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RESEARCH ARTICLE

EPIDEMIOLOGY AND SENSITIVITY PROFILE OF BLOOD CULTURE ISOLATES AT IBN TOFAIL UNIVERSITY HOSPITAL- MARRAKESH

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ABSTRACT

Aim: The aim of our study is to define the epidemiological profile and antibiotic sensitivity of isolated bacteria from blood cultures, in order to enhance the probabilistic antibiotherapy of bacteremia. **Material and method:** This is a retrospective study, conducted in the laboratory of bacteriology at IBN TOFAIL hospital in Marrakesh over a period of one year (January 2016-January 2018), covering all the bacteria isolated in blood cultures collected from inpatients. The bacterial identification was made by biochemical gallery "Api" and the sensitivity to antibiotics was tested by antibiogram on agar medium according to the recommendations of the EUCAST 2017. **Results:** During the study period, 460 Blood culture were performed from which 124 bacterial strains were isolated. Enterobacteriaceae dominated the epidemiological profile and accounted for 39% of isolates followed by coagulase-negative Staphylococcus (35%), Enterococcus spp (10%), taphylococcus aureus (6.5%), Acinetobacter boumania (6.5%) and Streptococcus spp (3%). 71% of isolates were from ICU departments. Antibiotic resistance showed that 50% of S.aureus were resistant to oxacillin (Methicillin-resistant Staphylococcus aureus MRSA), 46% of Enterobacteriaceae were resistant to third generation cephalosporins, 21% of which were Extended-spectrum beta-lactamase (ESBL) producers. **Conclusion:** For a better guidance toward the choice of antibiotics in bacteremia, regular epidemiological studies of blood cultures isolates, and antibiotic sensitivities are necessary and recommended.

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INTRODUCTION

Infectious diseases have an important place in both Africa and occidental countries because bacteremia is responsible for significant morbidity and mortality. They are a diagnostic and therapeutic emergency. Their diagnosis is based mainly on the germ isolation at blood cultures which remains the key test. The treatment is rapid and effective antibiotic therapy that is usually probabilistic in first 48 hours.

Aim: Our aim is to define the bacteriological profile of bacteremia and study the sensibility of the main involved bacteria at ibn Tofail hospital in Marrakesh to antibiotics.

MATERIAL AND METHODS

This is a retrospective study, conducted in the laboratory of bacteriology at IBN TOFAIL hospital in Marrakesh over a period of one year (January 2016-January 2018), covering all

the bacteria isolated in blood cultures collected from inpatients. The bacterial identification was made by biochemical gallery "Api" and the sensitivity to antibiotics was tested by antibiogram on agar medium according to the recommendations of the EUCAST 2017.

RESULTS

During the study period, 258 HEMOCULTURES were carried out, 62 bacterial strains were isolated, 71% from ICU 13% of neonatology, 10% of gynecology and 6% of neurosurgery nterobacteria were (39%), represented mainly by klebsiella pneumonia (34%) and Echerichia (21%) coli predominating epidemiologic profile, coagulase-negative Staphylococcus (35%), followed by, Enterococcus (10%), Staphylococcus aureus (6.5%) and Acinetobacterboumania (6.5%), Streptococcus (3%). The resistance to oxacillin was 50% for S. aureus and 23% for coagulase-negative staphylococci. Enterobacteriaceae were resistant to third-generation cephalosporins in 46%, had a broad spectrum beta-lactamase phenotype in 21%, and 71% of isolates were from ICU departments.

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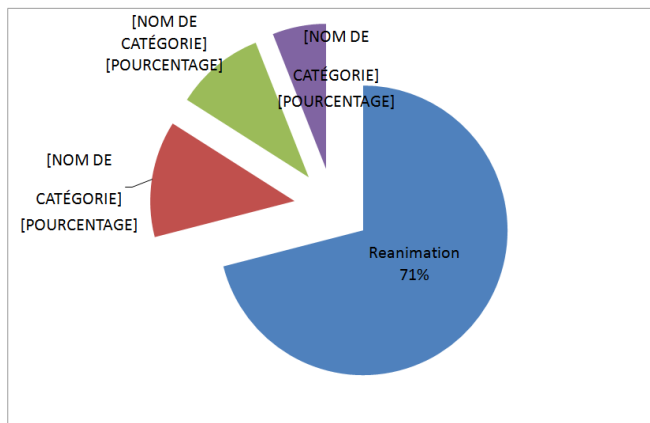


Figure 1. Departments distribution of the different bacterial strains isolated from blood cultures

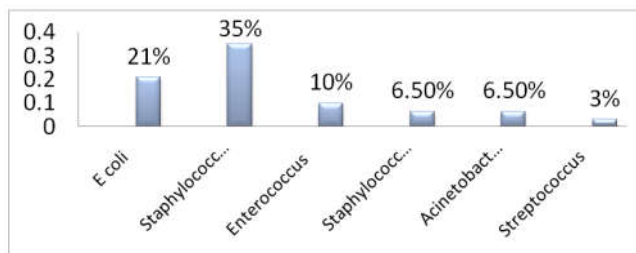


Figure 2. The distribution of isolated bacteria in blood cultures

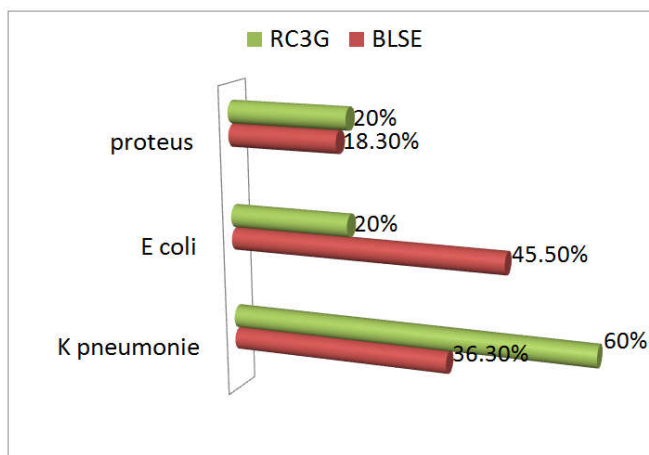


Figure 3. Resistance of isolated enterobacteria in blood cultures

DISCUSSION

During our study, we analyzed 258 blood cultures. Our positivity rate was on average 24%, in the literature review (Stalnikowicz, 2001 and Mallat, 2004), reported positivity rates ranged from 8.7% to 21% these variations can be related to studied departments, since in our study 71% of the isolates were from ICU departments enterobacteria and SCN are the main causes of bacteremia 39% and 35% this is in perfect

agreement with the Spanish study and the French study (Alvarez Lerma, 2010 and Bourneton, 2010). The resistance rate of enterobacteria to C3G and ESBL in our series were 46% and 21%, respectively. These rates are very far from Tunisian, American and European studies where the rate does not exceed 27.7% and 18% for ESBL (Alvarez Lerma, 2010; Bourneton, 2010 and Elouennass, 2008). The high resistance to oxacillin (50% for SA and 23% for SCN) is worrying, it is higher than reported in the literature (Bourneton, 2010 and Elouennass, 2005), for isolates of *S. aureus* and less higher than others for coagulase-negative staphylococcal isolates (Karlowsky, 2004).

Conclusion

Blood culture, a key examination in the diagnosis of bacteremia, Medical services are those who use it most often. For a better guidance toward the choice of antibiotics in bacteremia, regular epidemiological studies of blood cultures isolates, and antibiotic sensitivities are necessary and recommended.

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