



Women and Urinary Tract Infection

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Abstract

Women face health problems in day to day life. One of the serious issues is urinary tract infection. Urinary infection is very common, but women get more infection than men. UTI caused by the organisms cause serious urinary inflammation. The major causative organisms are *E. coli*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Enterococcus faecalis* etc. Today, all age group of women have urinary infection. Women can get easily infection than men through improper hygiene, sexual activity, maternal time, menstrual cycle, and menopause. In this study, frequently we found that those having above 40 age group women have got more infection with *E. coli* and *Pseudomonas aeruginosa*. Few peoples were infected by mold. In this primary investigation, we isolated clinical pathogens from normal urine samples by plate count method. In macroscopic observation we found cloudiness or turbidity, also we performed basic tests like glucose, ketone bodies, nitrite, bile deposits etc. In microscopic studies, like WBCs, RBCs, Epithelial cells, Hyaline cast, Waxy cast. Next, the studies focus on antimicrobial susceptibility test.

Keywords: Antimicrobial; Urinary Infection; Bile; Ketone Bodies; Clinical Pathogens

Introduction

Urinary tract infection (UTI) is the second most common clinical indication for empirical antimicrobial treatment in primary and secondary care, and urine samples constitute the largest single category of specimens examined in most medical microbiological laboratories. Healthcare practitioners regularly have to make decisions about prescription of antibiotics for UTI. Criteria for the diagnosis of UTI vary greatly, depending on the patient and the context [1].

UTIs refer to the presence of microbial pathogens within the urinary tract and it is usually classified by the site of infection as bladder (cystitis), kidney (pyelonephritis) or urine (bacteriuria). They are asymptomatic or symptomatic. UTIs that occur in a nor-

mal genitourinary tract with no prior instrumentation are considered as "uncomplicated", whereas "complicated" infections are diagnosed in genitourinary tracts that have structural or functional abnormalities including instrumentation such as indwelling urethral catheters, and are frequently asymptomatic [2,3].

UTIs, including cystitis and pyelonephritis, are the most common infectious diseases in childhood [4]. *E. coli* accounts for as much as 90% of the community-acquired and 50% of the nosocomial UTIs [5]. UTIs are responsible for more than 7 million patient visits and one million hospital admissions (due to complications) per year in the United States only. Additional diseases include neonatal meningitis responsible for about 0.25 per 1000 live births in industrialized countries and 2.66 per 1000 in developing countries [6].

In the United States, 70 - 80% of complicated UTIs are attributable to indwelling catheters [7], accounting for 1 million cases per year [4]. Catheter associated UTIs (CAUTIs) are associated with increased morbidity and mortality and are collectively the most common cause of secondary bloodstream infections. Risk factors for developing a CAUTI include prolonged catheterization, female gender, older age and diabetes [8].

The proliferation of bacteria in the urothelium can be asymptomatic or symptomatic, which causes inflammatory response and symptomatic case characterized by a wide range of symptoms including, fever, lethargy, anorexia and vomiting [9-14].

However, both genders are susceptible to this type of infection, but women are more, as their reproductive anatomy and physiology are more sensitive. Half of all women by 32 years age had experienced at least an infection history.

Normally, urinary tract urine mostly dominated by *E. coli* 75% - 80%, followed by *S. saprophyticus* 10 - 15%. While, Anatomy or physiological factors cause abnormality of urinary tract and lead to localize infectious bacteria, such as different species of *Klebsiella*, *Proteus*, *Enterobacter*, *Enterococcus*, *Staphylococcus* and *Pseudomonas aeruginosa*. Those bacteria are more common in most of the cases, and infrequently cause to uncomplicated cystitis and pyelonephritis.

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Bacterial identification and susceptibility tests are important for selecting the appropriate antimicrobial agent affecting bacterial diseases [21]. Thus, the accurate diagnosis of UTI and determination of antibiotic sensitivity pattern is important for selection of appropriate drug for effective treatment. This is why this study is important worldwide. Despite published guidelines for the optimal selection of an antimicrobial agent and duration of therapy, studies demonstrate a wide variation in prescribing practices. The present study focus on how does a woman infected with uropathogenic problems.

Materials and Methods

Sample collection

We asked patients to clean their genital area, totally we collected 11 from women. The midstream urine samples were collected in sterile container and immediately subjected under microbiological laboratory.

