

TITLE: DETECTION OF MICROBIAL BIOFILMS ON CENTRAL VENOUS CATHETERS REMOVED FROM INTENSIVE CARE UNIT PATIENTS

AUTHORS: BERNARDI-WENZEL, J.; SCARIOTTO, O.A.; GUEVARA, F.M.; BUZIN, G.; PINHEIRO, M.A.R.; SÔNEGO, E.S.

INSTITUTION: UNIVERSIDADE FEDERAL DO PARANÁ – UFPR – CAMPUS TOLEDO (RODOVIA PR 182 - S/N, KM 320/32, CEP 85.919-899, TOLEDO-PR, BRAZIL)

ABSTRACT: Biofilms are complex microbial communities formed by individual microorganisms cells embedded in an extra-cellular polysaccharides matrix that adhere to a surface and function as a microenvironment. Biofilm formation is one of the most common complications due to the use of medical devices and is related to infections, usually severe, aggravated by biofilm resistance to antibiotics and the fragility of patient's immune system. One of the most widely used medical devices in the Intensive Care Units (ICU) is the central venous catheter (CVC), for access of large caliber veins in patients. Therefore, there is a need to prevent infections due to the formation of CVC biofilms, in view of the prevalence of cases worldwide and in Brazil, as well as the severity of their complications. Thus, this study aimed: to analyze the colonization of catheters in patients of hospitals in the city of Toledo-PR, to identify and determine the frequency of colonization, to correlate with the clinical data of the patients. Until now, CVC collects have been performed in one of the hospitals in Toledo-PR. Under aseptic conditions, the distal tips of the CVC of patients admitted to the ICU were collected, transferred to sterile tubes and transported to the Microbiology laboratory of the UFPR - Campus Toledo. The CVC were submitted to two methodologies of microbial culture, the semiquantitative and the quantitative, being evaluated the number of colony forming units (CFU) grown in culture medium. Catheter tip colonization has been defined as microbial growth of ≥ 15 CFU and contaminated if there is growth < 15 CFU, per semiquantitative culture. For the quantitative culture, contaminated if the growth are $< 10^3$ CFU.mL⁻¹ and colonized if the growth are $\geq 10^3$ CFU.mL⁻¹. Next, the microorganisms were isolated and identified by biochemical tests. Among of the catheters collected and processed, 60% showed bacterial growth, with 20% being evidenced the microbial colonization and the other 40% only contamination. In identification of the microorganisms, 30% of the catheters were identified *Staphylococcus aureus* and 70% *Staphylococcus* coagulase negative. In relation to the pathologies of patients with CVC and the relationship between these and colonization, it was possible to verify that in only one case of suspected infection, the count of microorganisms was low (4 CFU), and the catheter was considered contaminated. For the other patients, there was a direct relationship between the appearance of infection symptoms and colonization of the catheter. These results demonstrate the importance of monitoring catheter infections and of measures that can reduce or prevent microbial adhesion in these devices, reducing the incidence of infections and deaths.

Keywords: sepsis, *Staphylococcus*, microbial colonization, bacteremia.

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