

Urinary tract infection and its effect on outcome of pregnancy

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Abstract

Background: Urinary tract infection in pregnancy has been found to be a very common health problem, specially in country like India. The total incidence is 5-10% in pregnancy. This study aims to determine the incidence of UTI in pregnancy, most common micro-organism responsible for UTI, most sensitive antibiotics and maternal and fetal outcome.

Methods: We randomly select 600 pregnant women, 200 in each trimester, attending outpatient department of Sultania Zanana Hospital, Bhopal, India from the period of October 2013 to September 2014. All pregnant women between 18-35 yrs of age without any medical disorders or previous adverse pregnancy outcomes were in inclusion criteria. Urine culture sensitivity was done as a screening test for UTI. They were followed up till delivery in relation to any pregnancy complication and perinatal outcome.

Results: It was found that incidence of UTI was highest in second trimester(15%) and total incidence was 9.8%. The most common maternal morbidity was preterm labour (6.6%) and fetal morbidity was LBW (3.6%).

Pregnant women with UTI are susceptible for adverse maternal and fetal outcomes like recurrent infection, chorioamnionitis, PROM, preterm labour, cystitis, pyelonephritis, prematurity, IUGR, LBW, GBS which could be prevented by antimicrobial treatment.

Conclusions: From this study, we concluded that every pregnant women should be screened for UTI and urine culture sensitivity should be a part of routine antenatal care. Public educational programmes on the importance of personal hygiene and good environmental sanitation habits should be carried out frequently.

Keywords: UTI, Preterm labour, LBW.

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Introduction

Urinary tract infection is one of the most common bacterial infections.⁽¹⁾ It is the second most common bacterial infection seen during pregnancy⁽²⁾ which could be symptomatic or asymptomatic.

The symptomatic urinary tract infection further categorized as uncomplicated or complicated. Uncomplicated urinary tract infection is a symptomatic urinary tract infection with symptoms of frequency, urgency, dysuria, or supra pubic pain in a woman with a normal genitourinary tract.

Complicated urinary tract infection is associated with functional or structural abnormalities of the genitourinary tract which involve either the bladder or kidneys.

The asymptomatic urinary tract infection is a persistent, actively multiplying bacteria within the urinary tract without any symptoms of infection.⁽³⁾ The prevalence in pregnancy varies from 2 to 7% and it depends on parity, race, and socioeconomic status. If asymptomatic bacteriuria is not treated, approximately 25% of women will subsequently develop acute symptoms of an infection during pregnancy.

Asymptomatic bacteriuria (ASB) is an entity with possibly serious consequences in the form of fetal and maternal morbidity. It can cause maternal anemia, acute pyelonephritis recurrent infection, preterm labour,⁽⁴⁾ septicemia and even death of the mother. It can cause

intra uterine growth restriction, prematurity and low birth weight of the fetus and fetal mortality.

Screening of asymptomatic subjects for bacteriuria is appropriate as bacteriuria has adverse outcomes that can be prevented by antimicrobial therapy. Apart from that, even the progression of the asymptomatic bacteriuria to the symptomatic UTI in the later life can be prevented, which emphasizes the fact that, "prevention is better than cure" as is believed from the time immemorial, which mandates early detection and treatment of asymptomatic bacteriuria, in pregnant women.

Materials and Methods

The present study UTI and its effect on outcome of pregnancy is a prospective based study conducted from October 2013- September 2014 in department of Obstetrics and Gynaecology, Sultania Zanana Hospital, Bhopal, India. 600 randomly selected pregnant women 200 of each trimester attending Outpatient department of Sultania Zanana Hospital were explained about the study who fulfil the inclusion criteria attending OPD on Monday and Saturday were selected for the study and their consent for participation in the study was obtained. Inclusion criteria were all antenatal women of age between 18-35 yrs with no medical disorders and no previous adverse pregnancy outcome (abortion, perinatal deaths, prematurity or LBW). Then they were

allocated to the study. They were instructed about giving mid stream urine sample by clean catch method for urine routine microscopy and urine culture sensitivity.

The pregnant women was allocated as UTI positive when the clean caught mid stream urine culture had single uropathogen, with a colony count of more than or equal to 10 CFU. After screening and quantitative bacterial count done, for evidence of UTI, women with bacteriuria were treated with 14 days course of antimicrobial drugs as per the sensitivity of organisms. Repeat cultures were obtained 2 weeks after completion of therapy.

