

Title: BIOFILM PRODUCTION AND PRESENCE OF *icaA* GENE AMONG *Staphylococcus aureus* ISOLATES CARRYING THE PANTON-VALENTINE LEUKOCIDIN GENES

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Abstract:

Staphylococcus aureus can cause a wide range of infections and the presence of the Pantone-Valentine leukocidin (PVL) virulence factor may lead to abscesses formation difficult to treat with antimicrobials. Moreover, the ability of some isolates to colonize polymeric surfaces and form biofilm is related to an increased bacterial virulence. The aim of this study was to investigate the production of biofilm and the presence of *icaA* gene in *S. aureus* PVL-positive isolates from patients attended at Rio de Janeiro hospitals and to associate those characteristics to specific genetic backgrounds. All 27 PVL-positive isolates were previously characterized in relation to their SCC*mec* type by *multiplex* PCR and had their clonal lineage defined by PFGE and MLST. The biofilm quantification was assessed by the microtiter-plate test (MPT) supplemented with 1% of glucose and the *icaA* gene was detected by PCR. Among the isolates, 16 (59%) were methicillin-resistant *S. aureus* (MRSA) and carried the SCC*mec* type IV. In general, the isolates belonged to the lineages USA1100/ST30 (4 MRSA), USA400/ST1 (2 MRSA e 3 MSSA), USA800/ST5 (2 MRSA) and USA300/ST8 (1 MRSA). Besides, 15 isolates from sporadic sequence types were also evaluated. All 27 isolates produced biofilm in different degrees of intensity and among 15 of them tested for the presence of *icaA* gene all were positive for this gene. The majority of isolates were moderate biofilm producers (17/27; 63%). However, USA400/ST1 isolates were stronger biofilm producers in comparison to the other lineages (p -value < 0.05). Only one *icaA*-positive isolate, related to the ST5 lineage, was defined as a weak biofilm producer. The strong biofilm production by USA400/ST1 isolates highlights the need for continued research as this PVL positive lineage is prevalent in Brazilian hospitals. Furthermore, the action of both virulence factors, biofilm and PVL, could be related to poor patient's outcome.

Key-words: *Staphylococcus aureus*; PVL; biofilm, clonal lineages

Founding: CAPES, CNPq, FAPERJ and PROEX