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

Autores: Peixoto, P.B.[1], Silva, R.B.[1], Santos, K.R.N.[2], Massinhani, F.H. [1], Oliveira, C.C.H.B.[1], Oliveira, A.G.[1]

Instituição: [1] UFTM - Universidade Federal do Triangulo Mineiro (Praça Manoel Terra 330- Bairro Abadia- 38.025.015- Uberaba - MG), [2] UFRJ - Universidade Federal do Rio de Janeiro (Cidade Universitária- 21941-590- Rio de Janeiro - RJ)

Resumo:

In addition to beta-lactams resistance, which is conferred by the *mecA* gene located on mobile genetic elements called staphylococcal chromosome cassette *mec* (SCC*mec*), 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 SCC*mec* 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 SCC*mec* type IV and the other carried diverse types of SCC*mec*, including SCC*mec* I (n=6, 15.8%), SCC*mec* V (n=5, 13.1%) and SCC*mec* III (n=1, 2.6%). For 6 (15.8%) MRSE isolates the SCC*mec* 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 SCC*mec* 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.

Palavras-chave: bloodstream infections, coagulase-negative staphylococcus, SCC*mec* types, *Staphylococcus epidermidis*, vancomycin susceptibility.

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