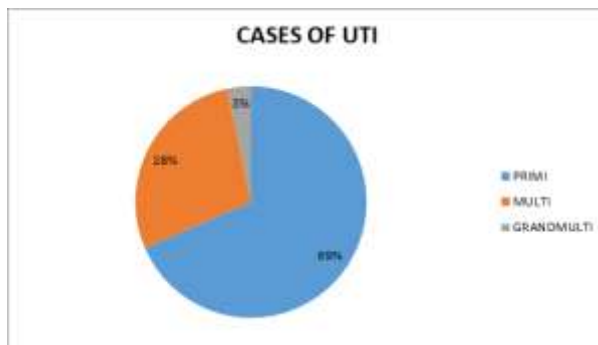
If cultures were sterile, periodic repeat cultures were done at 4 weeks interval. For patients who do not respond to initial therapy, or relapse, a second antibiotic course given on the basis of sensitivity. Cultures were repeated in the same way after 2 weeks, till the culture becomes sterile. Once sterile they were followed up carefully with the urine cultures every 4 weeks to detect any relapses till delivery.

All the patients were followed up till delivery for any evidence of complications like IUGR, anaemia, preterm labour. Mode of delivery, period of gestation at the time of delivery were assessed about the mother. Newborns were assessed for maturity, birth weight and APGAR scores.

Results

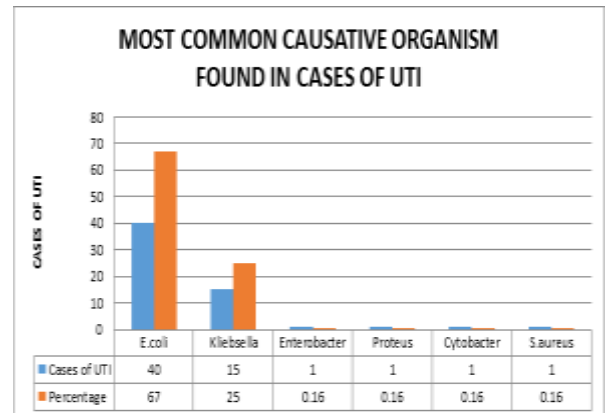
The study included 600 antenatal women attending OPD in Sultania Zanana Hospital, Bhopal, India from the period of October 2013 to September 2014. It was observed that the incidence of UTI was highest in second trimester(15%). The overall incidence of UTI found was 9.8%. Most cases of UTI was found to be in age group 21-30 yrs.(7.3%). 0.8% in less than 20 yrs. 1.6% in 30-35 yrs.

UTI was found to be in 67% primigravida as compared to 28% in multigravida and 2 cases (3.3%) in grand multi.

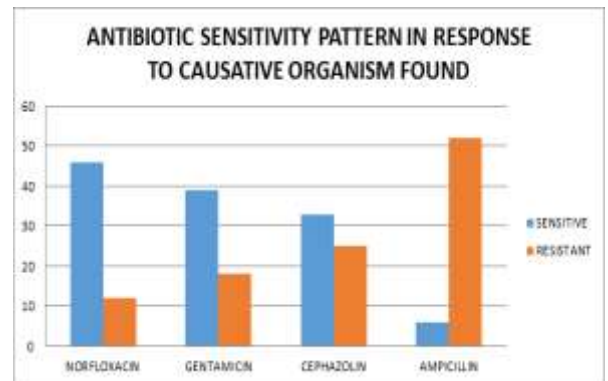


Out of 200 cases taken in each trimester, total of 78 urine routine microscopy was found positive, urine culture sensitivity of 59 cases was found positive which signifies 75% sensitivity of the test.

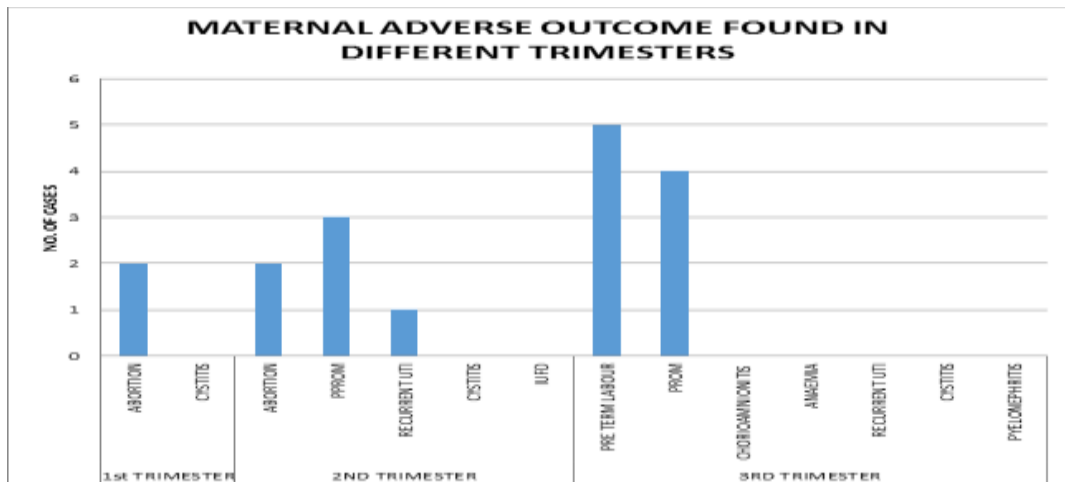
The most common organism isolated was found to be E.coli (67%) and kleibsella (25%), Enterobacter, Proteus, Cytobacter and Staph aureus was also isolated (0.16%).



