OPEN ACCESS
Scholars International Journal of Obstetrics and Gynecology
Abbreviated Key Title: Sch Int J Obstet Gynec
ISSN 2616-8235 (Print) |ISSN 2617-3492 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: https://saudijournals.com

Original Research Article

Risk Factors of UTI in Pregnant Women and the Maternal and Perinatal Outcome Attending North East Medical College and Hospital, Sylhet

Dr. Nasrin Chowdhury[1*], Dr. Mohammad Shahadat Hossain Mazumdar[2]

[1] Assistant Professor, Department of Gynecology and Obstetrics, North East Medical College and Hospital, Sylhet, Bangladesh
[2] Residential Surgeon, Sylhet Women's Medical College and Hospital, Sylhet, Bangladesh

DOI: 10.36348/sijog.2021.v04i06.004 | **Received:** 09.04.2021 | **Accepted:** 18.05.2021 | **Published:** 20.06.2021

***Corresponding author:** Dr. Nasrin Chowdhury

Abstract

Objective: In this study was designed to see the risk factors of UTI in pregnant women and the maternal and perinatal outcome. ***Methods:*** In this case control study, women enrolled in antenatal OPD of North East Medical College and Hospital, Sylhet, during July 2020 to December 2020, were randomly allocated into case and control group. The inclusion criteria for pregnant women during the 13^{th} - 26^{th} weeks of pregnancy in the case group was the positive urine cultures of bacteria (more than 10^5 colonies growth in a standard positive urine culture). The same with negative culture was control group. Then parameters such as parity, sexual activity, type of delivery, and infants' birth weight were recorded in questionnaire. ***Results:*** Incidence of UTI in mid trimester pregnancy during study period was 26%. Risk factors like previous history of UTI, sexual activity and multipara were higher in case group. Highest age incidence was between 20-30 years. Predominantly patients were asymptomatic. Lower abdominal pain was a common symptom. Eshcherichia coli was commonest organism. Prevalence of bacteriuria was more in women with history of UTI earlier in pregnancy. Premature rupture of membrane was significantly higher in case group. Caesarean section was higher in the case group. According to this study, the average weight of newborns whose mothers had UTI was 2.83 kg and it was 0.44 kg lower than the newborns of healthy mothers. ***Conclusion:*** According to the conducted study, UTI in mothers is the major reason for comparatively lower birth weight of infants. Routine urine check during pregnancy is helpful in diagnosing this early and fast care. For better results, more analysis is required.

Keywords: Urinary tract infection (UTI), maternal outcome, perinatal outcome.

Copyright © 2021 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Urinary tract infections (UTIs) are among the most prevalent bacterial infections in humans, both in the population and hospital. UTI has been registered among 20 percent of the pregnant women and it is the most frequent cause of admission in obstetrical wards1. It is characterized as a presence, in a symptomatic patient with a concomitant pyuria of at least 100,000 organisms/mL (>5 WBCs/mL) [1, 2]. UTI is not only normal but the spectrum of clinical effect ranges from asthmatic bacteriurea (ABU) to acute pyelonephritis [3].

Three common clinical manifestations of UTIs in pregnancy are: asymptomatic bacteriuria, acute cystitis and acute pyelonephritis [4].

Women with ABU during pregnancy are more likely than women without bacteriuria to give birth to premature or baby children, and have a 20 to 30 times higher risk for developing pyelonephritis during their pregnancy. In approximately 30 percent of cases, untreated ABU can also contribute to the development of cystitis. In addition, anaemia was associated with acute pyelonephritis [5]. The neonatal death rate and Gram-negative septicemia may both be correlated with ABU [6].

Pregnancy is one of the factors which increase the risk of UTI partly because of gravitational pressure on ureters causing urinary flow stasis and the humoral and immunological changes during the normal pregnancy are also attributed too [7]. A variety of disorders are associated with an elevated incidence of UTI during infancy. The incidence of UTI varies by age, sexual activities and the occurrence of gastrointestinal disorders. In healthy women, the prevalence of bacteriuria increases with age from about

one percent in females with 5 to 14 years of age to more than 20 percent in women at least 80 years of age [8]. Sickle cell traits, diabetes mellitus and grand multiparity have been reported; each is associated with two-fold increase in the rate of bacteriuria [9]. The prevalence is higher among individuals in lower socioeconomic classes and those with a past history of UTI [10]. There is also increase in the risk of developing UTI due to catheterization, spermicidal contraceptive usage, kidney stones, tumors and urethral strictures [8, 11]. Various microorganisms are able to invade urinary tracts and bacterial organisms, which cause this disease, include Escherichia Coli, Klebsiella pneumonia, Proteus, Acinetobacter, Saprophyticus Staphylococcus, Streptococcus Group B and Pseudomonas aeruginosa [12].