Parameters

The samples were analyzed recorded the urine appearance, volume, color, pH, odour, sediment.

Culturing and identification

Serial dilution agar plating method

This method is used to isolation of bacteria and enumeration of presence of microorganisms. The basic serial dilution procedure was followed (Dubey and Maheswari) to isolate the bacteria, the basic media were used Mac Conkey agar, and here midstream urine samples were used. A specimen was considered positive for UTI if a single organism was cultured at a concentration of $> 10^5$ cfu/ml, or when a single/organism was cultured at a concentration of 10^4 cfu/ml while > 5 leukocytes per high-power field were observed on microscopic examination of the urine.

Urine examination

Gram staining procedure was performed to identify the colony morphology, deposits, blood cells also recorded. The following tests were performed, ketone bodies, bile pigment, bile salt, glucose, nitrite.

Results and Discussions

Urine samples of 11 were collected from all age group of women, three of them above 40. In this study, frequently we isolated *E. coli* and *Pseudomonas aeruginosa*. The urine samples were collected periodically and recorded. We observed that above 40 age group of women highly risk with *E. coli* and *P. aeruginosa* also containing pus cells. Urine parameters were measured like pH, odour, volume, appearance, colour, deposits for different age group of women (Table 1). The midstream urine samples were cultured on Mac Conkey agar medium (Table 2). The selected colonies were stained with gram staining procedure. Based on microscopic analysis we recorded pus cells, RBCs, Epithelial cells, deposits like hyaline cells, urobilinogen phosphate deposition.

Test sample	Age	Gender	Colour of the urine	Appearance	pH	Pus cells	Volume	Ketone	Urobilinogen
1	38	F	Pale yellow	Turbidity	Acidic	Packed with pus cells/ hpf	30	None	-ve
2	50	F	Pale yellow	Turbidity	Acidic	Packed with pus cells/ hpf	30	None	+ve
3	25	M	Yellow	Clear	Acidic	Nil	30	None	-ve
4	29	F	Pale yellow	Turbidity	Acidic	Nil	30	None	-ve
5	25	F	Dark Yellow	Clear	Acidic	Nil	30	None	-ve
6	24	F	Yellow	Clear	Acidic	Nil	30	None	-ve
7	38	F	Yellow	Turbidity	Acidic	Packed with pus cells/ hpf	30	1.4 to 3.0mmol/L	-ve
8	26	F	Dark Yellow	Turbidity	Acidic	Nil	30	None	-ve
9	19	F	Yellow	Clear	Acidic	Nil	30	None	-ve
10	19	F	Yellow	Clear	Acidic	Nil	30	None	-ve
11	18	F	Yellow	Clear	Acidic	Nil	30	None	-ve

Table 1: Parameters of urine samples.

Test sample	Isolated bacteria	No. of colonies
1	<i>E. coli</i>	4
	<i>P. aeruginosa</i>	3
2	<i>E. coli</i>	5
	<i>P. aeruginosa</i>	5
3	<i>E. coli</i>	0
	<i>P. aeruginosa</i>	0
4	<i>E. coli</i>	2
	<i>P. aeruginosa</i>	1
5	<i>E. coli</i>	3
	<i>P. aeruginosa</i>	2
6	<i>E. coli</i>	1
	<i>P. aeruginosa</i>	1
7	<i>E. coli</i>	2
	<i>P. aeruginosa</i>	1
8	<i>E. coli</i>	3
	<i>P. aeruginosa</i>	2
9	<i>E. coli</i>	2
	<i>P. aeruginosa</i>	1
10	<i>E. coli</i>	2
	<i>P. aeruginosa</i>	1
11	<i>E. coli</i>	2
	<i>P. aeruginosa</i>	1

Table 2: Isolated bacteria of urine samples.

In this present study, we monitor the frequent report for the persons. Depend upon the personal hygienic habit, proper sanitation etc., may create the infection again and again. Antibiotics treatment will give better results. The future scope of this study, will be analyze the patient’s abnormalities with UTI and antimicrobial susceptible also compare the urinary inflammation for men and women.

Conclusion

In this juncture, *E. coli* infection was very common for women. We proceeded 11 samples out of 10 were infected both *E. coli* and *P. aeruginosa*. The parameters of the samples were clearly understood. In future studies focus on antibiotic assay, comparative analysis, along with uropathogenic infections.

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