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PREVALENCE OF UTI AMONG PREGNANT WOMEN AND ITS COMPLICATIONS IN NEWBORNS AT OBSTETRICS AND GYNAECOLOGY DEPARTMENT OF SKMCH, MUZAFFARPUR, BIHAR

Gynaecology

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ABSTRACT

Urinary Tract Infections (UTI) are mainly caused by the presence and growth of microorganisms in the urinary tract, which are the single commonest bacterial infections of all age groups and especially in pregnancy. The main objective of this study is to determine the Prevalence of UTI among pregnant women and complications in their newborns. An observational study was carried out over a period of 6 months from March 2019 to August 2019. A total of 120 pregnant women were enrolled. UTI was diagnosed based on urinalysis reports. With the help of data collection form demographic data were collected. Out of 120 pregnant women, 35% of them had urinary tract infection. It is mostly observed high in age group of <25yrs, Primigravida, winter season and during Third trimester of pregnancy. The commonest causative organism was found to be E.coli (50%).The weight of newborn infants of mothers afflicted with UTI were significantly not lowered compared to newborns of healthy women. The prevalence rate of urinary tract infection (UTI) during pregnancy is high. So it is important to do routine screening of all pregnant women for significant bacteriuria to reduce the complications on both maternal and fetal health.

KEYWORDS

Urinary Tract Infection, Pregnant Women, Newborns, Pyelonephritis, E. Coli, Multigravida.

INTRODUCTION

Urinary tract infections (UTI) are mainly caused by the presence and growth of microorganisms in the urinary tract, which are the single commonest bacterial infections of all age groups and especially in pregnancy. It may involve the lower urinary tract or the bladder after anemia, UTIs are the second common complications in pregnant women, which if untreated can adversely affect the health of infant or the pregnant mother.

Following are the signs and symptoms associated with UTI:

- Pain or burning (discomfort) when urinating
- Frequent urination
- A feeling of urgency
- Blood or mucus in the urine
- Cramps or pain in the lower abdomen
- Pain during sexual intercourse
- Pain, pressure or tenderness in the area of the bladder.
- When bacteria spread to the kidneys patient may experience: back pain, chills, fever, nausea and vomiting.

Bacteria which is present in digestive tract, vagina or around the urethra (entrance to the urinary tract) can also cause UTI, mostly they enters the urethra and then travel to bladder and kidneys. Pregnant women are more susceptible than men, due to anatomy of short urethra, easy contamination of urinary tract with fecal flora and various other reasons. There is an increased risk for UTI, beginning from 6th week and the peak levels were observed from 22nd to 24th weeks. The increased risk of having UTI during pregnancy is mainly due to past history of UTIs and other risk factors includes- lower socio economic status, individual hygiene, sickle cell trait and anemia, increased parity or age, number of child births, number of inter-courses per week, and lack of prenatal care. The functional urinary tract abnormalities and diabetes mellitus can also increase susceptibility to UTIs during pregnancy.

The Pressure of gravid uterus on ureter causing stasis of urine flow which is attributed to humoral and immunological changes during normal pregnancy may increase the risk of UTI. The changes in urine chemical composition with elevated glucose and amino acids levels facilitate bacterial growth.

Urinary tract infections 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.

In pregnancy UTI is classified into two categories

1. Asymptomatic: The involvement of lower urinary tract leading to asymptomatic bacteriuria is the most common during pregnancy due to anatomical and physiological changes.
2. Symptomatic - The involvement of upper urinary tract can lead to symptomatic bacteriuria and is characterized by acute pyelonephritis which is the most common cause of predelivery hospitaliza-tion.

