Study of Prevalence of Sexually Transmitted Infection in Patients with Symptoms of Urinary Tract Infection

Rekha Sthapit, Ramesh Prasad Acharya, Pratap Narayan Prasad
Tribhuwan University Teaching Hospital, Kathmandu, Nepal

ABSTRACT

Introduction: Urinary tract infections are commonly encountered in day to day practice of a general practitioner.The purpose of this study is to determine if there is an association between urinary tract infections (UTI) and sexually transmitted infections (STI), as both may present with similar symptoms.

Methods: This was a hospital based, prospective observational study in 104 women of 18 to 49 years age group, done during a period of six months at Patan hospital .Urinalysis results and genital examination findings were recorded.STI was defined as a vaginal swab positive for Trichomonas vaginalis(TV)/Neisseria gonorrhoeae (NG)/Chlamydia trachomatis(CT).UTI was defined as urinary WBC >=6per high power film. A urine c/s >105 colonies of a single pathogen was considered urine culture positive.

Results: Mean age of patients was 28.38 years. The most prevalent organism was TV (6/104, 5.8%), followed by NG(4/104,3.8%) and CT(2/104, 1.2%). 11.5% of women had STI , while 57.7% were urine culture positive. Out of those with urine culture positive, 83.3% had urinary WBC<30/hpf , and 16.7% had urinary WBC> 30/hpf. The relation between pyuria and urine c/s positivity was significant (p value 0.005). The prevalence of STI in urine c/s positive group was 13.3%, and in urine c/s negative group was 9.1% (p value 0.553).

Conclusion: There was no statistically significant difference in the prevalence of STI between urine culture positive and negative groups.

Key words: sexually transmitted infections, urinary tract infections, urine culture

Correspondence
Dr. Rekha Sthapit
Teaching Assistant, Department of General Practice and Emergency Medicine
Tribhuvan University Teaching Hospital, Maharajgunj, Kathmandu, Nepal
Email: rekha_sthapit@hotmail.com

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30

INTRODUCTION

Though UTI is considered to be one among the most common bacterial infections, it is difficult to accurately assess the incidence[1], as accurate diagnosis depends on both the presence of symptoms and positive urine culture. The concept of significant bacteriuria was developed by Kass[2], Sanford, and others in the mid 50s.The utility and consistency of the criterion of >10^5CFU/ml for the diagnosis of UTI has been validated repeatedly. Though STI remains a global health problem[3], its epidemiology in Nepal is poorly understood[4].

As women with UTI and those with early low grade pelvic infections may present with similar symptoms, the diagnosis of these entities may be challenging, leading to overtreatment of UTIs and under treatment of STIs, giving rise to complications. Several studies of asymptomatic women or those with symptoms of UTI suggest anywhere between 10% - 50% of them will have STI if tested[5]. Hence, a thorough history with examination is crucial in the differentiation of symptoms, and here lies the importance of this study.

METHODS

Though UTI is considered to be one among the most common bacterial infections, it is difficult to accurately assess the incidence[1], as accurate diagnosis depends on both the presence of symptoms and positive urine culture. The concept of significant bacteriuria was developed by Kass[2], Sanford, and others in the mid 50s.The utility and consistency of the criterion of >10^5CFU/ml for the diagnosis of UTI has been validated repeatedly. Though STI remains a global health problem[3], its epidemiology in Nepal is poorly understood[4].

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RESULTS

Demographic factors

Age: There were a total of 12 patients with STI, out of which all belonged to the 21-30 years age group. The mean age was 28.38 years, median-28, mode-26; the minimum age was 17 years & the maximum age was 42 years. Total 34.60% of unmarried and 65.40% of married had symptoms of UTI, similarly 66.70% of unmarried and 33.30% of married having symptoms of UTI had STI while 34.40% unmarried and 69.60% or married having symptoms of UTI did not have STI.

