P2517 Evaluation of a rapid method for bacterial identification and sensitivity profiling from positive blood culture bottles

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Background: Septicaemia is a serious and life-threatening infection with high mortality rates. The time required to fully process blood culture samples is critical for successful management and survival of sepsis patients, which takes around 24-48hrs using standard methods. Several studies have evaluated different methods for faster identification and sensitivity testing of causative agents of sepsis, including Gram-positive and Gram-negative isolates.

Materials/methods: One hundred and five monomicrobial positive blood culture bottles were included (containing 51 Gram-positive and 54 Gram-negative isolates). The microorganisms in these samples were allowed to continue growing in fresh medium with added saponin (0.1% w/v) for 30 mins. A series of centrifugation steps followed to wash and concentrate the microorganisms. Bacterial suspensions were then prepared, and the organisms were identified and tested for sensitivity using VITEK 2 and VITEK MS (MALDI-TOF) systems on the same day of detection by the blood culture system. The ID and AST results were compared with the standard method in the lab that requires additional time for overnight subculture.

Results: In comparison with the standard method, the accuracy rates of Gram-positive ID and AST were 98% and 98.7%, respectively, whereas the accuracy rates for Gram-negative ID and AST were 100% and 99.4%, respectively. Most tested antimicrobial agents produced consistent results (i.e. agreement in comparison with standard method), however agents that produced the least consistent results (i.e. disagreement) were sulfamethoxazole (SXT) with Gram-positive isolates; and ampicillin/subbactam (SAM) and ticarcillin/clavulanic acid (TIM) with Gram-negative isolates. In addition, the analysis time inside the VITEK 2 system was not affected by using the direct method (no significant difference in analysis time; P>0.05).

Conclusions: The direct method using saponin resulted in obtaining reliable ID and AST results without the time needed for overnight culture (12-16hrs) for the causative agents of monomicrobial septicaemia.