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Significance of coagulase-negative staphylococci isolated from blood cultures of pediatric patients

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The problem which was posed at the beginning of the actual study was the following: Is it possible to distinguish coagulase-negative staphylococci (CNS)-sepsis isolates from contaminants in order to diagnose a CNS-sepsis?
The study was realized with a patient population of 83 children, whose charts were reviewed regarding the sepsis diagnosis. The decision to make a diagnosis was strongly dependent of 3 major and 5 minor clinical criteria. In this way, 96 disease episodes were considered, of which 33 turned to be sepsis and 63 non-sepsis episodes. The belonging 100 CNS-isolates were then examined regarding their microbiological properties.
At the end of this study, we agree that CNS are potential pathogens for sepsis. The mechanisms of pathogenicity are not all cleared yet. We could only examine a few aspects of the virulence of these bacteria, finding that *S.epidermidis* was the most frequent species isolated as well during sepsis as non-sepsis episodes. The predictive value positive for this species and concerning the sepsis diagnosis was poor (38,3%), however we could prove that a contamination was more probable (84,2%) when the species isolated was another CNS species.
Neither the biotype nor slime nor DNAse production could give a clinical significance to the CNS. The two last properties were found as well among sepsis isolates as among contaminants, but they were uncommon in general. It is interesting to note that 2/3 of the CNS isolates which didn't produce any of the 2 substances were contaminants, which can be explained by the fact that our CNS-contaminant population was much greater than the CNS-sepsis isolate one.
Generally, the sepsis isolates were more resistant to antibiotics than contaminants. A sepsis could be diagnosed in nearly half of the cases if the isolate was resistant to at least 5 antibiotics. Comparatively, a CNS species which was susceptible to more than 8 antibiotics led to a contamination in 3/4 of the cases. However, this criterion wasn't statistically significant either.
It was also observed that resistant strains belonged to disease episodes (sepsis or non-sepsis) with a hospital stay longer than 2 days. The resistance increases with the duration of hospitalization.

Our study confirms that none of the parameters cited above allows to diagnose a CNS sepsis with 100% confidence, and sepsis is still first of all a clinical diagnosis. In order to define true CNS-sepsis, the clinician should primarily rely on the clinical picture the patient presents. Criteria like „number of

blood cultures positive for CNS“ and „increased CRP-value“ may be of particular help to distinguish true pathogens from contaminants.

Although it should be continued to investigate about the CNS virulence, it shouldn’t be forgotten that they are frequent contaminants, and each person drawing bloodcultures should aim at avoiding contamination.