In this study our main purpose was to search out the risk factors of UTI in pregnant women and the maternal and perinatal outcome in pregnant women.

OBJECTIVE

General Objective

- To identify the risk factors of UTI in pregnant women and the maternal and perinatal outcome.

Specific Objective

- To evaluate causes of UTI.
- To detect organism responsible for UTI.

METHODOLOGY

Type of Study: Case control study

Place of Study: Sylhet Medical College and Hospital.

Study Period: July 2020 to December 2020

Study Population

Pregnant women during the 13th - 26th weeks of pregnancy in the case group was the positive urine cultures of bacteria and pregnant women during the 13th - 26th weeks of pregnancy in the control group was the negative urine culture.

Sampling Technique: Purposive

Exclusion Criteria

- Pregnant women having diabetes
- Pregnant women taking immunosuppressive drugs and with renal disease or on antibiotic therapy within 72 hours

Method

- During the study, we had 62 culture positive women within study period. Age matched control group also selected. Informed verbal consent was taken. Socio-demographic data such as age, occupation, parity and duration of gestation were collected from the pregnant women using standard questionnaires and kept confidential during the research. In the study, two hundred and fifty (250) urine samples were collected and analyzed during the study period. Sixty-two (62) samples showed significant growth.

Data Analysis

- Statistical analysis was performed using the Statistical package for social science SPSS version 23.0. A descriptive analysis was performed for clinical features and results were presented as mean ± standard deviation for quantitative variables and numbers (percentages) for qualitative variables.

RESULTS

In table-1 shows age distribution of the patients where most of the in both groups belong to 20-30 years age group 40.5% and 38.8%. The following table is given below in detail:

Table-1: Age distribution of the patients

Age groups	Case, %	Control, %
20-30 years	40.5	9.5
>30 years	38.8	10.2

In figure-1 shows parity distribution of the study group where UTI was more prevalent among birth order second and third irrespective of previous obstetric history and it was almost equal in both case and control (28 % and 29.2 %). In primi patient it was 16.1%. From three and more birth order UTI showed reduced preponderance. The following figure is given below in detail:

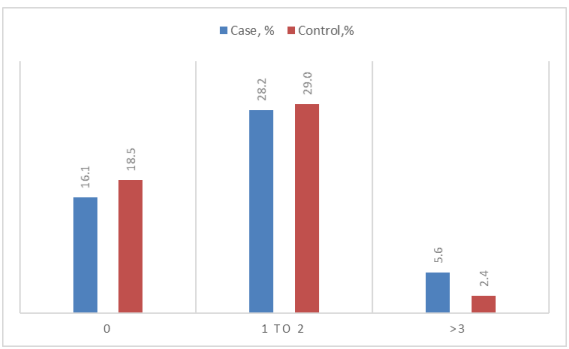

Fig-1: Parity distribution of the study group

In figure-2 shows organisms responsible for UTI where E. coli was the commonest organism causing UTI in our study followed by pseudomonas and klebsiella. Asymptomatic bacteriuria was the most frequently encountered in case. The following figure is given below in detail:

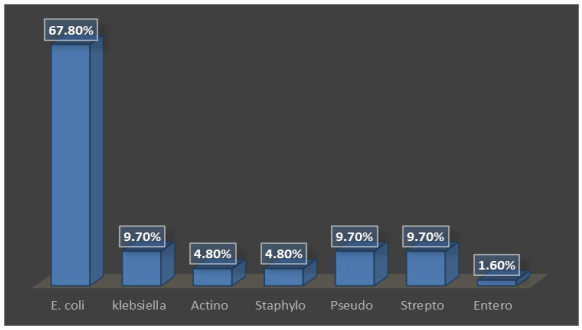

Fig-2: Organisms responsible for UTI

In figure-3 shows mode of delivery. Caesarean section was higher in women with UTI than without caused mostly due to prematurity and fetal distress. The following is given below in detail:

