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A Study on Urinary Tract Infections in Pregnancy.

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ABSTRACT

Background: Urinary tract infection can lead to poor maternal and perinatal outcomes. Investigating the epidemiology of UTI and antibiotics sensitivity among pregnant women is fundamental for care givers and health planners. We aimed to review the urinary tract infections in pregnancy. **Methods:** Study group included 78 pregnant women with Urinary tract infection considered as infected women and 164 normal healthy pregnant women without urinary tract infection considered as Non-infected women. Infected pregnant women were advised for urine routine and culture, sensitivity. Pregnant women were explained to collect proper midstream urine sample in a sterile leak proof container after cleaning genitals. **Result:** 29 (37.1%) out of 78 pregnant women were confirmed as culture positive urinary tract infection. Majority of the pathogens isolated from culture positive urinary tract infections were Escherichia coli followed by Staphylococcus aureus, Klebsiella species, Pseudomonas aeruginosa. On assessing various predisposing factors, most of the patients informed decreased intake of fluid intake (73%), no hand washing before urination (69.2%), voluntary delay of voiding (61.5%), forward direction of wiping of perineum (58.9%). **Conclusion:** Especially in developing countries like India, screening for ASB during pregnancy gives excellent path to prevent adverse outcomes for both mother and child.

Keywords: Urinary tract infection, Pregnancy.

INTRODUCTION

Bacteriuria is divided into asymptomatic bacteriuria (ASB) and Urinary tract Infection, bacteriuria with specific symptoms.[1] ASB is defined as a significant bacteriuria with ≥ 105 CFU/mL (Colony forming units), without symptoms of UTI.[2] Urinary tract infection can be a lower or upper UTI. Patients usually complaints of frequency, urgency and burning micturition, loin pain, fever, abdominal pain.[3] Untreated UTI can lead to complications such as abortion, prematurity, low birth weight baby, still birth, preterm labour, preeclampsia, chronic pyelonephritis and rarely kidney failure.

Short urethra, urethral opening nearer to anus explains the fact why UTI is more common in women about fourteen times when compared to men and also women ignore the urge to urinate and also don't empty the bladder completely while urinating.[4] UTI is the most common infection during pregnancy and 5th common cause of admission under Obstetric.[5]

Urinary tract infection is the most common medical complication of pregnancy occurring in approximately 4-7% of pregnant women. Incidence of UTI during pregnancy in India is 8.8%. UTI will usually begin in at the 6thweek and peaks during 22 to 24th week. Asymptomatic bacteriuria occurs in 4% to 8% of all pregnancies. Pyelonephritis occurs in 1% to 2% of pregnancies. 1% of pregnant women will have acute cystitis.[6]

Urinary tract infection can lead to poor maternal and perinatal outcomes. Investigating the epidemiology of UTI and antibiotics sensitivity among pregnant women is fundamental for care givers and health planners. In modern era, obstetric nurse care begins with antenatal care which is vital for satisfactory perinatal outcomes.

Clinicians need to identify high risk factors and should give suitable interventions with care competence. Effective nursing care during UTI Enhances maternal foetal wellbeing and ensures their safety. UTI is most commonly diagnosed condition in pregnant women, that's why we undertook this study and aimed to review the urinary tract infections in pregnancy.

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MATERIALS AND METHODS

A Prospective study was undertaken at Obstetrics and Gynecology department in Shantiram Medical College, Nandyal. This study included a pregnant women attending Out Patient Department during the study period of one year (Aug 2016 to July 2017). Study group included 78 pregnant women with Urinary tract infection considered as infected women and 164 normal healthy pregnant women without

urinary tract infection considered as Non-infected women.

Inclusion criteria

All Pregnant women irrespective of trimesters.
All age groups

Exclusion criteria

Pregnant women with comorbidities including DM, HTN, renal failure, placental haemorrhage.
Bedridden patients

Both groups infected & non-infected pregnant were assessed clinically. All the data pertaining to age, sex, address, occupation, education, symptoms related to UTI, gestational age, parity, number of abortions etc., were collected. All the patients were examined and routine investigations done.

Infected pregnant women were advised for urine routine and culture, sensitivity. Pregnant women were explained to collect proper midstream urine sample in a sterile leak proof container after cleaning genitals. After urine routine, urine culture & sensitivity results were entered into excel sheet along with patients data and analysed.

RESULTS

A total of 242 pregnant women were included in this study. 164 (67.7%) were pregnant women without urinary tract infections and 78 (47.5%) were pregnant women with urinary tract infections. 29 (37.1%) out of 78 pregnant women were confirmed as culture positive urinary tract infection (Table 1).

