Urinary Tract Infections, their Frequency and Most Common Provocative Thing in the Region of Tetovo in the Period between 2012-2013

Healthcare

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Abstract

Introduction: Urinary infections are one of the most common infections, which according to the statistics; take the second or third place in our country and in the world of population morbidity. **Aim:** The aim of this study was to detect the most common causes of the urinary infections among the population in our region, to follow their sensitivity on antibacterial drugs with aim to help the doctors in general practice to treat according to the given sensitivity in IN VITRO conditions. (antibiogram). **Material and methods:** The study made in the Centre for Public Health Tetovo in the microbiology lab in the period of 01.01.2012 to 31.12.2013. Throughout this period are sent 6861 patience on urine culture with symptoms of urinary infections. From them only 1444 have positive results and 5417 were sterile. The isolation of breeds is made by common techniques for bacteriological check. The urine sample is taken from the moderate squirt of spontaneous piss. The same is planted on bloody agar on differential base UTI with use of quantative analysis. The number of bacteria in 1 ml is determined by scheme and automatic counter of colonies (protocol device). Identification of the breeds is made by examination of biochemical reactions and characteristic of the bacteria with aim of commercial stripes. Stripes are used from the manufactures SIEMENS NUC52 (Neg Urine Combo panel Type 52) which incubate form 6-12 hours and are read in the device Micro Scan auto SCAN 4 with which at the same time is made identification and determination of the sensibility of the isolated bacteria. **Results:** In the period from 01.01.2012 to 31.12.2013, from 6861 patience send for urinoculture, 1444 from the resulted with positive bacterial result. The most common isolated bacteria is Escherichia coli with 66.48%, Klebsiella pneumoniae sups pneumoniae 13.71%, Proteus mirabilis with 12.4%, Pseudomonas aeruginosa with 3.67%, Enterococcus faecalis so 2.77%, Enterobacter cloacae with 0.69% and Citrobacter freundii with 0.28%.

Introduction

Infections of the urinaty system are important medical problem, according to the statistics of the informations for population morbidity, they take the second or the third place of frequency in our country and abroad.

The frequence of this infections vary between people with different sex and age, are more commonly between the female population due to the anathomy configuration and much shorter urethra, closer vagina and to anus. The urinary system is composed of : kidneys, urethers, urinary bladder and urethra.

The infections usually happen accidently, microorganism through the urethra came to the urinary bladder where they reproduce and breed infection and if we don't eliminate them on time, they can spread to the kidneys causing kidney's irritation, and rarely on desceding way (from the blood during septicemia) to arrive to the urinary system.

The urinary infections are classified by different schemes:

Depending which part of the urinary system is affected, infections are divided on:
Simple cistitis (the lower parts of the urinary tract are affected)
Pyelonephritis (the upper parts of the urinary tract are affected)
Depending on presence of the symptons asymptomatic and symptomatic.

Recurrent infections of the urinary system are common and they can be caused by the same microorganism that caused the previous infection which were temporary relaps or caused by other microorganism-reinfection.

In the pathogenesis of the infections of the urinary tract many factors take place:

Factors from the host: Calculoza, opstraction; Hormonal disbalance; Bigger prostate in the men; Congenital anomalies; Instrumentations; Catherization; Immuncomprises and etc.

Factors from the pathogen microorganism: Their adhezion; Excistence of capsula; Toxins secretion and etc.

The most common symptons of the urinary system infections are: Urge to urinate frequently; Urination burning; Pain during urinating; Pus in the urine; Presence of blood in the urine; Strong smell of the urine; Weakness, sometimes fever and higher temperature.

Diagnosis of the infections in the urinary system is very important particullarly uncessary except identification of the challengers to determine the number of the bacteria in order to distinguish the contamination of the urina with bacteria which are present in the urethra as invaders or are part of the normal bacterial flora. According the classification given by Kass only the result of 10^5 in 1ml/urine is real infection and serious state according to Stamey and results of smaller number of bacteria in 1ml/urine when appropriate symptons leads to infection of the urinary system.

The most common causers of infections of the urinary system are part of the normal intestinal flora as:

- Escherichia coli (70-90%)
- K.pneumoniae,
- Proteus mirabilis
- Pseudomonas aeruginosa
- Enter.faecalis.

Breeds from Escherichia coli as most common bacteria isolated from the urine are distinghishing breeds that are part of the normal intestinal flora, they bring particular charachteristics named as factor of virulention: O antigen (only particular O types as 01, 02, 04, 06, 018, 075), K antygen (most common K1,K2, K3, K5, K12, K13), fimbrions (resistent of manoza) produce chemolizin, aerobactin and kolicin B.