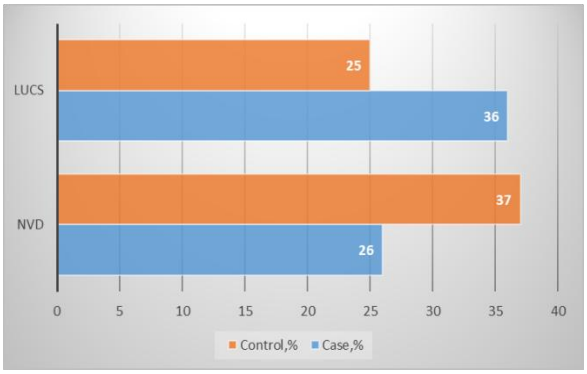

Fig-3: Mode of delivery

In table-2 shows causes of UTI where while looking into etiological factors, past history of UTI before pregnancy did not play a strong role as a risk factor. On the other hand, previous history of UTI in current pregnancy was significantly higher in case group which was 22%. Sexual activity in early pregnancy also played a significant role in causing UTI. The following figure is given below in detail:

Table-2: Causes of UTI

Parameters	Case (%)	Control (%)	X^2 Test
Past H/O UTI			
Present	(30.6)	(30.6)	0.574
Absent	(19.4)	(19.4)	
Previous H/O UTI in current Pregnancy			
Present	(17.7)	-	<0.001
Absent	(32.3)	(50)	
Past H/O UTI			
Present	(30.6)	(30.6)	0.574
Absent	(19.4)	(19.4)	

In figure-4 shows Symptoms of UTI. Where most of the cases UTI was asymptomatic, 32.3%. The following figure is given below in detail:

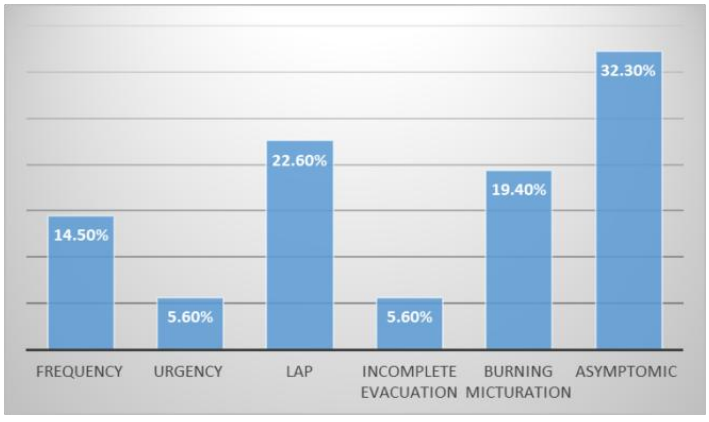

Fig-4: Symptoms of UTI

Table-3 shows fetal outcome where preterm labour was comparatively high in case group. Birth weight of babies born to UTI mother was significant lower than their counterpart. The following table is given below in detail:

Table-3: Fetal outcome

Complications	Case, %	Control, %	X^2 test
Preterm labour	8.9	4.0	0.090
Low birth weight	15.3	0.8	<0.001
PROM	11.3	4.8	0.043
Fetal distress	28	17.7	0.019
Admission in NICU	16.3	14.52	0.697

DISCUSSION

The prevalence of mid-trimester UTI was 12.30 percent less than third trimester pregnancy [13], a report at the Dhaka national medical college in 2011.

This variation is the result of an anatomically evolving genitourinary and urinary structures. In one research, the correlation of UTI with perinatal and maternal risk of negative effects, such as babies who have low birth weight, premature delivery of UTI, sometimes high blood pressure/before eclampsia, mortality, caesarean delivery and intrauterine restrictions in their development has been observed [13]. But similar similarities have not been shown in other studies. This incoherent finding may be attributable to sampling bias, environmental disparities, insufficient monitoring of confounding variables and whether the sample is focused on hospital or on the community [14].

