

РОЛЬ МИКРОБИОЛОГИЧЕСКИХ ИССЛЕДОВАНИЙ В ДИАГНОСТИКЕ И ЛЕЧЕНИИ ИНФЕКЦИЙ МОЧЕВЫВОДЯЩИХ ПУТЕЙ

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Резюме: Проведен мониторинг чувствительности/резистентности к антибиотикам ведущих возбудителей урологических инфекций выделенных от 475 пациентов различных лечебно-профилактических учреждений г. Бишкек в период с 2008 по 2010гг. Выявлена тенденция уменьшения доли грам-отрицательных микробов в развитии уроинфекций на фоне их общего преобладания и возрастание роли энтерококков.

Анализ антибиотикограмм выявил отсутствие чувствительности уропатогенов к пенициллину, ампициллину и выборочную чувствительность к цефалоспорином разных поколений. В качестве препарата выбора предлагается ципрофлоксацин.

Ключевые слова: инфекции мочевыводящих путей, микрофлора, антибиотики

СИЙДИК ЧЫГАРУУЧУ ЖОЛДОРДУН ИНФЕКЦИЯЛАРЫНЫН ДИАГНОСТОДО ЖАНА ДАРЫЛОДО МИКРОБИОЛОГИЯЛЫК ИЗИЛДӨӨЛӨРДУН РОЛУ

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Резюме: 2008-жылдан 2010-жылга чейинки мезгилде Бишкек шаарынын ар түрдүү дарылоо-профилактикалык мекемелеринин 475 бейтаптан чыккан урологиялык инфекцияларды козгоого алып барган микробтордун антибиотиктерге сезгичтиктерине/резистенттүүлүгүнө мониторинг жүргүзүлгөн. Энтерококтордун жалпы басымдуу жана өрчүү ролунун фонунда уроинфекциялардын өрчүшүндө терс-грам микробтордун үлүшүнүн төмөндөө тенденциясы аныкталган.

Антибиотикограммалардын анализи пенициллинге, ампициллинге уропатогендердин сезгичтиги жана ар кандай муундагы цефалоспоринге тандалма сезгичтиги жок экендигин аныктаган. Тандалма препараттары ципрофлоксацин сунушталат.

Негизги сөздөр: сийдик чыгаруучу жолдордун инфекциялары, микрофлора, антибиотиктер.

THE ROLE OF MICROBIOLOGICAL INVESTIGATIONS ON DIAGNOSIS AND TREATMENT OF URINARY TRACT INFECTIONS (UTIS)

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Summary: It has been done monitoring of susceptibility/resistancy leading pathogens of urinary tract infections isolated from 475 patients in different institutions of Bishkek during 2008-2010. It is exposed the tendency of decreasing the role of Gram-negative microorganism in developing the urinary tract infections and predominance position of Enterococcus.

The analysis of the antibiograms exposed absence of susceptibility uropathogens to penicillin, ampicillin and selective susceptibility to cephalosporins of different generations. The drug of choice is suggested ciprofloxacin.

Key words: urinary tract infections, microflora, antibiotics

Introduction

Urinary tract infections are among the most prevalent infectious diseases with a substantial financial burden on society. Urinary tract infections

account for more than 100,000 hospital admissions annually, most often for pyelonephritis [1]. They also account for at least 40% of all hospital-acquired infections and are in the majority of cases catheter-

associated [3].

Urinary tract infection is the second most common clinical indication for empirical treatment in primary and secondary care, and urine samples constitute the largest single category of specimens examined in most medical microbiology laboratories. Healthcare practitioners regularly have to make decisions about prescription of antibiotics for urinary tract infections. Criteria for the diagnosis of urinary tract infection vary, depending on the patient and the context. There is considerable evidence of practice variation in use of diagnostic tests, interpretation of signs or symptoms and initiation of antibiotic treatment, with continuing debate regarding the most appropriate diagnosis and management [4].

Up to 40% of women will develop UTI at least once during their life, and up to 10% of UTIs result in serious complications [2].

Irrational use of antibiotics assisted the evolution of microorganisms to develop antibiotic resistance by different mechanisms. The increase of antibiotic resistance strains of microorganisms and appear of new antibiotics are in markets require strict criteria for standardizations of evaluation the resistance [4].

