

***Staphylococcus aureus* IN THE COVID-19 PANDEMIC: ANTIMICROBIAL RESISTANCE AMONG ISOLATES FROM PATIENTS ADMITTED TO INTENSIVE CARE UNITS IN A HOSPITAL IN RIO DE JANEIRO**

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ABSTRACT:

Staphylococcus aureus has great clinical relevance, and it is often associated with resistance to different antimicrobials. Previous colonization by methicillin-resistant *S. aureus* (MRSA) is considered a risk factor for developing infection, with a direct impact on patient prognosis, mortality rate and hospital costs. Co-infections by *S. aureus* and SARS-COV-2 may require greater antimicrobials use and invasive medical devices, increasing the selective pressure on microorganisms in the hospital environment. The aim of this study was to characterize the antimicrobial susceptibility of *S. aureus* isolates from nasal swab for epidemiological surveillance of patients with and without COVID-19 diagnosis admitted to Intensive Care Units (ICUs) of a hospital in Rio de Janeiro, during the SARS-COV-2 pandemic. One swab was obtained per patient. Susceptibility profiles to 11 antimicrobials were determined by disk diffusion test (CLSI, 2020) for all *S. aureus* isolates. Detection of SCCmec type was performed by PCR. The isolates were acquired between September 2020 and September 2021. COVID-19 patients corresponded to 30.3% (76 patients) of a total of 251 evaluated. Among the 91 (36.2%) MRSA isolates detected, 33 (33/76; 43.4%) were associated with patients diagnosed with COVID-19. Antimicrobial resistance rates were 92.4% for penicillin, 74.5% for erythromycin, 52.9% for clindamycin, 25.9% for gentamicin, 15.9% for ciprofloxacin, 3.9% for tetracycline, 1.2% for rifampicin and 0.8% for sulfamethoxazole-trimethoprim. All isolates were sensitive to linezolid and mupirocin. It is important to highlight that isolates from the COVID-19 ICU were more resistant to erythromycin (86.8%) and clindamycin (69.7%) than isolates from non-COVID-19 ICU (69.1% and 45.7%, respectively), with $p < 0.05$. Among clindamycin-resistant isolates 81.9% presented inducible resistance to MLS_B. The SCCmec type IV was found in 70.3% of MRSA isolates, type II in 23.1%, type V in 2.2%, type III in 1.1% and four isolates (3.3%) were not typeable. The results presented in this study indicate a high rate of patients colonized with MRSA isolates in ICUs of patients with a diagnosis of COVID-19 at a hospital in Rio de Janeiro. In addition, high rates of resistance to erythromycin and clindamycin were also found among these patients, highlighting the importance of surveillance and infection control measures in the healthcare facility.

Keywords: *S. aureus*, MRSA, resistance to antimicrobials, nasal swab, COVID-19

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