Título: DECREASED VANCOMYCIN SUSCEPTIBILITY IN Staphylococcus epidermidis STRAINS CARRYING DIFFERENT SCCmec TYPES ISOLATED OF PRIMARY BLOODSTREAM INFECTIONS IN A NEONATAL INTENSIVE CARE UNIT

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Resumo:
In addition to beta-lactams resistance, which is conferred by the mecA gene located on mobile genetic elements called staphylococcal chromosome cassette mec (SCCmec), mostly nosocomial Staphylococcus epidermidis isolates are also resistant to multiple other antibiotic classes. Therefore, vancomycin has become the first-line therapy for infections caused by the methicillin-resistant staphylococci although, since the 1990s, there have been increasing reports of both vancomycin-intermediate as well vancomycin-resistant strains. This study evaluated the susceptibility to vancomycin of methicillin-resistant S. epidermidis (MRSE) isolates recovered from neonates with true primary bloodstream infection in a neonatal intensive care unit at a Brazilian tertiary hospital. The SCCmec types were determined by multiplex PCR. The minimum inhibitory concentration (MIC) for vancomycin was determined by broth dilution method that was performed and interpreted according to Clinical and Laboratory Standards Institute (CLSI) guidelines. Moreover, agar screening with 4 µg/mL and 6 µg/mL of vancomycin were used. A total of 38 MRSE isolates showing oxacillin MICs of 1 µg/mL to >256 µg/mL were evaluated in this study. Most (n=20, 52.6%) MRSE isolates harbored SCCmec type IV and the other carried diverse types of SCCmec, including SCCmec I (n=6, 15.8%), SCCmec V (n=5, 13.1%) and SCCmec III (n=1, 2.6%). For 6 (15.8%) MRSE isolates the SCCmec were not-typeable by the method employed. Twenty five (65.8%) MRSE isolates showed vancomycin MIC of 4 µg/mL, 12 (31.6%) of 2 µg/mL and 1 (2.6%) of 0.5 µg/mL. No isolate grew on agar screening with 6 µg/mL of vancomycin but twenty five (65.8%) isolates grew on agar screening with 4 µg/mL. Notably, although all MRSE isolates evaluated were susceptible to vancomycin based on the current cut-off, the MIC values obtained were high independently of the SCCmec type. For S. aureus, infections with strains showing MICs of 1-2 µg/mL not respond to treatment with vancomycin but for coagulase negative staphylococci there are no studies. In conclusion, the results of this study demonstrate that invasive MRSE isolates tend to show decreased vancomycin susceptibility. Thus, we suggest that the implementation of infection control measures similar to those used for MRSA may be necessary to prevent further spread of these multi-drug resistant S. epidermidis strains in hospitals, mainly in neonatal intensive care units.

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