The aim of research is to study the prevalence of uropathogens and their antibiotic resistance

bacteriology laboratories taken from patients of urology departments of the institutions of Bishkek.

Specimens collected by taking clean catch midstream urine in sterile tubes and inoculated on culture media. The number of bacteria is considered relevant for the diagnosis of a UTI. Qualitative and quantitative urine culture is done to isolate significant pathogen.

Qualitative urine culture begins with primary culture on blood agar to isolate of urinary pathogens, and to represent contamination of urine.

Quantitative urine culture performs using a 1:1000ml (0,001ml) sterile disposable loop to evaluate the level of bacteriuria.

Isolated microorganisms identified by conventional methods.

Antibioticsusceptibility testing of isolates is done by disk-diffusion method.

Results and Discussions

The analysis of the types of microorganisms showed that the main roles in UTIs play opportunistic-pathogenic bacteria which belong to family of Enterobacteriaceae and Gram-positive cocci as an ascending infection and hematogenous or lymphatic spread.

The predominant pathogen is Escherichia coli 2008-53,2%; 2009-18%; 2010-11,2%. Gram-

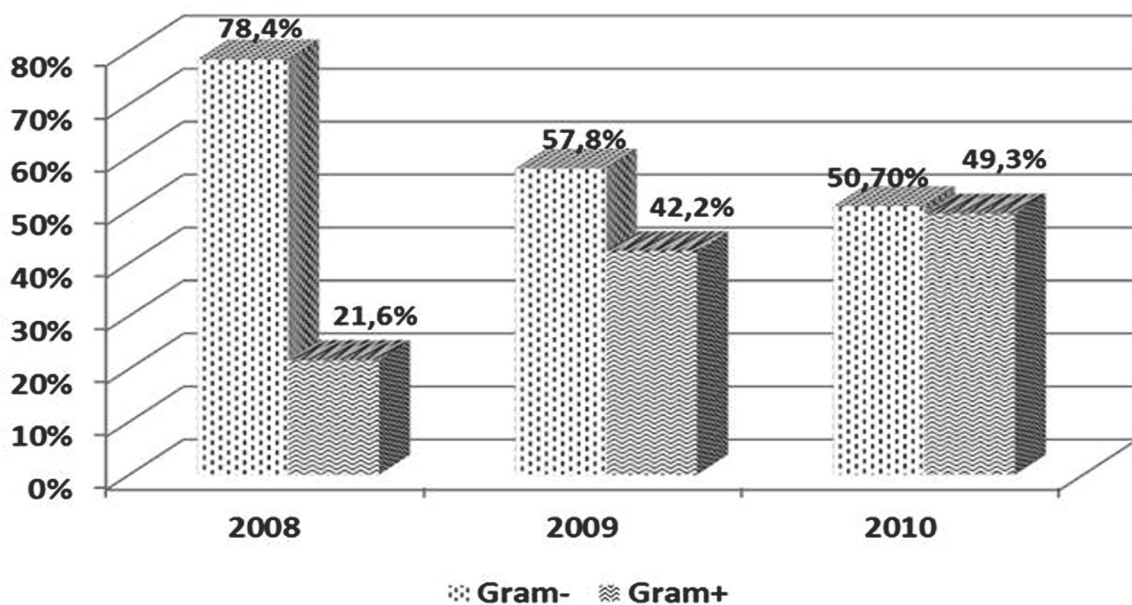


Diagram 1. The prevalence of Gram-positive and Gram-negative microorganisms isolated from urine sample

isolated from urine sample.

Material and Methods

475 urine samples were examined in different

negatives are most frequent microbes isolated during the study period (diagram1).

Among Gram-positive uropathogens mostly

isolated Staphylococcus spp. (16%; 23%, 16,5%). It is increasing the role of Enterococcus (3,2%; 19%; 36,5%). Representatives of Streptococcus spp. are found in 4,3%; 25,6%; 41,8%.

positives are increasing year by year and in 2010 it is almost in the same rate with Gram-negatives (diagram1).