Correlation of characteristics including age group, gravidity, abortions, gestational age in months significance were assessed between infected and non-infected pregnant. The p value was >0.05, not statistically significant. In pregnant women, Urinary tract infections was more commonly observed in the age group of 26-35 years (34.7%), followed by <25 years (32.6%) and >35 years (28%). Multigravida (33.9%) persons were shown preponderance for UTI when compared to primigravida (30.9%). Most of UTI were observed in pregnant with >1 abortion (60%) and during second trimester (39.4%).

Table 1: Demographic characteristics of studied population.

Demographic parameters		Infected (n=78)		Non-infected (n=164)	
		n	%	n	%
Age	< 25 years	15	19.2	31	18.9
	26-35 years	42	53.8	79	48.1
	>35 years	21	26.9	54	32.9
Gravidity	Primigravida	35	44.8	68	41.4
	Multigravida	43	55.1	96	58.5
Abortions	No	68	87.1	133	81
	Once	7	8.9	26	15.8
	>1	3	3.8	5	3
Gestational age in month	1st trimester	15	19.2	37	22.5
	2nd trimester	43	55.1	66	40.2
	3rd trimester	20	25.6	61	37.1

Majority of the pathogens isolated from culture positive urinary tract infections were Escherichia coli followed by Staphylococcus aureus, Klebsiella species, Pseudomonas aeruginosa. 27.5% of Escherichia coli were isolated from UTI pregnant women, 17.2% were Staphylococcus aureus, 13.7% were Klebsiella species & Pseudomonas aeruginosa, 10.3% were proteus species, 6.8% were serratia species and 1(1.2%) of Citrobacter species, Acinetobacter species, Streptococcus agalactiae each [Table 2].

Table 2: Various organisms responsible for urinary tract infections among pregnant women.

Causative agent	Infected pregnant women (n=78)	
	Total	Percentage
Esch. coli	8	27.5
Klebsiella species	4	13.7
Pseudomonas aeruginosa	4	13.7
Proteus species	3	10.3
Staph.aureus	5	17.2
Serratia species	2	6.8
Citrobacter species	1	1.2
Acinetobacter species	1	1.2
Streptococci agalactiae	1	1.2
Total	29	100%

Risk factors related to urinary tract infection were assessed among pregnant women. On assessing various predisposing factors, most of the patients informed decreased intake of fluid intake (73%), no hand washing before urination (69.2%), voluntary delay of voiding (61.5%), forward direction of wiping of perineum (58.9%) [Table 3].

Table 3: Predisposing factors responsible for urinary tract infections during pregnancy.

Predisposing factors	No. of infected patients	Percentage (%)
Decreased daily fluid intake	57	73
Voluntary delay of voiding	48	61.5
Family history of UTI	34	43.5
No hand washing before urination	54	69.2
Synthetic undergarment	19	24.3
Presence of UTI attacks previously	26	33.3
Frequent sexual intercourse	15	19.2
Forward direction of wiping perineum	46	58.9
No Urination after coitus	11	14.1
Not washing genitals before coitus	12	15.3
Child spacing of less than 2 years	26	33.3
No urination before sleep	14	17.9
Decreased frequency of changing underwear	37	47.4
Husband not washing genitals before coitus	15	19.2
Not washing genitals after coitus	19	24.3
Husband not washing genitals after coitus	11	14.1

DISCUSSION

UTI has to be diagnosed at the earliest stage, Asymptomatic bacteriuria should be treated as early as possible. Studies showed that 30-50 % pregnant women whose ASB left untreated later developed pyelonephritis.[7] UTI during pregnancy may lead to serious complications including adverse outcomes for both mother and child including pre-term birth and small- for-gestational-age babies.[8]

During pregnancy, there is a striking anatomical change seen in the urinary system, it is mainly due to the increased progesterone level as it relaxes the wall of the ureters and allows its dilatation and kinking, and also by the pressure from the enlarging uterus. As the pregnancy progresses the kidney increases in weight and length by one CM. From the 10th week of pregnancy the renal pelvis and the ureters also dilate. The smooth muscle of the wall of ureters undergoes hyperplasia, hypertrophy and muscle tone relaxation. The ureter elongates become tortuous and forms single or double curves. In later part of the pregnancy, the renal pelvis and the ureter are dilated more on the right side than on the left side because heavy uterus is displaced to the right by the sigmoid colon. The Glomerular Filtration Rate (GFR) and Renal Plasma Flow (RPF) will also increase. Women's kidneys must manage the increased metabolic and circulatory demand of the maternal body and the excretion of the foetal waste products. In some women, marked changes can be observed in the urinary system mainly due to the hormonal effect and this tends to result in a slow down or stasis of urinary flow.[9]

The risk of UTI may begin in 6 week and will be at peak during 22-24th week.[10] The most common symptoms of urinary tract infection were frequency of micturition, burning micturition, supra pubic pain, nocturia, lower abdominal pain and back pain.[11]

A total of 242 pregnant women were included in this study. 164 (67.7%) were pregnant women without urinary tract infections and 78 (47.5%) were pregnant women with urinary tract infections. 29 (37.1%) out of 78 pregnant women were confirmed as culture positive urinary tract infection in the present study.

