Impact of FilmArray rapid multiplex PCR assay in blood culture identification: Appropriate Reduction of Vancomycin and Broad spectrum antibiotics

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Background:
Identification of bacteria isolated from blood culture usually takes over 24 hours. In July 2018, FilmArray multiplex PCR panel for blood culture isolate identification(BCID) was approved. Our institution quickly introduced this genomic technology with Antimicrobial Stewardship program. We investigate the clinical impact using FilmArray system.

Methods:
This study was prospective observational study. We compared conventional phase (Jan 19, 2018 to Jury 30) and FilmArray phase (July 1 to Oct 31). We included patients with positive blood cultures in our hospital. Patients that not hospitalized, under 15 years old, and contamination were excluded. Despite AST advised antimicrobials choices, the management of patients was decided by every doctor. Outcomes were duration of using broad spectrum antibacterials, time to start anti-MRSA therapy to MRSA bacteremia, and 28 days overall survival. We collected data from electric charts and blood culture database.

Results:
FilmArray group was 156 patients(male 53.8%) and control group was 139(male 63.3%). Average age was 72.7±14.3. No statistical differences were seen about broad spectrum antibacterials. But times using CFPM and MEPM were shorter in FilmArray group(CFPM 61 hr (28.0-83.0) vs 174 hr (71.75-391.75), MEPM 45 hr (25.5-63.5) vs 164 hr (76.0-336.0)). Time to started anti-MRSA therapy to MRSA bacteremia was 19.0hr vs 52.5hr (p=0.00326). 28 day overall survival was improved compared with control group in GPC group(p=0.0154).

Conclusions:
We found we can administer anti-MRSA antimicrobials quicker than conventional method by using FilmArray, and improve 28 days overall survival in gram-positive bacteremia group. Further more the technology with AST may affect more appropriate antimicrobial use. This result was promising but past reports indicated that FilmArray did not change survival. So further studies should be needed and another problem, for example costs, also should be considered.