How accurate is differential time to positivity of central and peripheral blood cultures?

These results strongly suggest that despite its high specificity, the differential positivity time may not be reliable to rule out catheter-related bloodstream infections due to S. aureus” Bouzidi et al (2018).

Abstract:

Objectives: Differential time to positivity of cultures of blood drawn simultaneously from central venous catheter and peripheral sites is widely used to diagnose catheter-related bloodstream infections without removing the catheter. However, the accuracy of this technique for some pathogens such as Staphylococcus aureus is debated in routine practice.

Methods: In a 320-bed reference cancer centre, we retrospectively studied the charts of patients with at least one blood culture positive for S. aureus among paired blood cultures drawn during a 6-year period. Microbiological data were extracted from the prospectively compiled database of the Microbiology unit. Data concerning the 149 patients included were retrospectively reviewed by independent physicians blinded to the absolute and differential times to positivity, in order to establish or refute the diagnosis of catheter-related sepsis. Due to missing data, 48 charts were excluded, so that 101 cases were actually analysed. The
diagnosis was established in 62 cases, refuted in 15, and inconclusive in the remaining 24.

Results: For the 64 patients with both central and peripheral positive blood cultures, the differential positivity time was significantly greater for patients with catheter-related bloodstream infections due to S. aureus (P < .02). However, because of the high number of false-negative cases, the classic cut-off limit of +120 min showed 100% specificity but only 42% sensitivity for the diagnosis of CRBSI due to S. aureus.

Conclusions: These results strongly suggest that despite its high specificity, the differential positivity time may not be reliable to rule out catheter-related bloodstream infections due to S. aureus.

Reference:

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