Aim - the aim of this study is detecting of the most common causers of urine infections of the population in the region of the city Tetovo and to determine their sensitivity of antibacterial drugs with aim to help the doctor in general practice to the given sensitivity in in vitro conditions (antibiogram).

Material and methods - The study made in the Center for Public Health in the microbiology labaratory in the period 01.01.2012 to 31.12.2013. In this time period for urine culture are send 6861 patient with symptoms of urinary infection. From them 1444 resulted with positive result and 5417 were sterile.

The isolation of the breeds is made using usual techniques for bacteriological check. The sample is taken from the moderate urinary squirt

Identification of the breeds is made by examination of biochemical reactions and characteristic of the bacteria with aim of commercial stripes. Stripes are used from the manufactures SIEMENS NUC52 (Neg Urine Combo panel Type 52) which incubate form 6-12 hours and are read in the device Micro Scan auto SCAN 4 with which at the same time is made identification and determination of the sensibility of the isolated bacteria.

Results - In the period from 01.01.2012 to 31.12.2013, all positive urine cultures are given to further manufacture for identification and determination of the sensitivity. The following results are given:

The most common bacteria is Escherichia coli with 960 positive results (**66.48%)**, follow Klebsiella pneumoniae sups pneumoniae with 198 positive results (**13,71%)**, Proteus mirabilis with 179 positive results (**12.4%**), Pseudomonas aeruginosa with 53 positive results (**3,67%**), Enterococcus faecalis with 40 positive results (**2,77%**), Enterobacter cloacae with 10 positive results (**0.69%**) and Citrobacter freundii with 4 positive results (**0.28 %**) and etc.

Isolated bacteria	Number of positive results	%
Escherichia coli	960	66.48%
Klebsiella pneumoniae sups pneumoniae	198	13.71%
Proteus mirabilis	179	12.40%
Pseudomonas aeruginosa	53	3.67%
Enterococcus faecalis	40	2.77%
Enterobacter cloacae	10	0.69%
Citrobacter freundii	4	0.28%
	TOTAL: 1444	

The sensitivity of the positive isolats is trialed with commercial stripes NUC 52 (Neg Urine Combo panel Type 52) and are gotten the following results, on the table is presented only the percentage of the sensitive layers without noticing intermediate and resistent layers.

Antibiotic	Bacteria (sensitive layers %)				
	Escherichia coli	*K.pneumoniae*	*Proteus mirabilis*	*Ps. aeruginosa*	*Enteroc. faecalis*
Amox/clav.ac	68,23%	27,65%	89,23%	0,1%	98,14%
Cefoxitin	76,27%	65,95%	84,61%	22,22%	/
Ceftazidime	82,94%	65,95%	92,30%	62,5%	/
Imipenem	99,99%	99,68%	99,99%	99,015	/
Amikacin	98,82%	97,87%	99,99%	70,83%	/
Gentamicin	72,74%	48,93%	99,99%	25,05%	16,66%
Ciprofloxacin	67,84%	61,70%	92,30%	33,33%	/
Nitrofurantoin	51,56%	31,91%	/	14,28%	83,33%
Trimeth/sulfa	26,27%	14,86%	46,15%	/	/
Fosfomycin	89,44%	39,18%	99,99%	78,12%	/
Meropenem	99,23%	98,34%	99,99%	87,99%	/
Cefepime	87,21%	89,25%	99,99%	82,35%	/
Pic/ureidopen	18,43%	0,87%	38,46%	17,64%	/

Conclusion - The sensitivity of the breeds isolated in our labaratory Escherichia coli is biggest towards carbapenem, cefalosporini, aminoglikozidi and kinolini which are the most common antibiotics used for therapy of the same.

Breeds of K.pneumonie are more resistant than Escherichia coli towards tested antibiotics. They have shown bigger resistance towards carbapenem and cefalosporini,

The isolated breeds of Proteus mirabilis are sensitive towards the bigger number of tested antibiotics except on nitrofurantoin which is not recommended for their elimination.

Ps. Aeruginosa and breeds isolated in our region are quite resistant towards the bigger number of tested antibiotics. They have shown bigger sensitivity karbapenemi and cefalosporini from the third generation.

Enteroc.faecalis as gram positive bacteria biggest sensitivity has shown towards beta laktamic antibiotics.

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