



Rapid detection of carbapenem-resistant isolates Enterobacteriaceae from the blood cultures

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Introduction

The relevance of the topic is related to the problem of the spread of antibiotic resistance among representatives of the Enterobacteriaceae family. Of beta-lactam antibiotics, until recently, the drugs of choice for starting therapy were carbopenems, as the most effective drugs for the treatment of severe infections caused by the polymicrobial flora. The action of this group of antibiotics is characterized by a wide spectrum of activity, low toxicity, good pharmacokinetic parameters. At the same time, the acquired resistance to antibiotics of this group is now becoming more prevalent among gram-negative non-fermenting bacteria and Enterobacteria - pathogens of nosocomial infections. It is necessary to have the fastest screen, given the prevalence of carbapenemases and adequate start therapy.

Purpose

Evaluation of the effectiveness of using chromogenic medium for detection and isolation of carbapenem-resistant isolates of the family Enterobacteriaceae from the blood culture.

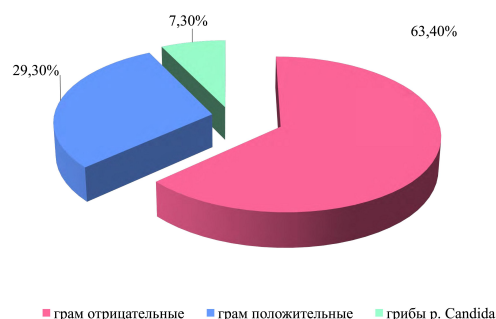
Materials and Methods

The study is included 145 patients from different departments of treatment and prophylactic institutions in Rostov-on-Don with clinical manifestations of a blood flow infection. Haemoculture was examined on the hematological analyzer BactAlert (BioMerieux, France). With positive growth, sowing was carried out on conventional agar with the addition of chromogenic agar CHROMagar™ KPC (CHROMagar, France). The identification of the strains and the determination of susceptibility to antimicrobials were determined on an automatic analyzer Vitek 2 (BioMerieux, France). It was used carbapenem inactivation method to identify the production of carbapenemases in Gram-negative bacteria.

Results

Positive hemoculture was detected in 41 (28.3%) patients in a microbiological study. The causative agents were distributed as follows: Gram-positive bacteria accounted for 29.3%; Gram-negative bacteria - 63.4%; yeast fungus - Candida 7.3%.

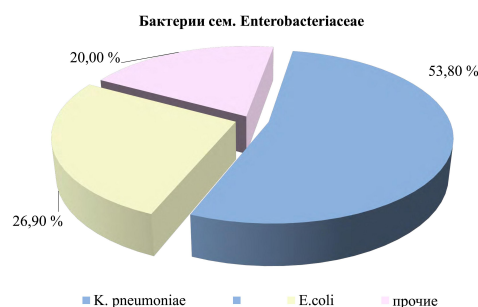
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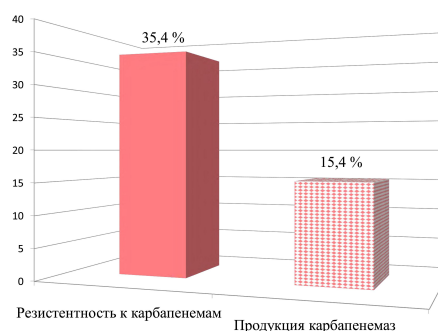
Conclusions

Acquired resistance to carbapenems is now becoming increasingly common among both non-fermenting bacteria and enterobacteria. The spectrum of antimicrobial agents for patients infected with carbapenemase-producing Enterobacteriaceae is very limited. It is necessary to have the fastest screening for adequate starting therapy given the increased resistance to carbapenem and the prevalence. CHROMagar™ KPC is allowed to adjust the starting therapy even before the final result is given, as fast and adequate antimicrobial therapy increases the chances of survival.

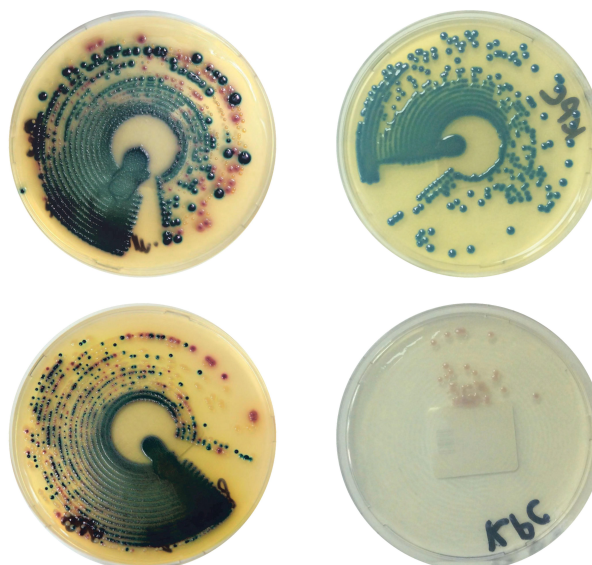
Бактерии сем. Enterobacteriaceae были представлены E.coli 26,9%, K. pneumoniae 53,8%, прочие 19,2%.



Резистентность к карбапенемам у E.coli и K. pneumoniae составила 35,4%. Карбапенемаза-продуцирующие E.coli и K. pneumoniae диагностировались в 15,4%.



Первичный высев на хромогенный агар CHROMagar KPC позволил с высокой вероятностью до получения окончательного результата диагностировать чувствительность или резистентность к карбапенемам, что явилось основанием для стартовой терапии.



CHROMagar™ Orientation

CHROMagar™ KPC