

Title: TIME REDUCTION OF BACTERIAL IDENTIFICATION FOR BLOODSTREAM INFECTIONS

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Abstract:

The rapid and accurate identification of causing agents in the bloodstream infections is very important for the adjustment of antimicrobial therapy and consequent impact in the patient's outcome. These infections are associated to high mortality rates, increase of admission time and costs related to the assistance. Through conventional methods the bacterial identification is obtained at least in 48 hours. However the use of new technologies, like the Matrix-assisted laser desorption ionization time-of-flight (MALDI-TOF) mass spectrometry, has provided a quick identification of the involved agent. The aim of this study was to evaluate the concordance of bacterial identification from the positive blood culture bottles after 5 hours of incubation comparing with conventional method (24 hours of incubation). During period of August and September 2014 were tested 107 positive blood culture samples from BACTEC FX that were cultured on agar blood plate and incubated at 35°±2°C for about 5 hours. In parallel a Gram stain was performed for all samples. After incubation, a bacterial mass of agar blood culture was spotted twice onto target MALDI plate with addition of 0,4µL of formic acid (concentration 98-100%) and 0,8µL of matrix (alpha-cyano-4-hydroxy cinnamic acid) and submitted to identification by Maldi-TOF MS. The agar blood plate were incubated again overnight at 35°±2°C, following the conventional routine of identification. It was considered in the Maldi-TOF scores > 2.0 or double score between 1.7 and 2.0 for genus and species identifications. It was obtained 86,9% of concordance in the results. In 6,5% of samples it was not obtained identification in the first 5 hours of incubation and 4,7% were concordants, but with score < 2.0. According the obtained results here, the implementation of Maldi-TOF MS in the routine of positive blood culture identification after 5 hours of incubation in agar blood plate allows bacterial identifications in a very short time, with very reliable data, providing to medical staff therapeutic adjustments in the same day that it was obtained the positivity of blood culture.

Keywords: Bloodstream infections, Maldi-TOF, rapid diagnostic, blood culture, bacterial identification.