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Original Research Article

A HOSPITAL BASED PROSPECTIVE STUDY TO ASSESS MATERNAL AND FETAL OUTCOMES THAT OCCUR SECONDARY TO SYMPTOMATIC URINARY TRACT INFECTION IN PREGNANCY

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ABSTRACT

Background: Urinary tract infection is one of the most common bacterial infections. The prevalence of UTI in pregnancy depends on parity, race, and socioeconomic status, individual hygiene and anaemia. Thus, screening for UTI should be a part of routine antenatal care, so that early detection and treatment of asymptomatic bacteriuria prevents maternal and fetal complications.

Materials & Methods: A hospital based prospective study done on 100 pregnant women attending the department of obstetrics and gynaecology during one-year period. A detailed history, thorough clinical examination and routine investigations were carried out in all cases. The biochemical investigation included haemoglobin estimation and serum urea and creatinine. They were instructed about giving mid-stream urine sample by clean catch method for urine routine microscopy and urine culture sensitivity.

Results: The prevalence of Symptomatic UTI was 20% of cases in our study. More common in 18-25 years age group of 11 patients (18.33|%). 10% of patients had abortions, 30% of patients had anaemia, 20% of patients developed puerperal pyrexia. 15% patients developed abortions and PIH, 10% patients developed chorioamnionitis and 5% patients developed PPROM, recurrent UTI and preterm labour each. Preterm births were noted in 35% patients, 15% babies showed fetal growth restriction and perinatal mortality was noted in 10% cases.

Conclusion: Hence pregnant women should be screened for bacteriuria and treated if results are positive. Public educational programs 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.

Keywords: Symptomatic UTI, Pregnant Women, Asymptomatic, Bacteriuria.

INTRODUCTION

Urinary tract infections can be symptomatic or asymptomatic, out of which asymptomatic urinary tract infection accounts to 50% of all urinary tract infections.[1] The apparent reduction in immunity of pregnant women appears to encourage the growth of both commensal and non-commensal microorganisms.

UTI are mainly caused by the presence and growth of microorganisms in the urinary tract, especially the lower urinary tract and the urinary bladder.[2,3] There is an increased risk for UTI, beginning from 6th week and the peak levels were observed from 22nd to 24th weeks.[2] It is the second most common bacterial infection seen during pregnancy which could be symptomatic or asymptomatic.[4]

The physiological increase in plasma volume during pregnancy decrease urine concentration and up to 70% pregnant women develop glycosuria, which encourages bacterial growth in urine.[5]

Maternal and foetal complications attributed to it are symptomatic urinary tract infection (UTI), pyelonephritis, pre-eclamptic toxaemia (PET),

anaemia, low birth weight (LBW), intrauterine growth restriction (IUGR), preterm labour (PTL), preterm premature rupture of membrane (PPROM) and post-partum endometritis.[6]

The prevalence of UTI in pregnancy depends on parity, race, and socioeconomic status, individual hygiene and anaemia. Prevalence of UTI in pregnant women in America is 2.5-8.7%, whereas the prevalence of UTI in pregnant women in developing countries is around 12-40%. This is due to difference in the socio-economic levels and standards of living.[7,8] If asymptomatic bacteriuria is not treated, approximately 25% of women will subsequently develop acute symptoms of an infection during pregnancy.[9]

UTIs are more frequently caused by gram-negative organisms than gram-positive organisms. Gram-negative organisms include *E. coli* (60-70%), *Klebsiella* (10%), *Proteus* (5-10%) and *Pseudomonas* (2-5%), and gram-positive organisms include *Streptococcus* species, *Staphylococcus* species and *Enterococcus* species.[10,11] Thus, screening for UTI should be a part of routine antenatal care, so that early detection and treatment of asymptomatic bacteriuria prevents the maternal and fetal complications.

MATERIALS AND METHODS

A hospital based prospective study done on 100 pregnant women attending the department of obstetrics and gynaecology in Government District hospital, Sawaimadhopur, Rajasthan, India during one year period.

Inclusion Criteria

All antenatal women between the ages of 18-35 years with no medical disorders (Haemorrhagic disorders, hypertension, diabetes and renal disorders) and no previous adverse pregnancy outcomes (abortion, perinatal deaths, prematurity or low birth weight).

Exclusion Criteria

All immunocompromised patients were excluded from the study.

Methods

A detailed history, thorough clinical examination and routine investigations were carried out in all cases. The biochemical investigation included haemoglobin estimation and serum urea and creatinine. They were instructed about giving mid-stream urine sample by clean catch method for urine routine microscopy and urine culture sensitivity.