Based on performed researches, the prevalence of Symptomatic urinary tract infection in pregnant women was found to be 1-18%. The prevalence of asymptomatic bacteriuria in pregnancy in India is 6.2% and varies widely within and between countries. For example, 10% in Iran,12% in Bangladesh,7.3% in Ghana, 6% in Singapore, 4.3% in Malaysia and 14.6% in Nigeria. ASB is major risk factor for the development of urinary tract infections (UTIs) during pregnancy accounting for 70%. Pregnancy enhances the progression from ASB to symptomatic bacteriuria, which could lead to acute Pyelonephritis in 20-50% of cases and adverse obstetric outcomes like prematurity, anemia, UTIs, and higher fetal mortality rates, if left untreated. Diagnosis is mainly done by routine blood examination and centrifuged urine deposits which are microscopically examined for pus cells, red blood cells, epithelial cells, cysts, crystals and yeast like cells. Pus cells >5/HPF were considered significant for infection. However, urine culture remains the gold standard method for screening asymptomatic bacteriuria during pregnancy.

If UTI is left untreated it leads to some severe complications which include poor maternal and perinatal outcomes. Maternal complications like anemia, preeclampsia, renal failure, septicemia, and adult respiratory syndrome. Fetal complications like IUGR, acute respiratory distress and prematurity.

Impairment of mental and motor development is seen more in children born with mothers having pyelonephritis. There is a significant statistical correlation between UTI and mental retardation.

MATERIALAND METHODS

Study Site

This study was conducted at Department of Obstetrics and Gynaecology, Sri Krishna Medical College and Hospital,

Muzaffarpur, Bihar from March 2019 to August 2019. This hospital provides primary and specialized health care facilities to people in and around Muzaffarpur, Bihar.

Inclusion criteria
All the pregnant women with UTI or without UTI Newborns.

Sample Size
120 in-patients and out-patients of pregnant women with UTI are taken into the study.

Statistical analysis
Statistical analysis was performed with the Graph pad prism version 6.01. Differences between groups were determined with the Chi-square at level of significance ($p<0.05$).

RESULTS

Out of 120 pregnant women, prevalence rate of UTI was found to be 35%.Table 1 showed the total prevalence rate of UTI.

Table 1 : Prevalence rate of UTI among pregnant women

Prevalence	Cases	Percentage
UTI	42	35
Non-UTI	78	65
Total	120	100

Prevalence of UTI in pregnant women in relation to age is shown in Table 2. Highest incidence of UTI was seen in pregnant women of age <25 yrs and lowest incidence was noticed in age >30 yrs of age group.

Table 2 : Prevalence of UTI in pregnant women in relation to age

Age in years	No. of Examined	No. of positive	Percentage
<5	62	25	60
25-30	50	13	31
>30	8	4	9
Total	120	42	100

Prevalence of UTI in pregnant women in relation to Gravidity is shown in Table 3. Highest incidence is seen in Primigravida and lowest incidence is seen in multi-gravida.

Table 3 : Prevalence of UTI in pregnant women in relation to gravidity

Gravidity	No. of Examined	No. of positive	Percentage
Primi Gravida	64	25	60
Second Gravida	37	9	21
Multi Gravida	19	8	19
Total	120	42	100

Chi-square value is 2.7395, p-value is 0.254171 result is not significant at $p<0.05$

Prevalence of UTI in pregnant women in relation to pus cells is shown in Table 4. Highest incidence is seen in pus cells >20/hpf, followed by 10-20/hpf.

Table 4 : Prevalence of UTI in pregnant women in relation to pus cells

Pus Cells	No. of Examined	No. of positive	Percentage
0-5	49	0	0
5-10	29	0	0
10-20	17	17	40
>20	25	25	60
Total	120	42	100

Chi-square value is 120, p value is <0.00001, result is significant at $p<0.05$

Prevalence of UTI in pregnant women in relation to seasons is seen in Table 5. Highest incidence is seen in inter followed by summer and monsoon.

Table 5 : Prevalence of UTI in pregnant women in relation to seasons

Pus Cells	No. of Examined	No. of positive	Percentage
Winter	43	24	57
Summer	32	7	17
Monsoon	45	11	11
Total	120	42	100

Frequency of pathogens causing UTI is shown in Table 6. The commonest causative organism was found to be E.coli.