Dimetry et al,[12] Tamalli et al observed the prevalence rate of UTI was less than one third of pregnant women.[13] A study from Kenya and Saudi Arabia reported the prevalence of UTI was less than one fifth of studied pregnant population.[14,15] Whereas, prevalence rate was higher in Nigeria study nearly half of the pregnant women had UTI.[16] Our study is line with study of Nigeria.[16] Mahendra A et al suggested that asymptomatic bacteruria is prevalent in our setting and E.coli is most commonly seen,[17]

As per this study, in pregnant women, Urinary tract infections was more commonly observed in the age group of 26-35 years (34.7%), followed by <25 years (32.6%) and >35 years (28%). Multigravida (33.9%) persons were shown preponderance for UTI when compared to primigravida (30.9%). Most of UTI were observed in pregnant with >1 abortion (60%) and during second trimester (39.4%) which was not significant. Many of the studies from different regions such as Tanzania,[18] Sudan,[19] Saudi Arabia,[11] also found there is no significant association between infected and non-infected pregnant women in relation to abortions, parity, gestational age. Whereas, few studies observed there is an increased of risk of UTI among pregnant women with multiparity.[20,21]

Majority of the pathogens isolated from culture positive urinary tract infections were Escherichia coli followed by Staphylococcus aureus, Klebsiella species, Pseudomonas aeruginosa in the present study. In line with this study of Nora Refat Mohamed et al,[22] Haider G et al,[23] Turay AA et al,[24] observed the most common pathogen as Escherichia coli followed by Staphylococcus aureus. Whereas, Dimetry et al,[12] found Klebsiella was the predominant pathogen causing UTI in pregnancy followed by Esch. coli. This difference in pathogen predominance may be due to varied study population and their hygienic practices, increase in vaginal pH, lactose, hormones during pregnancy enhance the growth of organisms.

On assessing various predisposing factors, most of the patients informed decreased intake of fluid intake (73%), no hand washing before urination (69.2%), voluntary delay of voiding (61.5%), forward direction of wiping of perineum (58.9%) as per present study. Norah Rafet Mohamed et al,[22] observed significant association between voluntary urination delay, decreased frequency of micturition, use of synthetic undergarment, post coital urination. These facts were supported by Amiri et al,[25] Dimetry et al,[12] Wamalwa et al.[14] Intake of more fluids should be encouraged among pregnant women to decrease the chances of UTI, as pregnant urine is nutritious rich and attract microorganisms which can be avoided by more intake of fluids and regular passage of urine. No hand washing before urination, not washing genital before coitus, forward direction of wiping of perineum indicates less orientation regarding UTI. There is a greater need to educate pregnant women related to antenatal care. Antenatal meetings will help to educate them in a proper way and also helps to provide treatment. Regular antenatal care should be taken to minimize the complications of pregnancy, and to ensure a healthy maternal and foetal outcome.

If UTI is treated early, then it will not harm the baby. Prevention of UTI is through drinking minimum 8 glasses of water in a day, empty the bladder before and after the sex, wash genital area with warm water before sex, take showers instead of bath, avoid tight fitting clothing and pantyhose, so on.

CONCLUSION

Pregnancy women are more prone for the risk of urinary tract infection. There is a greater need to suspect UTI during pregnancy especially after 20 weeks of gestational period. Especially in developing countries like India, screening for ASB during pregnancy gives excellent path to prevent adverse outcomes for both mother and child.