The indexes of antibiotic resistance and antibiotic susceptibility results in 2008 showed

According the diagram 1 the mean of Gram-

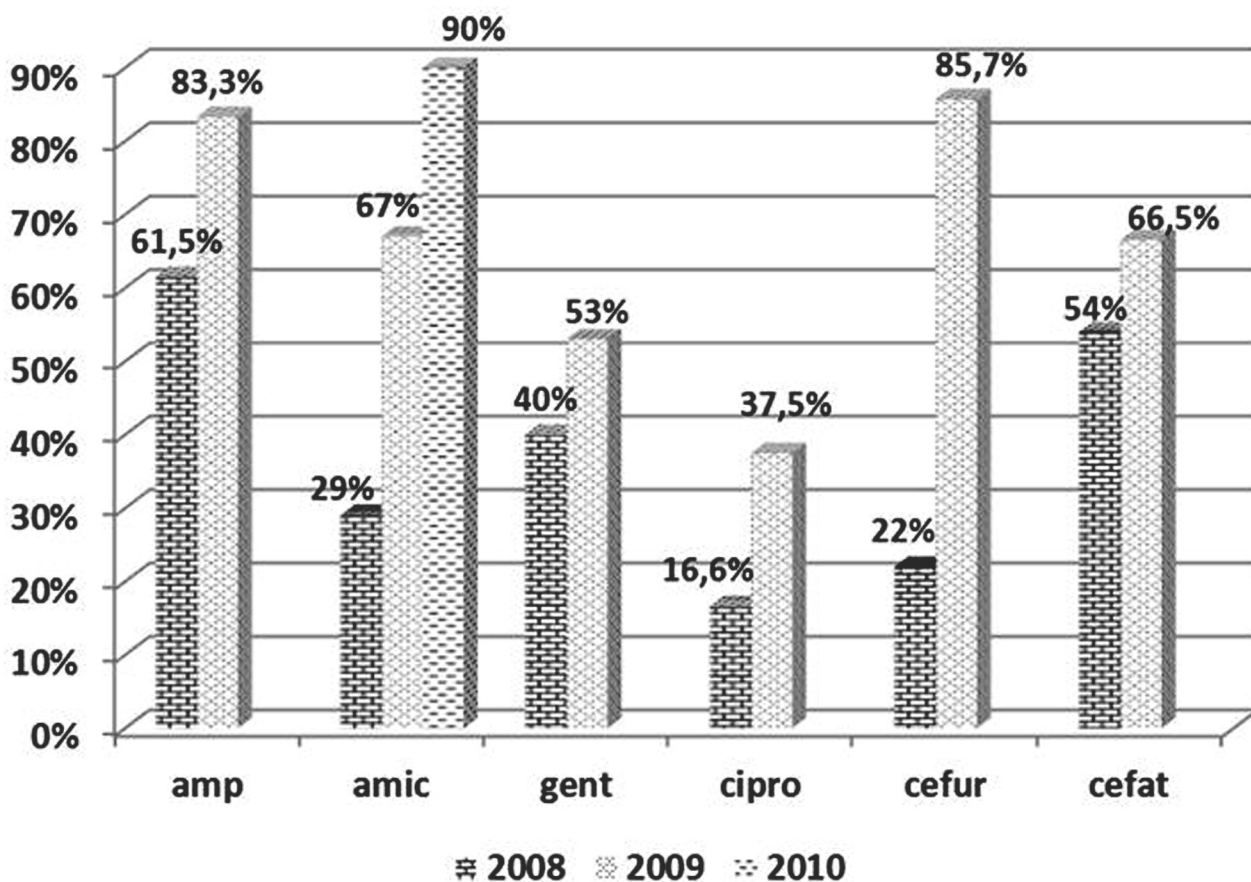


Diagram 2. Antibitic resistance of E.coli to antimicrobial agents during 2008-2010.

