Adherent bacteria and biofilm frequently colonize central venous catheters (CVCs). CVC colonization is correlated to infections and particularly to bloodstream ones" Rosa et al (2017).

Abstract:

Adherent bacteria and biofilm frequently colonize central venous catheters (CVCs). CVC colonization is correlated to infections and particularly to bloodstream ones. The classical microbiological methods to determine of CVC colonization are not fully reliable and are time-consuming.

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BioTimer Assay (BTA) is a biological method already used to count bacteria adherent to abiotic surfaces and biofilm without sample manipulation. BTA employs specific reagents whose color changed according to bacterial metabolism. BTA is based on the principle that a metabolic reaction will be faster when more bacteria are present in the sample. Therefore, the time required for color changes of BTA reagents determines the number of bacteria present in the sample through a correlation line. Here, for the first time, we applied BTA and a specifically developed laboratory procedure to evaluate CVC colonization in comparison with the routine microbiological method (RMM). 125 CVCs removed from patients for

suspected catheter-related bloodstream infection (CRBSI) or at hospital discharge were examined. BTA was reliable in assessing sterility and CVC colonization (100% agreement with RMM) and in recognizing the presence of fermenting or non-fermenting bacteria (97.1% agreement with RMM) shortening the analytical time by between 2- and 3-fold. Moreover, the reliability of BTA as early alert of CRBSI was evaluated. The sensitivity, specificity, positive, and negative predictive values for BTA as an early alert of CRBSI were 100, 40.0, 88.8 and 100%, respectively. In conclusion, BTA and the related laboratory procedure should be incorporated into routine microbiological methods since it can be considered a reliable tool to evaluate CVC colonization in a very short time and a rapid alert for CRBSIs.

Reference:

Rosa, L., Cutone, A., Coletti, M., Lepanto, M.S., Scotti, M., Valenti, P., Raponi, G., Ghezzi, M.C. and Berlutti, F. (2017) Biotimer assay: A reliable and rapid method for the evaluation of central venous catheter microbial colonization. Journal of Microbiological Methods. September 28th. .

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