P2346 Comparison of blood culture sampling strategies in sepsis

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Background: Sampling is probably the most important step in improving the performance of blood cultures (BC). Most standards recommend 40 ml blood, divided between two venipuncture sites, so called multi-site sampling (MSS). Recently proposed, single site sampling (SSS) consists of drawing the same volume of blood through one venipuncture site. However, the performances of these two strategies have scarcely been studied.

Materials/methods: Patients that were treated according to a sepsis triage model were included prospectively in the emergency department. In total, six BC bottles (four from the first arm, BC1, BC2, BC3, BC4, and two from the other, BC5, BC6,) were collected from each patient. SSS consisted of BC1, BC2, BC3, BC4 and MSS BC1, BC2, BC5, BC6. There were three of each BacT/ALERT FA Plus and BacT/ALERT FN Plus bottles. Bottles were defined as having clinically relevant growth, contaminant growth, or no growth. The effect of numbers of bottles and MSS vs. SSS on BC positivity was analyzed.

Results: In total, 500 patients were enrolled in the study. 417 patients were included in the final analysis since 83 patients were excluded due to not adhering to the study protocol. 136 (32.6%) patients had clinically relevant growth of which 38 patients had polymicrobial growth. 31 (7.4%) patients had only contaminant growth. There was no significant difference between MSS (128/136, 94.1%) and SSS (119/136, 87.5%) in detection of all clinically relevant isolates in individual patients. In BC with polymicrobial growth, MSS could detect all clinically relevant growth in 36/38 (95%) patients whereas 27/38 (71%) were detected by SSS.

The cumulative detection rates of all clinically significant isolates that grew in all six bottles were 63.2%, 77.2%, 81.6%, 87.5% and 97.8% for one, two, three, four and five bottles respectively. No difference in time to detection was detected between MSS and SSS.

Conclusions: No significant difference was detected between MSS and SSS in this well-defined patient cohort. For patients with polymicrobial growth, MSS detected more clinically relevant isolates, however this subgroup was relatively small. Our findings suggest that SSS may be a feasible alternative to MSS in patients with sepsis.