

First Trimester - A Prevalence of UTI Through Urine Culture Study; A Prospective Study

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Abstract: *Urinary tract infections (UTIs) are common among pregnant women, particularly during the first and third trimesters, with Escherichia coli being the most frequently identified pathogen. This study, conducted at HI - TECH Medical College & Hospital, Bhubaneswar, from January to December 2024, examined 212 pregnant women attending antenatal checkups. Urine routine and culture tests were performed to diagnose UTIs, and data were analyzed using SPSS version 27. The study found a UTI incidence of 19%, with asymptomatic cases accounting for 64%. The presence of pus cells (6 - 10 cells/hpf) was observed in 52% of cases. Asymptomatic bacteriuria, if left untreated, can lead to symptomatic infections, pyelonephritis, and adverse pregnancy outcomes such as preterm birth and low birth weight. Poor hygiene and fecal contamination were identified as major risk factors. The study highlights the need for routine screening, early diagnosis, and appropriate antibiotic treatment to prevent complications. Awareness regarding hygiene and hydration is essential to reduce the prevalence of UTIs during pregnancy.*

Keywords: urinary tract infection, pregnancy, prevalence, hygiene, hydration

1. Background

UTIS are the most common infections encountered during pregnancy most commonly seen in first and third trimester. The organism found are Escherichia Coli (90 - 95%) others are klebsiella pneumoniae, enterococci, proteus mirabilis and pseudomonas aeruginosa, citobactor, staphylococcus epidermis.

This can be grouped into asymptomatic bacteriuria, cystitis & pyelonephritis. Asymptomatic bacteria occurs in about 5% (5 - 7%) pregnancies. It must be treated as about 25% of these may subsequently develop active symptomatic infection during pregnancy.

Diagnosis of asymptomatic bacteriuria - It is made when a routine mid stream urine culture of a clean voided mid stream specimen contains more than 1 lakh (10^5) colony forming units (CFU) or organisms per ML. In a catheter sample even 100CFU/ML is also significant. Screening by urine culture & microscopy on the first visit is recommended (ACOG).

All pregnant women should have a urine culture at their first prenatal appointment to detect asymptomatic bacteriuria. In a recent report treatment of asymptomatic infection was also associated with reduction in incidence of low birth weight infants.

Asymptomatic bacteriuria and acute cystitis characteristically respond well to short course of oral antibiotics, long course of therapy is more appropriate for the patients with recurrent infections. Incidence of pyelonephritis is 1 - 2% most case develop as a consequences of undiagnosed or inadequately treated lower urinary tract infection. The high concentration of progesterone secreted by the placenta has an inhibitory effect on ureteral peristalsis and secondly enlarging gravid uterus often compresses the ureter particularly the right at the pelvic brim creating additional stasis. Which in turn facilitates migration of bacteria from the bladder into the ureter and renal parenchyma.

The global prevalence of UTI in pregnant women is 23 - 9% in India, the prevalence is 60 - 7% WHO and local guidelines recommended the use of nitrofurantoin and cotrimazole as first line therapies. As antimicrobial susceptibility patterns change rapidly, new resistant strains are emerging and updates to the guidelines are needed periodically.

2. Methods

Study Design

This is a prospective study conducted in outpatient department of O&G at HI - TECH MEDICAL COLLEGE & HOSPITAL, Bhubaneswar from JAN 2024 - DEC 2024. A total of 212 pregnant women attending OPD for ANC checkup without any medical disorder were taken into study. Urine routine and culture was done in all patients visiting for ANC.

Clinical data were collected from Electronic medical records and identified for further review. Relevant information including demographic data, baseline comorbidities, obstetric characteristics, urine culture results was collected. UTIs were diagnosed using midstream urine culture.

Sample Size Calculation

For prevalence A total of 212 pregnant women were taken into study.

Statistical Analysis

Data was analysed by statistical package for social sciences (SPSS) VERSION 27.0. Descriptive statistics were determined to present the findings.

3. Result

Out of 212 pregnant women tested for UTI, Incidence was 19%. Asymptomatic UTI seen in 64%. 52% cases showed pus cells around 6 - 10 cells/hpf. Commonest organism was E. Coli.

4. Discussion

This is the study conducted to determine the prevalence of UTI in pregnant women in first trimester. In this study the overall prevalence of UTIs in pregnant women was high. The predominant bacterial pathogen identified in women with UTIs was E. COLI. Followed by kleibselia pneumoniae. Asymptomatic bacteriuria seen in maximum number of patients. Most contributing factors are fecal contamination and poor personal hygiene.

The presence of UTIs has been associated with adverse pregnancy outcomes, including increased rate of preterm delivery and low birth weight. Untreated UTIs can also lead to chorioamnitis, preterm labor and PPRM.

5. Conclusion

In this study prevalence rate of UTI is very high. The physiological changes of pregnancy predispose the women to UTI. Awareness has to be created for proper hygiene and adequate hydration.

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