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New approached in the diagnosis of sepsis

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Introduction: Sepsis is a fatal condition caused by body's immune system over-reacting to infection. It carries both high morbidity and mortality. Early diagnosis of sepsis can greatly reduce both.

Objectives: To evaluate the comparative performance of Verigine blood culture nucleic acid system to conventional techniques in the rapid diagnosis of sepsis by both identifying bacteria and their resistance markers.

Methods: All blood culture bottles showing Gram-positive cocci and Gram-negative bacilli were processed by Verigene according to the manufacturer's instructions and were cultured simultaneously by conventional methods for both ID as well as susceptibility using VitekII (Biomerioux, France).

Results: A total of 63 patients with Gram-positive sepsis and 63 patients with Gram-negative sepsis were included in the evaluation. Verigine system correctly identified all *staphylococci*, *streptococci* and *enterococci*, *Enterobacteriaceae* and *Pseudomonase euroginosa* compared to the conventional culture. It correctly identified 11 methicillin-susceptible *Staphylococcus aureus* (MRSA) and 15 methicillin resistant coagulase negative *staphylococci*. It correctly identified one MRSA, failed to identify 2 and falsely identified 2. It correctly identified 11 vancomycin sensitive enterococci. By rapid identification of staphylococci together with their resistance markers, vancomycin was de-escalated to cloxacillin in 11 patients and cloxacillin was escalated to vancomycin in 2 and all antibiotics were stopped in 14 patients. By rapid identification of Gram-negative bacteria, de-escalation and escalation from and to carbapenems occurred in 2 and 20 patients respectively.

Conclusion: Rapid molecular diagnosis of sepsis can greatly assist in the proper use of antimicrobial agents, helping the antimicrobial stewardship program.

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