Out of all patient, 44 had negative urine culture and 66 had positive urine culture. Out of all negative urine culture 4(9.1%) had STI and out of all positive urine culture 13.3% were positive in urine culture (Odds =1.54, p=0.55, CI 0.43-5-5).
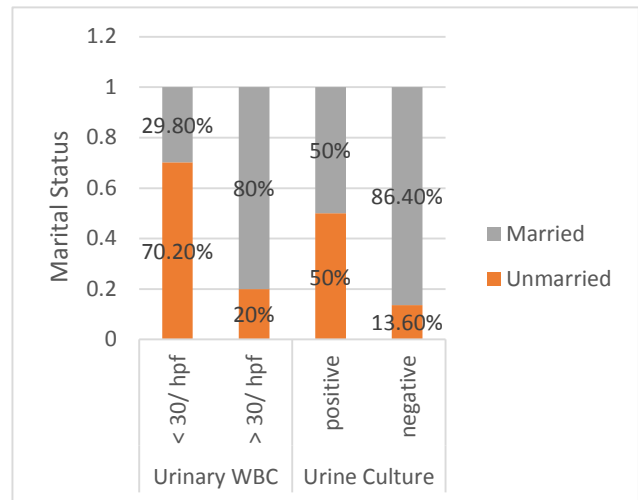

Figure 1: Relation of marital status with urinalysis and urine culture
p value for urinalysis: <0.003, Odds ratio 9.43, CI 1.88-47.62
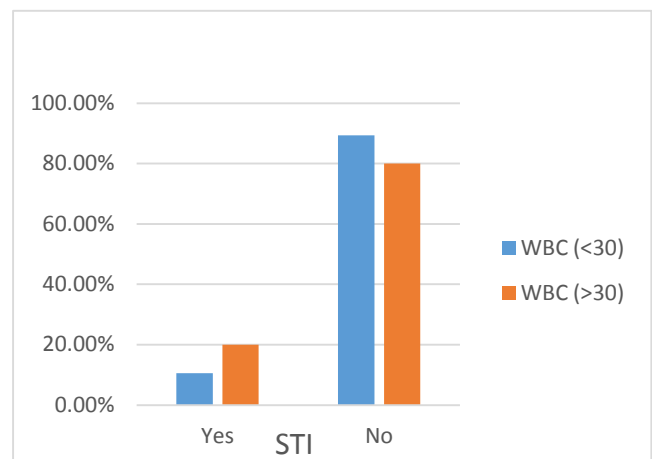p value for urine culture: <0.001, Odds ratio 6.33, CI 2.33-17.24
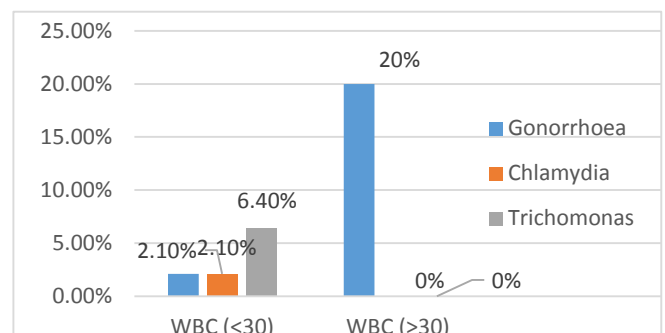

Figure 2: Relation of STI with urinalysis
p value: 0.324

Figure 3: Relation of common STIs with urinalysis
p value for gonorrhoea: 0.045
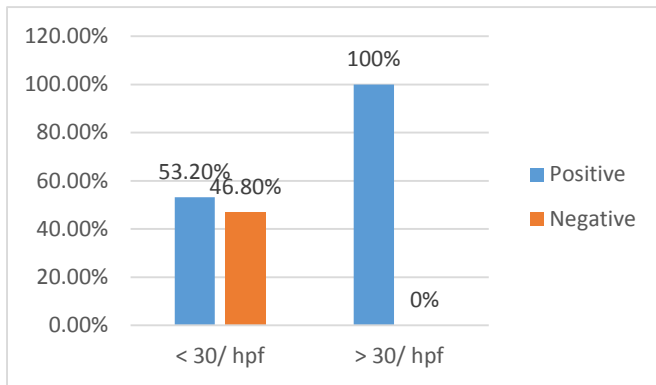p value for chlamydia: 1.000
p value for trichomonas:1.000

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31

Figure 4: Urine culture result in relation to urinalysis
p value: 0.005

DISCUSSION

There was no statistically significant association between urinary symptoms or UTI and STI (p value 0.0553), which is similar to the study by Huppert JS et al.[6]The prevalence of STI was 11.5% in this study, which was different from the above mentioned study (33%).This may be attributable to the underdiagnoses of STI in our set up(use of only suboptimal tests, lack of specific investigations, and more sensitive tests like PCR for detecting Neisseria and Chlamydia.[7] Also, urine samples for PCR testing and urethral swabs for diagnosis (Chesson HW etal[8]) were not included in this study, which could have affected the detection rate of STI. Though overtreatment of UTI carries minimal risk, a 40% overtreatment rate with a 50% under treatment rate of STI is not acceptable. In the study done by Shapiro et al[9], the prevalence of STI was 17.3%, which is comparable to this study.

