Association between identification and Antibiotics Susceptibility Testing with ACCELERATE-PHENO™SYSTEM and the antimicrobial management of patients with severe sepsis from Hospital Universitario de la Princesa.

Zurita-Cruz, Nelly Daniela; Gómez-de-Frutos, Sara; Llorca, Laura; De las Cuevas, Carmen; Cardeñoso, Laura.

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Background

The aim of this study is to analyse the adequacy of treatment in patients with severe-sepsis (SS) coming from the identification and antibiotic susceptibility testing (AST) obtained by Accelerate-Pheno™ System (Accelerate Diagnostics, Inc.) of pathogen microorganisms isolated from positive blood cultures (BC)

Material and methods

We included 23 adult patients with SS (average age=70.4). BC were incubated in BACTEC™ Blood Culture System (Becton-Dickinson) until positivization, then they were proccessed on this way:

- Gram stain/MALDI-TOF MS™ system (Bruker-Daltonics) direct from positive BC for identification (1.5 hours).
- Accelerate-Pheno™ System for ID (1,5 hours) & phenotypic AST (7 hours)
- MicroScan™ Walkaway™ system (Beckman-Coulter) from subculture for AST (36-48 hours)

Results obtained in each stage were reported to physicians and their subsequent antimicrobial management of patients were registered

Results

Empiric treatment was modified on 78,23% (n=18) of patients when Gram stain/MALDI-TOF MS™ identification, and the Accelerate-Pheno™ System AST were notified. For 11 patients (47,8%) treatment were modified according to AST obtained by Accelerate-Pheno™ System, even for 30,44% (n=7) when they had been any previous change of empiric treatment according to Gram/MALDI-TOF ID.

Results of therapy interventions for each situation and change realized in antimicrobial treatment are shown in the Graphic .

Empiric Treatment • **23 patients**

Change Treatment Gram / MALDI-TOF (1.5 hrs)

- **14 patients (60.8%)**
- 7 patients Narrower-spectrum
- 6 patients Broader spectrum
- 1 patient Equivalent-spectrum

Change Treatment AST Accelerate-Pheno ™ System (7 hrs)

- **11 patients (47.8%)**
- 7 patients narrower-spectrum
- 2 patients Broader-spectrum
- 2 patients Equivalent-spectrum
- 4 first change
- 7 second change

Change Treatment AST MicroScan™ (36-48 hrs)

- **6 patients (26.1%)**
- 3 patients Narrower-spectrum
- 2 patients Broader-spectrum
- 1 patient Equivalent-spectrum
- 5 second change
- 1 third change

Conclusion

Our results show that Accelerate-Pheno™ System allows antibiotic de-escalation and adequacy of empiric treatment of patients with severe BSI and sepsis at least 28 hours earlier than conventional phenotypic AST.