In our study, we found that, preterm labour was comparatively high in case group. Birth weight of babies born to UTI mother was significantly lower than their counterpart. The increased occurrence of preterm labor and UTI-related delivery can result from inflammatory reactions by cytokines and prostaglandin mediators caused by uro-pathogens' colonization of amniotic fluid. These bacteria develop the collagenase and phospholipases A and C, which serve as the precursors for the pro-contractile prostaglandins E2 and F2a [15].

In one sample, the problem for Escherichia coli (E coli), the most prominent UTI cause organism among pregnant women, with multi-drug-resistant strains, should be dealt with in this study in order to minimize the likelihood of adverse maternal and neonatal results [16].

In our studies, we observed that E. coli, led by pseudomonas and klebsiella, was the most prevalent cause of UTI. The most common condition was asymptomatic bacteriuria. Lower abdomen pain (22.6 percent) and headache were followed (19.5 percent).

CONCLUSION

From our study we can say that, UTI in mothers is the major reason for comparatively lower birth weight of infants. Routine urine check during pregnancy is helpful in diagnosing this early and fast care. For better results, more analysis is required.

REFERENCES

1. Bacak SJ, Callaghan WM, Dietz PM, Crouse C. (2005). Pregnancy associated hospitalizations in the United States, 1999-2000. American Journal of Obstetrics and Gynecology, 192(2):592–7. doi: 10.1016/j.ajog.2004.10.638.
2. Emilie Katherine Johnson, MD, Edward David Kim, MD, FACS. (2011). UTIs in pregnancy. Update: March 29, 2011.
3. Ullah MA, Barman A, Siddique MA, et al. (2007). Prevalence of asymptomatic bacteriuria and its consequences in pregnancy in a rural community of Bangladesh. Bangladesh Med Res Counc Bull, 33: 60-64.
4. Loh KY, Silvalingam N. 2007 Urinary tract infections in pregnancy. Malaysian family physician, 2(2):54-57.
5. Haider G, Zehra N, Afroze Munir A, et al. (2010). Risk factors of urinary tract infection inpregnancy. J Pak Med Assoc., 60: 213-216.
6. Nandy P, Thakur AR, Ray CS. (2007). Characterization of bacterial strains isolated through microbial profiling of urine samples. On Line J Biol Sci., 7: 44-51.
7. Sescon NIC, Garingalao-Molina FD, Ycasiano CEJ, et al. (2003). Prevalence of asymptomatic bacteriuria and associated risk factors in pregnant women. Phil J Microbiol Infect Dis., 32: 63-698.
8. Colgan R, Nicolle LE, Mcglone A, et al. (2006). Asymptomatic Bacteriuria in Adults. Am Fam Physician., 74: 985-990.
9. Ramzan M, Bakhsh S, Salam A, et al. (2004). Risk factors in urinary tract infection. Gomal J Med Sci., 2: 50-53.
10. Enayat K, Fariba F, Bahram N. (2008). Asymptomatic bacteriuria among pregnant women referred to outpatient clinics in Sanandaj, Iran. Int Braz J Urol., 34: 699-707.
11. Turpin CA, Minkah B, Danso KA, et al. (2007). Asymptomatic Bacteriuria in pregnant women attending antenatal clinic at Komfo Anokye teaching hospital, Kumasi, Ghana. Ghana Med J., 41: 26-29.
12. Emamghorashi F, Mahmoodi N, Tagarod Z, Heydari ST. (2012). Maternal urinary tract infection as a risk factor for neonatal urinary tract infection. Iran J Kidney Dis, 6(3):178–80.
13. Parveen K, Momen A, Begum AA, Begum M. (2011). Prevalence of Urinary Tract Infection During Pregnancy. J. Dhaka National Med. Coll. Hos.; 17 (02): 8-12.
14. Cheesebrough, M. (2000. Examination of Urine. District laboratory practice in tropical countries. Part 2. Cambridge: Cambridge University Press, pp. 105114.
15. Chen, Y.K., Chen, S.F., Li, H.C., Lin, H.C. (2010). No increased risk of adverse pregnancy outcomes in women with urinary tract infections: a nationwide population-based study. Acta Obstet. Gynecol. Scan. 89(7): 882-8.
16. Conde-Agudelo, A., Villar, J., Lindheimer, M. (2008). Maternal infection and risk of preeclampsia: systematic review and meta-analysis. Am. J. Obstet. Gynecol, 198(1): 7-22.