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EVALUATION OF *KLEBSIELLA SPP.* AND *ACINETOBACTER SPP.* ANTIBIOTIC RESISTANCE IN HOSPITAL ENVIRONMENT (STAVROPOL, RUSSIA)

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One of the major issues modern medicine is facing is the resistance microorganisms develop to antibacterial drugs. This appears especially urgent as we speak of treating nosocomial infections [1]. In the latest years there has been special concern in relation to progressive growth of the resistance to numerous antibacterial drugs seen in *Klebsiella spp.* **and** *Acinetobacter spp.* **[2, 3]. Due to this it was quite of interest to evaluate the antibiotic sensitivity that these microorganisms demonstrate in patients with nosocomial infections in the hospitals of Stavropol.**

Material and Methods. The research was carried out on the premises of the Bacteriological Laboratory of Centre for Clinical Pharmacology and Pharmacotherapy, LLC (Stavropol, Russia). The focus of the study was the biological material from patients with nosocomial infections obtained from the hospitals of Stavropol (Clinical Hospitals № 2 & № 3, Stavropol Regional Child Hospital, Stavropol Regional Perinatal Center) in 2013. The bacteriologic examination was carried out following the respective approved recommendations [4, 5], while the *Klebsiella spp.* and *Acinetobacter spp.* sensitivity was evaluated towards a wide range of antibiotics, which was done employing the disk diffusion method.

Results. The research helped isolate and identified 50 strains of Acinetobacter baumannii and 119 strains of *Klebsiella* spp. During that all the 50 strains of Acinetobacter baumannii were evaluated as resistant to penicillins and to 1st, 2nd and 3rd generation cephalosporins. The exception was found in the «protected» β-Lactam antibiotics – piperacillin/tazobactam and cefoperazone/sulperazone. The sensitivity to them was 100 %. Cefepime – a 4th generation cephalosporin – proved of little efficiency stirring sensitivity in 10 % of Acinetobacter baumannii strains only. The sensitivity to carbapenems proved insufficient as well with 40 % of bacterial strains only evaluated as sensitive to imipenem and meropenem. Virtually inefficient in vitro were aminoglycosides (gentamycin and amikacin), ciprofloxacin, levomycetin and co-trimoxazole. Resistance to doxycycline was revealed in 48 % of Acinetobacter baumannii strains, while tigecycline's activity was at 100 %.

Therefore, in case of nosocomial infections caused by *Acinetobacter baumannii* an advisable choice would be either "protected" β-Lactam antibiotics (namely piperacillin/tazobactam or cefoperazone/sulperazone) or tigecycline. Carbapenems and 2nd and 3rd generation fluoroquinolones could be viewed as an option only after a preliminary bacteriologic study of the patient's material.

The isolated strains of Klebsiella spp. (84 % of them accounted for by Klebsiella pneumoniae) also proved resistant to penicillins and 1st, 2nd and 3rd generation cephalosporins. Cefepime was effective in vitro in 21 % of cases alone; at the same time the microorganisms showed high sensitivity to piperacillin/tazobactam (100 %) and cefoperazone/sulbactam (92.4 %). To carbapenems (imipenem and meropenem) only 60.5 % *Klebsiellae* were sensitive, while a low level of sensitivity (below 30 % of strains) was detected to aminoglycosides (gentamycin and amikacin), ciprofloxacin, levomycetin, and co-trimoxazole. Ofloxacin/levofloxacin caused resistance in 60 % of microorganisms, while doxycycline – in 52 %. Tigecycline showed a high level of efficiency with 100 % of *Klebsiella spp.* of strains sensitive to it.

Mention to be made here that around 40 % of *Klebsiellae* strains produced extended spectrum beta lactamases (ESBL).

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This means that in hospital setting in case of infections caused by *Klebsiella spp.* a preferred choice would be either piperacillin/tazobactam or cefoperazone/sulperazone, or tigecycline. Employing carbapenems, ofloxacin/levofloxacin or doxycycline could allow us counting on a proper effect in slightly more than 50 % of cases.

Conclusion. Developing the resistance in hospital environment microorganisms would have a significant impact on the treatment outcomes regarding patients with nosocomial infections. A bacteriologic monitoring of such microorganisms evaluating their resistance to a wide range of anti-microbial medications should be a mandatory activity not only in particular inpatient units yet in the region as a whole. This work would contribute both to the development of general standard requirements for empirical therapy of infections in hospitals and to establishing individual approaches when shaping the therapeutic tactics for particular patients.

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Key words: *Klebsiella spp., Acinetobacter spp.,* nosocomial infections

ОЦЕНКА АНТИБИОТИКОРЕЗИСТЕНТНОСТИ *KLEBSIELLA SPP.* И *ACINETOBACTER SPP.* В СТАЦИОНАРАХ Г. СТАВРОПОЛЯ

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Ключевые слова: *Klebsiella spp., Acinetobacter spp.,* нозокомиальные инфекции

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GENE POLYMORPHISM OF LIPID METABOLISM MARKERS IN CALCIFIC AORTIC VALVE DISEASE

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Calcific aortic valve disease (CAVD) (senile, degenerative aortic stenosis) is the process of thickening and calcification of aortic valve (AV) leaflets in the absence of rheumatic heart disease. In the cases of AV sclerosis (calcification) thickened leaflets don't impact normal intracardiac hemodynamics. Aortic stenosis is characterized by obstruction of the left ventricle outflow tract. Pathogenesis of calcific aortic valve disease involves lipid dismetabolism. [4]. A thorough analysis of the lipid profile in the CAVS patient population revealed increased levels of total cholesterol and athe-