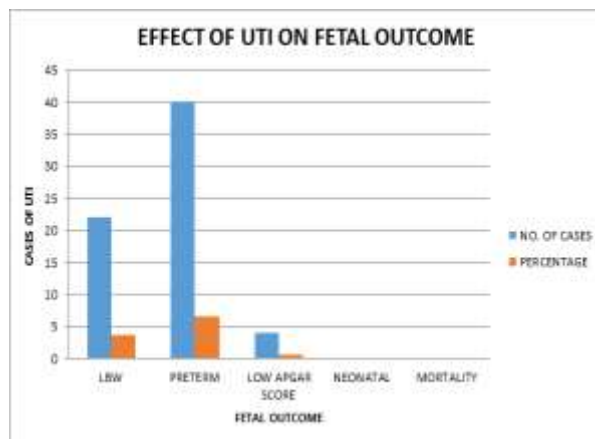
Most common susceptible antibiotic was found to be with nitrofurantoin(83%) and with norfloxacin(77%). Most resistant antibiotic was found to be ampicillin(10%).



Maternal adverse outcome found in different trimesters
 2 cases of first trimester abortion (3.3%). In second trimester 2 cases of abortion (1%), 3 cases of PPRM(1.5%) and 1 case of recurrent UTI (0.5%) was found. In third trimester 5 cases of preterm labour (8%), 4 cases of PROM (2%) were reported.



Preterm labour pains was found in 6.6% cases in UTI +ve patients, LBW was found in 3.6% of cases and low APGAR was found in 0.6% of cases.



Discussion

Incidence: In the present study the incidence of UTI is 9.8%. Delzell J et al⁽⁵⁾ in 1999 stated that high incidence of UTI may be due to hormonal effects produced during pregnancy which reduces the tone of uteri musculature aided by mechanical pressure from the gravid uterus resulting to urinary stasis thus encouraging bacterial proliferation in urine. This high incidence highlights the size of the problem which necessitates a rapid interference in pregnancy.

Age: The highest age specific prevalence in the current study was found in age group of 20-30 years and lowest in more than 30 years. This is probably because most of the patients had their pregnancy and marriages during this period. Bandyopadhyay et al⁽⁶⁾ in 2005 also observed highest prevalence in this age group the reason could be due to the fact that many are sexually active in this stage group.

Most of the patients with UTI in the present study belonged to the middle socio-economic group 66% as is true with most of the other studies and most cases of UTI found with unsound personal hygiene, 7.5%.

In the present study UTI is found more common in primigravida. Little et al⁽⁷⁾ have found it to be more common in primigravida.

The dominant isolates in this study was E.coli which was 67%. Others were klebsiella, Enterobacter, Proteus which were found in less numbers. This is similar to the findings of previous studies by Kass et al who proposed that increase in urinary progesterin and estrogens may lead to decreased ability of the lower urinary tract to resist invading bacteria beside decreased urethral tone that possibly allow some strains of bacteria to selectively grow.

Gupta et al stated that nitrofurantoin is relatively safe in pregnancy and is effective in most UTI, except that it can cause haemolysis in a glucose6phosphate deficiency baby, if used near term. Nitrofurantoin was found clinically very effective in UTI.

Maternal Outcome: In present study 2 cases of abortions in first and second trimester was observed. Whalley et al in 1996⁽⁸⁾ found abortion as a complication of UTI in pregnancy stated that UTI causes preterm pains as a result of cytokines liberated by micro-organisms which may cause abortions. Preterm labour pains and PROM in the current study was 8% and 1.5%.

Fetal Outcome: LBW was seen in 3% of the present study. Romero et al said that there was strong association between untreated urinary tract infection and LBW. This study proved that UTI was one of the main factors contributed to occurrence of preterm labour and LBW.

Conclusion

UTI in pregnancy leads to adverse maternal and fetal effects due to anatomical changes occurring in pregnancy, short urethra in females, easy contamination of urinary tract with faecal flora, immunodeficiency of pregnancy and various other reasons.

The highest incidence of UTI is found maximum in the second trimester, may be due to the physiological changes occurring mostly in the second trimester.

UTI affects premature labour directly through development of amnionitis. Bacterial enzymes such as collagenase may weaken the fetal membrane. The commonest maternal morbidity was preterm labour and fetal morbidity was LBW.

Pregnant women with UTI are at an increased risk for adverse maternal and fetal outcomes which could be prevented by antimicrobial treatment. Hence pregnant women should be screened for bacteriuria and treated if results are positive. Public educational programmes on the importance of personal hygiene and good environmental sanitation habits mostly during pregnancy should be carried out as a part of routine antenatal care.

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