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Species Identification, Antimicrobial Susceptibility Pattern and Biofilm Formation by Coagulase Negative Staphylococci Isolated from Neonatal Sepsis

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***SUMMARY. Coagulase negative staphylococci* (CoNS) were long considered nonpathogenic as they are the commensals of human skin and mucosa but due to the recent changes in the medical practice and changes in underlying host populations, they are being considered significant pathogens associated with number of infections. The objective of the study was to determine the species, antimicrobial susceptibility; biofilm forming ability of the clinically significant CoNS isolates Methods: A total of 42 clinically significant CoNS isolates obtained from neonates with sepsis were studied. Characterization was done using standard microbiological guidelines and antimicrobial susceptibility was done following CLSI guidelines. MecA gene mediating methicillin resistance was detected by polymerase chain reaction (PCR). Biofilm formation was detected using phenotypic methods i.e. Congo red agar (CRA) method and tube method(TM) and tissue culture plate (TCP) method and the presence of the icaAD gene was assessed by PCR. Results: Among 42 isolates, *Staphylococcus epidermidis* (42.9%) was the most common species which was followed by *Staphylococcus haemolyticus* (23.8%), *Staphylococcus hominis* (11.9%), *Staphylococcus lugdunensis* (9.5%), *Staphylococcus warneri* (7.1), *Staphylococcus cohni and Staphylococcus capitis* (2.4% each) 100% of the isolates were resistant to penicillin. Resistance to cefoxitin was observed in 71.4% of the isolates. MecA gene was detected in 76.2% of isolates. 61.9% of isolates were biofilm producers by CRA method, 59.5% by TM, 52.4% by TCP and icaAD was detected in 54.8% of isolates. Conclusion: CoNS isolates obtained from neonatal sepsis should be processed routinely and antimicrobial susceptibility testing should be performed. Multidrug-resistant CoNS are prevalent. Biofilm formation is a major virulence factor of CoNS, and the presence of icaAD was associated with a greater capacity to form biofilms. Preventive measures like hand hygiene, aseptic management of intravenous line should be followed to reduce the spread of virulent CoNS.**

RESUMEN. Cryptosporidium es un parásito intestinal común en vertebrados. Se considera la segunda causa común de diarrea y muerte en bebés después del rotavirus. El tratamiento específico de la infección por *Cryptosporidium* está restringido y la nitazoxanida es el único fármaco aprobado para su tratamiento con un efecto leve que plantea la necesidad de evaluar nuevos medicamentos. Este estudio tuvo como objetivo evaluar la eficacia de las nanopartículas de quitosano y su combinación con nitazoxanida en el tratamiento de la criptosporidiosis experimental mediante métodos parasitológicos e histopatológicos. Se dividieron cincuenta ratones en 5 grupos iguales; Grupo I: control sano, grupo II: control infectado por Cryptosporidium, grupo III: infectado y tratado con nitazoxanida, grupo IV: infectado y tratado con nanopartículas de quitosano y grupo V: infectado y tratado con nanopartículas de quitosano y combinación de nitazoxanida. El tratamiento de animales infectados con terapia de combinación produjo la mayor reducción significativa en la eliminación de oocistos. La terapia combinada mostró una clara mejoría de los cambios histopatológicos intestinales mientras que el grupo tratado con nitazoxanida mostró alguna mejoría.: El tratamiento de la infección por criptosporidios con la terapia combinada de nanopartículas de quitosano y nitazoxanida dio los mejores resultados, ya que indujo una reducción marcada en los recuentos de parásitos y la curación de los cambios histopatológicos intestinales, mientras que las nanopartículas de quitosano por sí solas dieron como resultado una mejora histopatológica leve pero con una reducción significativa de los recuentos de ooquistes.

KEY WORDS: antimicrobial susceptibility, biofilm, CoNS, neonatal sepsis, methicillin resistance.

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