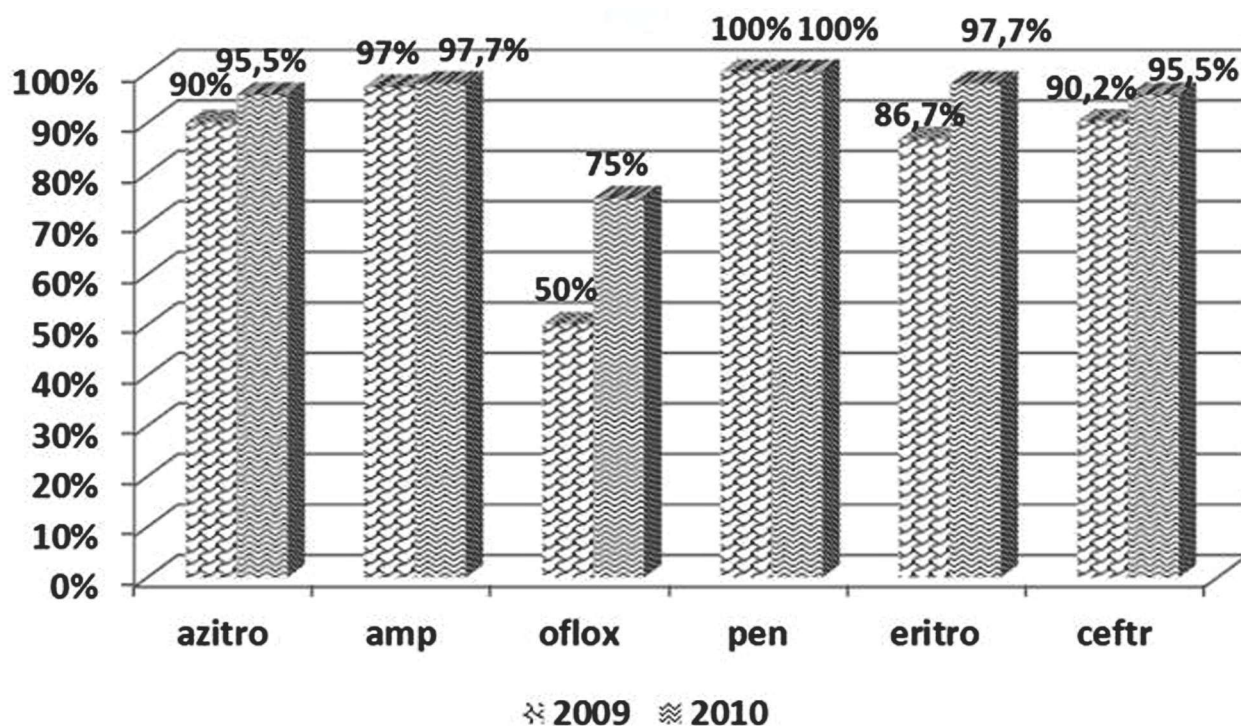


Diagram 3. Antibiotic resistance of Enterococcus spp. to antimicrobial agents in 2009 and 2010

that representatives of *Staphylococcus* spp. isolated from 94 urine samples are susceptible to imipenem 100%, cefazolin - 85%, streptomycin - 80%, oxacillin - 75%, and high resistance toward tetracyclin - 67%, doxycyclin - 87,55%.

Antibiotic susceptibility of *Escherichia coli* is as followed: cefalotin – 94%, polymixin – 91%, ceftazidime – 90%, pefloxacin – 83% and to nalidixic acid 78%.

As for resistance *E.coli* showed next indexes: tetracyclin – 79%, carbenicillin – 74,5%. Antibiotic resistance of *E.coli* to other antibiotics during workframe is given in diagram2 bellow.

In 2009 from 211 researched antibiograms uropathogenic *Staphylococcus* spp. is not found any effective antibiotic. 83-87% strains are resistant to oxacillin, lincomycin and clindamycin.

Gram-negative bacteria have low susceptibility to recommended antimicrobials for treatment of UTIs.

Antibiotic resistance of *Enterococcus* spp. is showed in diagram 3. High resistance mentioned microorganisms manifested to penicillin – 100%, ampicillin – 97%, azithromycin – 90 and 95,5% and ceftriaxone – 90,2 and 95,5%.

The group of enterobacteria possesses weak susceptibility toward most of tested antibiotics. So that microbes have had susceptibility in 62,5% to ciprofloxacin, 14,3% - cefuroxime.

In overwhelming majority the choice of

antibiotics conduct empirically on the base of data of predominant pathogens and on their antibiotic resistance in particular area.

Conclusions

Microbiological investigations in patients with UTIs play an important role in diagnosis of diseases.

It is necessary to prescribe antimicrobial treatment after initial detection of antibiotic susceptibility of isolates.

According to results the drug of choice for the treatment of UTIs caused by most spread pathogens is recommended antibiotic of quinolone's group – ciprofloxacin.

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