REFERENCES

1. Van Pinxteren B, Knottnerus BJ, Geerlings SE et al. NHG-Standaard Urineweginfecties (derde herziening). Huisarts Wet 2013;56:270-80.
2. Nederlandse vereniging voor obstetrie en gynaecologie. NVOG guideline:urineweginfectie In de zwangerschap (version 2.0). 2011.
3. Sobel JD, Kaye D. Urinary tract infections. In: Mandell GL, Douglas JE, Dolin R editor(s). Principles and Practice of Infectious Disease. 7. Vol.1, Philadephia: Churchill Livingstone Elsevier 2010. pp.957-85
4. Dielubanza EJ, Schaeffer AJ. Urinary tract infections in women. The Medical clinics of North America (2011); 95(1): 27–41.
5. Bacak J, Callaghan M, Dietz M, Crouse C. Pregnancy–associated hospitalizations in the United States 1999–2000. Am J ObstetGynecol (2005);192(2): 592–597.
6. Davidson R. Michele, London L. Maricia. OLDS Maternal Newborn Nursing and Women's Health Across the lifespan. New Jersey; Pearson Prentice Hall, 2008.
7. Smaill F, Vazquez JC. Antibiotics for asymptomatic bacteriuria in pregnancy. Cochrane Database Syst Rev 2007:CD000490.
8. Romero R, Oyarzun E, Mazor M, et al. Metaanalysis of the relationship between asymptomatic bacteriuria and preterm delivery/low birth weight. Obstet Gynecol 1989;73:576-82.
9. Wong Donna L, Perry Shannon E. Maternal and child nursing care. 1st ed. United States of America: Mosby; 1998. pp.58-79.
10. Rahimkhani M, Khaveri-Daneshvar H, Sharifian. R. Asymptomatic bacteriuria and pyuria in pregnancy. Acta Medica Iranica (2006); 46(5): 409-412.
11. Mohammad NA. A study of frequency and some risk Factors of Urinary Tract Infection among Pregnant Women Attending El Sadat Family Health Unit in Suez Governorate. Unpublished thesis, zagazig Un. Fac. Medicine, M.Sc., 2013.
12. Dimetry SR, El-Tokhy HM, Abdo NM, Ebrahim MA & Eissa M. Urinary Tract Infection and Adverse Outcome of Pregnancy. J Egypt Public Health Assoc. 2007;82(3):203-218.
13. Tamalli M, Sangar B & Alghazal MA. Urinary tract infection during pregnancy at Al-khoms, Libya. International Journal of Medicine and Medical Sciences 2013; 3 (5): 455-459.
14. Wamalwa P, Omolo J & Makokha A. Prevalence and risk factors for urinary tract infections among pregnant women. Prime Journal of Social Science 2013;2(12): 524-531.
15. Almushait MA, Mohammed HA, Al- Harthy DA & Abdullahd AM. Prevalence and Predisposing Factors of Urinary Tract Infections among Pregnant Women in Abha General Hospital. International Journal of Sciences Basic and Applied Research 2013; 11(1): 18-29.
16. Nworie A & Eze UA. Prevalence and Aetiologic Agents of Urinary Tract Infection in Pregnancy in Abakaliki Metropolis. Continental J. Medical Research 2010;4:18 -23.
17. Mahendra A, Krishne gowda A. Prevalence of symptomatic and asymptomatic UTI in pregnancy. Journal of health research 2009 March;11(3):56-58.
18. Masinde A, Gumodoka B, Kilonzo A & Mshana SE. Prevalence of urinary tract infection among pregnant women at Bugando Medical Centre, Mwanza, Tanzania. Tanzan J Health Res 2009; 11(3): 154-9.
19. Hamdan Z, Abdel HM, Salah KA & Ishag A. Epidemiology of UTIS and antibiotics sensitivity among pregnant women at Khartoum North hospital . Annals of Clinical Microbiology and Antimicrobials 2011; 102.
20. Sharma JB, Aggarwal S, Singhal S, Kumar S & Roy KK. Prevalence of urinary incontinence and other urological problems during pregnancy a questionnaire based study.Arch Gynecol Obstet. 2009; 279(6): 845-851
21. Onuoha SC, Fatokun K. Prevalence and antimicrobial susceptibility pattern of Urinary Tract Infection (UTI) among pregnant women in Afikpo, Ebonyi State, Nigeria. American Journal of Life Sciences 2014; 2(2): 6-52.
22. Nora Refat Mohamed, Hanan Hassan Hassan Omar, Inas Mohamed Abd-Allah. Prevalence and Risk Factors of Urinary Tract Infection among Pregnant Women in Ismailia City, Egypt. IOSR-JNHS. 2017 May-June; 6(3): 62-72.
23. Haider G, Zehra N, Munir AA & Haider A. Risk factors of urinary tract infection in pregnancy. J Pak Med Assoc 2010; 60(3): 213-216.
24. Turay AA, Eke SO, Oleghe PO & Ozekhome MC. The prevalence of urinary tract infections among pregnant women attending antenatal clinic at Ujoelen primary health care center, Ekpoma, Edo State, Nigeria. International Journal of Basic, Applied and Innovative Research 2014;3(1): 86 - 94.
25. Amiri FN, Rooshan MH, Ahmady MH & Soliamani MH. Hygiene practices and sexual activity associated with urinary tract infection in pregnant women. Eastern Mediterranean Health Journal 2009; 5(1): 104-110.

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