

Prevalence of Recurrent Urinary Tract Infection in the Postmenopausal Women

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Abstract

The study was conducted in kadur taluk, chikkamangalore district, to study the prevalence of the recurrent urine tract infection in the post-menopausal women. The causative organism, the associative risk factors and, their antimicrobial pattern were studied. A total of 230 women were included in the study conducted over one year. Following a written consent, midstream urine specimens were collected and the culture tests were done by a quantitative method whereas antimicrobial sensitivity was determined by using the Kirby-Bauer method. 32 women were found to have recurrent UTI. UTI was significantly associated with age, prolapse, diabetes, and poor blood sugar control. *Escherichia coli* (*E. coli*) was the most commonly isolated organism. Gram negative pathogens were found to be highly sensitive to cefoperazone, piperacillin and tazobactam.

Keywords: Prevalence; Diabetic Mellitus; Recurrent Urinary Tract Infection; Pathogen; Antibiotic.

Introduction

Urinary tract infection (UTI) is more common in the women than the males, in the ratio of 8:1 [1]. Urine infection is also the most common bacterial infection in the women [2,3]. Annually 150 million women

are estimated to have UTI [3]. 50-60% of the women has reported at least one episode of urinary tract infection once in a life time, every one in three women has at least one symptomatic UTI which needed antibiotic treatment [4,5]. necessitating antibiotic treatment by age 24.1 The prevalence of UTI increases as the women's age advances, bacteria is around 10-15% in women of 65-70 years and increases to 15%-20% of women aged >80 years [6,8].

The urinary tract is usually sterile, but the bacteria rise from the perianal region, leading to UTI. 8% of the women have asymptomatic bacteriuria. When these bacteria enter the systemic circulation it causes serious complications like uro-sepsis, septic shock and rarely death, more so in elderly diabetic women [9,10].

Recurrent UTI is defined as 3 episodes of urinary tract infection with positive urine culture during a 12 month period, or two episodes in the past 6 months [10-13]. Elderly women who are institutionalized develop UTI due to prolonged catheterization, associated medical conditions and functional status [14] postmenopausal women have a very high rate of UTI due to conditions like prolapse, lack of hormone estrogen, loss of lactobacilli in the vagina, increase *E. coli* colonization in the urethra and associated medical conditions like diabetes [5].

UTIs are classified into 6 categories- 1) uncomplicated *infection*- urinary tract is normal in anatomy and physiology, with no associated impaired host defense 2) *complicated infection*- urinary tract abnormality such as ureteric obstruction, renal calculi, or vesicoureteric 3) isolated infection - the first episode of urinary tract infection or the episodes of 6 months apart

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Received on 15.07.2017,
Accepted on 09.08.2017

4) *unresolved infection* – when the therapy fails due to bacterial resistance or due to 2 different organisms of equally limited susceptibilities 5) *reinfection*- no growth after a treated infection, but then the same organism regrows two weeks after therapy, or when two different microorganism grows during any period of time 6) *relapse* - is when the same microorganism causes a UTI within two weeks of therapy [16-18].

Patients presents with symptoms like dysuria, urinary frequency, urgency, suprapubic pain and hematuria [19]. In case of complicated cases the patient presents with persistent fever, chills, nausea and vomiting [20]. Diagnosis of UTI is made by performing a urine culture sensitivity, to detect the causticize organism and the sensitive antimicrobial [21]. A UTI is when there is positive urine culture with greater than 100,000 colony-forming units (cfu)/ml. In acute cystitis, even 1,000 cfu/ml and in acute pyelonephritis 10,000 cfu/ml may be sufficient for the diagnosis [21].

Material and Methods

We conducted a community based cross sectional study, on all the women residing in katur taluk. The study was conducted over 1 year January 2016 to December 2016. Following taking a verbal consent

each postmenopausal woman was interviewed. Maintain the confidentiality following examination mid-stream urine was collected for urine culture. A total of 230 women were included in the study. Data was analyzed using the SPSS version 20.0.

Results

Of the total 230 women studies, the mean age of the population was 52.19 ± 8.17 years, majority of the women were between the age 40 to 49 which constituted to 59.38%. 93.75% of The Women had no basic education, 43.75% of the women belonged to class 4 of the modified kupuswamy classification, prevalence of incontinence of urine was significantly increasing with decline in socio-economic status the patient data is tabulated in Table 1.

The most frequently reported urogenital problem by women was lower abdominal pain followed by increased frequency of maturation. The other presented complains were burning maturation, vaginal dryness, incontinence of urine, uterine prolapse presented in Table 2.

