently accomplished. Microorganisms were characterized by classical phenotypic tests, in addition to CAMP-reaction with *Staphylococcus aureus*, O129 vibrio-static agent susceptibility test, semi-automated API Coryne System (bioMérieux) and a MALDI-TOF method. Antimicrobial susceptibility profiles were determined by the disk diffusion method, according to the BrCAST – EUCAST and/or CLSI guidelines and clonal diversity verified by PFGE. Biofilm formation on polystyrene surfaces was evaluated by a semi-quantitative microplate assay. During the seven-year period of study, a total of 128 clinical isolates were identified as *C. striatum*: 6/2010, 36/2011, 40/2012, 20/2013, 11/2014, 6/2015 and 1/2017. MALDI-TOF-MS was found as a rapid and reliable method for the identification of *C. striatum*. Preliminary analysis identified 11 PFGE-types and endemic persistence of PFGE-type I. *C. striatum* strains were predominantly characterized as MDR (82%) and isolated from tracheal aspirates (n=50), blood and/or catheter tips (n=31), urine (n=17) and skin lesions (n=10). A higher ability of biofilm formation was observed for representative strains of MDR PFGE-types. Biofilm formation may favor pathogenicity of different *C. striatum* clones leading to invasive infections, dissemination and endemic persistence, especially of MDR strains. In conclusion, *C. striatum* infections were found as polyclonal endemic infections in a nosocomial unit in Rio de Janeiro metropolitan area. This work provides information about *C. striatum* complexity of outbreaks, intra-nosocomial transmission, endemic persistence and time-clonal distribution in hospital wards.

Keywords: *Corynebacterium striatum*, IRAS, virulence, nosocomial outbreak.

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