Abstract 9525

Early diagnosis in sepsis: T2 bacteria magnetic resonance assay versus blood culture

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Background: Sepsis is an entity with high morbidity and mortality in which response time is absolutely decisive. The application of the new molecular techniques in the microbiological diagnosis implies a faster identification of the pathogens. The goal of this study is to describe the performance of the magnetic resonance-based T2Bacteria Panel assay (T2BPA) for rapid detection of pathogens in whole blood samples of patients with diagnosis of sepsis in an every-day clinical setting.

Materials/methods: We performed a prospective observational study from May to November 2019. Patients admitted to the adult Emergency Department with an initial diagnosis of sepsis (SOFA ≥ 2) were included if a blood culture (BC) and T2BPA had been performed. First we analyzed the agreement between both tests, including the whole population and again after excluding subjects with infections from pathogens not included in T2BPA. Then we evaluated the diagnostic properties of the tests using an ad-hoc microbiological-clinical combined criteria as gold standard. These criteria include microbiological results from other samples yielding the same pathogen to assess true infection, along with clinical decision to treat when other samples were negative.

Results: Forty-five patients were included (mean age = 68.5 years). T2BPA and BC were positive in 37.7% and 40% of the cases, respectively. In 33.3% of cases, BC detected bacteria not included in the T2BPA. *E. coli* was the most frequent isolated bacteria (24,4%) by T2BPA, followed by *K. pneumoniae* (11,1%). The percentage agreement between both tests was 73.3%, with a Cohen's kappa = 0.53 (moderate agreement) considering the whole population. After excluding subjects with infections from pathogens not detected from T2BPA, the percentage agreement increased to 84.6% with a good kappa agreement (0.71). The accuracy of the tests in the whole sample was 96% and 87% for T2BPA and BC, respectively (Table).

Test	Sensitivity	Specificity	PPV	PPN	Accuracy
T2BPA	1	0,93	0,88	1	0,96
BC	0,8	0,92	0,89	0,85	0,87

Conclusions: The T2BPA has shown a moderate-to-good agreement with current standard (BC) for pathogen detection in a real-world sepsis scenario. Furthermore, this faster technique yielded a higher diagnostic accuracy using a clinical-microbiological criteria as gold standard.

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