Escherichia coli was the most frequently observed pathogen constituting to 43.7% in pour study. Klebsiellapneumonia was seen in 34.38% of the population. Candida albicans was noted in 18.75%

Table 1: Demographical data

Characteristic	Patients Number (n=32)	Percentages (%)
Age		
40-49	19	59.38
50-59	6	18.75
>/=60	7	21.88
Education		
Illiterate	30	93.75
Literate	2	6.25
Marital status		
Married	26	81.25
unmarried	6	18.75
Widowed	16	50
Socio economic status		
Class 1	1	3.13
Class 2	3	9.38
Class3	6	18.75
Class 4	14	43.75
Class 5	8	25

Table 2: Urinary symptoms

Symptoms	Patients	Percentages (%)
Increased frequency	24	75
Burning maturation	19	59.38
Hematuria	6	18.75
Lower abdominal pain	28	87.5
Fever	8	25
Dry vagina	5	15.63

Table 3: Urine culture isolates

Organisms Isolate	Patients	Percentages (%)
Escherichia Coli	14	43.7
Klebsiella pneumonia	11	34.38
Proteus mirabilis	3	9.38
Pseudomonas aeruginosa	4	12.5
Coagulase negative staphylococcus	9	28.13
Yeast	6	18.75

Table 4: Associated conditions

Associated Conditions	Patients	Percentages (%)
Prolapse	15	46.88
Diabetes	11	34.38
Urinary incontinence	9	28.13
Obesity	5	15.63
Urethral stenosis	7	21.88

of the population and predominantly in the diabetic women. *Pseudomonas aeruginosa* had an overall occurrence rate of 12.5%. *Pseudomonas aeruginosa* had incidence of 12.5% of total UTI cases, followed by *Proteus mirabilis* with 9.38% occurrence rate (Table 3).

Prolapse, predominately the cystocele was noted in 46.88% of the population, followed by diabetes mellitus noted in 34.38%. 7 women with recurrent UTI needed treatment with IV antibiotics following hospital admission 4 of them were associated with uncontrolled diabetes which needed insulin therapy.

Discussion

Recurrent UTIs are highly prevalent and are one of the most frequent clinical bacterial infections in women, accounting for nearly 25% of all infections. Approximately 50–60% of women report at least one UTI in their lifetime, and one in three will have at least one symptomatic UTI necessitating antibiotic treatment by age 24 [1,5,22]. The purpose of this study was to determine the prevalence of recurrent urinary tract Infections among the postmenopausal women, in the rural population of kadir.

In our study patients evaluated is unique as they represent that group of people in whom the prevalence of UTI is higher. We collected the descriptive statistics on the study subjects, evaluated their symptoms and collected their urine sample for culture. Patients were well explained as to how to collect a 'clean-catch' or midstream technique for collection of the urine sample, which will reduce the risk of vaginal and skin contamination up to 30% [23].

On testing the urine samples, we observed that 32 (13.92%) post-menopausal women of the 230 presented with pathogens in the urine sample which

was much lesser than the study conducted by Nath, et al which was 17.3%. [26], 13.5 in a study by Jackson et al [24] and much higher than the study conducted by Sarkar A et al. which was 7.7% [27]. These women were treated with orally administered antibiotics based on the culture reports, and after a period of 2 week were requested to provide another sample. For a period of one year, these women have been examined for urinary infection and treated for the same when the need arise. The urine cultures were compared to study whether it was caused by a particular pathogen causing the infection or there was more than one pathogen. It was however observed that the cultures grow more than one pathogen in 7 women and needed an extended antibiotic therapy.

Of the 32 post-menopausal women diagnosed with recurrent urinary tract infections, it was observed that association with other medical conditions led to situations which needed additional treatment. Furthermore, it was observed that the socio-economic status and associated conditions including, prolapse, diabetes, urinary incontinence, obesity and urinary stenosis play an important role in the incidence of urinary tract infections. On analysis of the data it was observed that a total of 32 post-menopausal women out of the sample group suffered from recurrent urinary tract infections. 7 of the 32 post-menopausal women required I.V antibiotics, hospital admission and care. 4 of those who were admitted to the hospital were diabetics and have been undergoing treatment for the same.

A study conducted by Jackson et al. reported the most common co-morbidity to be diabetes in women with recurrent UTI [24]. In another study done by Hu KK et al. it was found that a history of UTI, treated diabetes, and incontinence were all associated with a higher risk of recurrent UTI in post-menopausal women [25] which was the similar result found in our study.

Conclusion

In conclusion, our data support the view that the prevalence of urinary tract infection in postmenopausal women is high and that several factors importantly influence the incidence. These factors include a previous history of UTIs, urodynamic factors, especially incontinence, diabetes, and prolapse.

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