

TITLE: Mechanisms of bacterial resistance of *Staphylococcus aureus* in a public hospital

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ABSTRACT: *Staphylococcus aureus* (*S. aureus*) is the most important human pathogen of the genus *Staphylococcus*. They can cause infections in several organs and are important etiological agents in the hospital environment, since their high dissemination contributes to the multiresistance of antimicrobials. The present study aims to evaluate the resistance of clinical isolates of *S. aureus* in a Public Hospital. All cultures were evaluated from September to November/2018, totaling 820, of which 344 (58.1%) were positive and 486 (41.9%) were negative. Of the positive cultures, 114 (33.1%) of the genus *Staphylococcus* spp., And 29 (25.4%) of the *S. aureus* species were isolated. Of the positive cultures, *S. aureus* accounted for 8.4% of clinical isolates. Cultures were performed by the automated method in the BD Phoenix® (Becton & Dickinson) equipment, with identification and antimicrobial susceptibility testing performed through the PMIC/ID 89 panel. The mechanisms of bacterial resistance detected were broad-spectrum beta-lactamase (ESBL), *Staphylococcus* MLSb Phenotype (STAMLS), *Staphylococcus* inducible phenotype (STAIML), vancomycin-resistant *S. aureus* (VRSA), beta lactamase-producing *Staphylococcus* (BLACT), Mec A-mediated *Staphylococcus* and resistant *Staphylococcus* to methicillin (MRS). Of the 29 clinical isolates, 1 did not obtain an adequate evaluation result and was excluded from the study. Of the 28 isolates, the following phenotypes were expressed: 26 (92.9%) BLACT, 12 (42.9%) MRS, 12 (42.9%) Mec A, 11 (39.2%) STAMLS, 7) (10.7%) STAIML and 3 (10.7%) VRSA. Of the 28 isolates, only 2 (7.1%) did not express any mechanism of bacterial resistance. Regarding the numbers of resistance mechanisms, 7 strains (25%) expressed only 1 type, 7 (25%) 2 types, 1 (3.6%) 3, 8 (28.6%) 4. The 3 (10, 7%) strains with VRSA phenotype, also expressed all resistance mechanisms. Multiresistance was observed in isolates of *S. aureus*, with a higher frequency of BLACT (*Staphylococcus* beta lactamase) and (MRS (methicillin resistant *Staphylococcus*) mechanisms.

Keywords: mechanisms of resistance, antimicrobials, *Staphylococcus aureus*