Routine examination of urine was done during the first antenatal checkup. The women who had a positive screening test of urine was defined as >5 pus cells/HPF on routine examination of urine. They were subjected to urine culture and sensitivity. All the above information was noted down in prescribed formats. If the women with a positive urine examination complained of urinary symptoms like frequency of micturition, burning sensation during micturition, loin pain, fever, lower abdominal pain they were classified as having symptomatic UTI. Women who didn't have such symptoms were classified as having asymptomatic UTI.

Depending upon findings, patients were divided into two groups: those with UTI (both asymptomatic and symptomatic UTI) and those without UTI. All the patients of both groups were followed up throughout the pregnancy and puerperium. Maternal and perinatal outcomes were noted.

RESULTS

Out of 100 pregnant women tested for UTI, the incidence of urinary tract infection in pregnancy was found to be 20%, that is 20 patients had symptomatic UTI.

Our study shows that UTI in pregnancy was more common in 18-25 years age group in 11 patients (18.33|%), followed by in 26-30 years age patients (30%).

UTI in pregnancy is more common in multi gravida (11, 25%) followed by primigravida patients (9, 16%).

Table 1shows that 12 pregnant cases (60%) of UTI were observed highest in second trimester of pregnancy, followed by third trimester in 6 patients (30%).

Our study showed that the maternal outcome of UTI in pregnancy. 10% of patients had abortions, 30% of patients had anaemia, 20% of patients developed puerperal pyrexia. 15% patients developed abortions and PIH, 10% patients developed chorioamnionitis and 5% patients developed PPROM, recurrent UTI and preterm labour each (table 2).

Preterm births were noted in 35% patients, 15% babies showed fetal growth restriction and perinatal mortality was noted in 10% cases (table 1).

Table 1: Demographic and obstetric variables in study group

VARIABLES	N=100	No. of positive (N=20)	Percentage (%)
AGE (YEARS)			
18-25 yrs	60	11	60%
26-30 yrs	30	6	30%
>30 yrs	10	3	10%
GRAVIDA			
Primi	56	9	56%
Multi	44	11	44%
TRIMESTER			
First trimester	100	2	10%
Second trimester	100	12	60%
Third trimester	100	6	30%

Table 2: Distribution of cases according to maternal outcome, (n=20).

Maternal outcome	N	Percentage (%)
Abortions	2	10%
Anaemia	6	30%
Hypertension	3	15%
Puerperal pyrexia	4	20%
Chorioamnionitis	2	10%
PPROM	1	5%
Recurrent UTI	1	5%
Preterm labour	1	5%

Table 3: Effect of UTI on fetal outcome

Fetal outcome	Percentage of UTI present cases (%)
Preterm birth	7 (35%)
Fetal growth restriction	3 (15%)
Perinatal mortality	2 (10%)

DISCUSSION

Urinary tract infection (UTI) during pregnancy is very common in developing countries like India. UTI is caused by the growth of micro-organisms in the urinary tract. The prevalence of Symptomatic UTI was 20% of cases in our study. Delzell et al in 1999 stated that high incidence of UTI may be due to hormonal effects produced during pregnancy which reduces the tone of uterine musculature aided by mechanical pressure from the gravid uterus resulting in urinary stasis thus encouraging bacterial proliferation in urine. This high incidence highlights the size of the problem which necessitates a rapid interference in pregnancy.[12]

The highest age specific prevalence in the current study was found in age group of 18-25 years and lowest in more than 30 years. This is probably because most of the patients had their pregnancy and marriages during this period. This is similar to Esha et al[9] study and Mahor et al[7] study. Another study done by Bandyopadhay et al[13] 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.

In the present study UTI is found more common in primigravida, this is similar to Amit et al[2] study which showed 60% of primigravida having UTI in pregnancy and Mahor et al[7] study. Another study done by Little et al[14] have found it to be more common in primigravida.

In our study, highest cases (60%) of UTI were observed in second trimester of pregnancy, followed by in third trimester in 6 patients (30%), and the lowest incidence was found in the first trimester (10%), which is similar to Mahor et al study.[7] This difference may be as a result of either change in urinary stasis and vesicoureteral reflux or decrease in urinary progesterone and estrogens in the various trimester of pregnancy.[15] Most of the studies found that the incidence of UTI was highest in second trimester.[16]

In present study 2 cases of abortions in first and second trimester were observed. Whalley et al in 1996[17] 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 5% each.

In our study, preterm births were noted in 35% patients, 15% babies showed fetal growth restriction and perinatal mortality was noted in 10% cases. Similar results were observed in Esha et al[9] study and Mahor et al[7] study. This study showed that UTI was one of the main factors contributing to occurrence of preterm labour and FGR. Esha et al[9] 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

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 programs 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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