

TITLE: PREVALENCE OF MICROORGANISMS ASSOCIATED TO BLOODSTREAM INFECTIONS AND EVALUATION OF BACTERIAL RESISTANCE PATTERNS

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ABSTRACT:

Bloodstream infection is one of the most relevant infections related to health care and it is associated with high morbi-mortality rates and associated costs. Accurate diagnosis of bloodstream infections are essential and increase the rates of patient survival, which makes the blood culture has significant predictive value. In this context, MALDI-TOF technology is a major advance for diagnosis, due to speed of execution, assertiveness in results and low cost for microorganism identification. This study aimed to identify the prevalence of microorganisms isolated from blood cultures sent to the Hermes Pardini Laboratory and to evaluate antibiotic resistance patterns during the period from August 2017 to January 2018. The microorganism identification was performed by VITEK® MS (MALDI-TOF/ Biomerieux) and antibiotic susceptibility testing was performed by VITEK 2 Compact® (Biomerieux). A total of 1.820 (17.1%) patients presented positive blood culture. The microorganisms most frequently isolated were *Staphylococcus epidermidis* (n=510; 28.0%), *Staphylococcus haemolyticus* (n=194; 10.7%), *Staphylococcus aureus* (n=170; 9.3%), *Klebsiella pneumoniae* (n=139; 7.6%), *Enterococcus faecalis* (n=91; 5.0%), *Pseudomonas aeruginosa* (n=78; 4.3%), *Escherichia coli* (n=69; 3.8%) and finally, *Acinetobacter baumannii* (n=33, 1.8%). About the *Staphylococcus aureus*, 45.9% were methicillin resistant. In relation to extended-spectrum beta-lactamase (ESBL) production, 65.5% (91/170) of *Klebsiella pneumoniae* strains and 47.8% (33/69) of *Escherichia coli* produced this enzyme. Regarding carbapenems, 84.8% (28/33) of *Acinetobacter baumannii* strains, 27.3% (38/139) of *Klebsiella pneumoniae* strains, 23.1% (18/78) of *Pseudomonas aeruginosa* strains and 2.9% (2/69) of *Escherichia coli* strains showed resistance to at least one type of carbapenems. Lastly, 8.8% (8/91) of *Enterococcus faecalis* strains were vancomycin resistant. Furthermore, rapid bacterial identification, monitoring and analysis of microbiological profile must be constants, in order to avoid antibiotics resistances spreading which can lead to reduction of therapeutic possibilities.

Keywords: bloodstream infection, resistance patterns, antimicrobial