Table 6 : Frequency of pathogens causing UTI

Pathogen	Positive Cases	Percentage
E.coli	15	50
Enterococcus Faecalis	10	33
Klebsiella	3	10
Pseudomonas Aeruginosa	2	7
Total	30	100

Frequency of fetal weight in UTI positive cases is shown in Table 7. It is seen that newborns of UTI mother are generally born with normal weight.

Table 7: Frequency of fetal weight in UTI positive

Fetal weight in Kg	No. of Examined	No. of positive	Percentage
<2.7	20	9	27
>=2.7	52	24	73
Total	72	33	100

Chi-square value is 0.0077, p-value is 0.929867, and result is not significant

DISCUSSSION

In this study a total of 120 cases were collected, of which 42 cases i.e. 35% are UTI positive and 78 cases i.e. 65% are UTI negative. Hence the prevalence of UTI among pregnant women in this study was found to be 35% which indicates that prevalence rate is very high.

According to literature increase of maternal age leads to increase in risk of UTI by 1-2% which is not supported by our study as the p- value is not significant ($p <0.05$). The highest incidence seen in <25 yrs (60%) and lowest incidence is seen in >30yrs (4%).

Multigravida has an increased risk factor of developing bacteriuria among pregnant women according to various studies. In our study highest incidence is seen in Primigravida (60%) and lowest incidence is in Multigravida (19%) The result of our study is not significant at ($p<0.05$) which means there is no association between gravidity and incidence of UTI in pregnancy in our study.

Women with higher number of pus cells in urine specimen had significantly higher asymptomatic bacteriuria. Present study showed higher number of pus cells >20/ hpf in 60% of cases and 10-20/hpf in 40% of cases. This result is significant (p-value <0.05).

According to the results of this study, highest incidence of UTI among pregnant women is in winter (57%) followed by summer (17%) and Monsoon (11%) and the result is significant (p-value<0.05), which can demonstrate the effects of temperature on the incidence of UTI. In addition in this study, the results from the analysis of climate conditions showed that unconventional climate such as cold and dry weather in autumn and warm and dry weather in spring is associated with obvious changes in the number of UTIs.

According to our study the highest incidence of UTI is seen in third trimester (48%) followed by second trimester (45%) and least is seen in first trimester (7%). The increased incidence during third trimester may relate to increased mechanical obstruction due to gravid uterus. The risk of UTI is partly due to the pressure of gravid uterus on the ureters causing stasis of urine flow and is also attributed to the humoral and immunological changes during normal pregnancy.

The gold standard for detecting bacteriuria in pregnancy is urine culture.3 [Table 7] showed the frequency of various isolated pathogens. 78 cases were negative and had no growth. 42 cases were positive for urinary pathogens of which 12 cases, culture reports are not specified. Among 30 cases the significant isolates are- *E.coli* (50%) of the cases, *Enterococcus* (33%) ranking second, probably due to contamination of urine sample. *Klebisella* (10%) ranking third, and *Pseudomonas Aeruginosa* (7%).

According to literature, underweight is the complication of maternal UTI in newborn. In our study out of 72 delivery reports 9 UTI positive cases gives birth to underweight newborns whereas 24 cases with positive UTI has normal birth weight. This may be due to small sample size. Generally >2.7 kg is considered to be normal weight of newborn.

CONCLUSION

The prevalence rate of urinary tract infection (UTI) during pregnancy is very high (35%). The physiological changes of pregnancy predispose women to UTI so does other factors such as age, sexual activity, multiparty, previous history of UTI and socio-economic conditions. All pregnant women should be screened for UTI with a urine culture, treated with antibiotics if the culture is positive and then retested for cure. The goal of early diagnosis and treatment of UTI during pregnancy is to prevent complications with all the added benefits to the mother and the Fetus.

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