In this study, the most prevalent organism was TV (8.5%), followed by NG(3.8%) and CT(1.9%).This is not in accordance with the above mentioned study[8],where CT was found to be most prevalent(9/91, 9.8%, 1 quantity not sufficient), followed by TV(7/87, 7.6%, 5 missing blank); NG accounted by only 1 patient(1/92, 1.1%). The possible explanation to this again could be due to the unavailability of more advanced diagnostic tools in our set up; wet mount used for diagnosis of TV is insufficient for confirmation of the organism (sensitivity 58%).

The accurate diagnosis of either entity, i.e. either STI or UTI may be more difficult than is assumed to be, according to the data in this study showing 42.3% of patients with urinary symptoms as UTI negative (urine culture negative), and 11.5% showing STI positive, which is in comparison to the study done by Shapiro et al.[9] Further consideration relating to the accurate diagnosis of UTI is the use of colony count cut offs. Colony count of >10[5] was used in this study(urine culture positivity rate of 57.7%); colony count of > 10[2]CFU/ml was used in the above mentioned study[9], in which 57.3% were urine culture positive in samples collected by catheterization.

As the prevalence of STI in between urine culture positive and negative patients was not statistically significant in this study(13.3% and 9.1% respectively; Odds ratio 1.54, CI 0.43 – 5.4; p value 0.553), the hypothesis that STI causes the majority of symptoms in UTI negative patients was not supported by the data. However, the prevalence of trichomoniasis was found to be more (5.8%) in those with urine culture negative patients in this study, which is similar to the study done by Huppert JS et al[5].In the study done by Berg et al[10], there was no difference in the prevalence of STI between patients positive and negative for UTI(p> 0.05).

Only 9.6% of all these patients showed WBC> 30/hpf on urinalysis, 20% out of whom had STI (p value 0.324, insignificant). All of all these were NG positive (p value 0.045, significant). This may be explained by the probable false negativity (lab error) regarding urinalysis, small sample size and due to the substandard tests for diagnosis of STI as mentioned previously. In the study done by Huppert JS et al[6],62% of those with positive urinary leucocytes had STI, and 65% of those with sterile pyuria had STI(mainly trichomoniasis or gonorrhea).In this study, 63.5% of all patients had bacteriuria; 76.7% out of those were urine culture positive (p value 0.001, Odd's ratio 3.94, CI 1.70- 9.16, significant), in contrast to the study done by AL-Daghistani and Abdel – Dayem M[11], in which bacteriuria was found in only 23.2% (the presence of visible bacteria is less sensitive, but more specific).

In this study, 42.3% had no growth in urine, and 57.7% of patients had urine culture positive, which is in comparison to 57.3% patients in the study done by Shapiro et al[9], E. coli being the most common organism isolated (30.8%).Comparison of urinary WBC count was also done with urine culture results in this study. It was found that urinary WBC did not correlate well with urine culture results, which was not comparable to the study done by Al – Daghistani and Abdel – Dayem M[11] in which pyuria significantly correlated with urine culture results, but demonstrated more false positive results; here also E. coli being the most common organism isolated.

The results of this study may be explained by the small sample size, and probably by lab errors .It may also be explained by the fact though >=6 WBC/hpf may demonstrate a reasonable predictive value for UTI; it can also occur in women with <=6/hpf, and that the presence of pyuria on urinalysis has high sensitivity (95%), but a relatively low specificity (71%) for infection. Sterile pyuria itself could be due to a manifestation of urethritis rather than a UTI. In the study done by Huppert JS et al[6], 65% of those with positive leucocytes in urine had UTI, the results may be explained by the low colony count criteria for defining UTI(> 10[4]CFU/ml).

9.1% of those with sterile pyuria had STI(probably due to underdetection in our set up), which is found to be less in comparison to the study done by Berg et al[10], in which it was found to be 65%.E. coli was the most common organism grown in those with urine culture positive (6,

32

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18.8%).According to the findings in the study done by Naussar et al[7],when women are categorized as having urethral syndrome versus other urologic diseases, Chlamydia rates are higher, and higher STI rates may be found when cultures are taken from the urethra.[8]

CONCLUSION

The proportion of STI between those with and without UTI was not statistically significant in this study.

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33