# Urinary tract infections v/s other infections and their obstetrics complications in pregnant patients, admitted in tertiary care hospital in Jaipur Rajasthan


## Abstract

Background and Aims

Pregnancy causes numerous hormonal and mechanical changes in the body[1,2]. Beginning in the 6th week, with peak incidence during 22nd–24th weeks of gestation, 90% of the pregnant women develop ureteric dilatation thereby increasing the risk of urinary stasis and vesicoureteric reflux[3]. In addition, glycosuria and aminoaciduria during pregnancy provide an excellent culture medium for bacteria in areas of urinary stasis[2]. These changes along with already short urethra and difficulty with hygiene due to the distended pregnant belly increase the frequency of UTI in pregnant women.Other infections also occurs during pregnancy but their frequency is less than UTI(urinary tract infection) therefore we conducted a study to prove which type of infection is more common and their obstetrics complications during pregnancy.

Material and Methods

The present study was conducted at Mahatma Gandhi Medical College &Hospital in Jaipur Rajasthan over a period of one and half year (June 2022 to December 2023) after getting approval from institutional ethics committee. In this study 250 pregnant patients admitted in medicine wards, nephrology wards, obstetrics & gynecology wards, ICU with symptoms and signs of infections and age more than 18 years who gave written informed consent were included where as those who expired before the presence or absence of infection in them would have been established were excluded.

Results

In our present study the most common age group amongst study population was 20 to 24 years (41.7%) followed by 25 to 29 years (40%) and 30 to 35 years (18.3%), most of the study population had gestational age of 1 to 12 weeks (61.66%) followed by 13 to 28 weeks (31.66%) and more than 28 weeks (6.7%), most of the study population had parity two (46.7%) followed by parity one (43.3%), parity three (6.7%) and parity four (3.3%), the most common clinical features amongst study population was fever (62%) followed by Cough (34%), Headache (32.8%), Nausea (30.8%), Petechiae (26%), Diarrhea (26.8%) and Pain in abdomen (26.4%), the most common type of infections amongst study population was UTI (22.4%) followed by Acute gastroenteritis (21.6%), URTI (18%), Malaria (11.2%) and LRTI (8.4%) Dengue (8%), HBV (6%), Vaginal Candidiasis (5.6%) and HIV (4.8%), the most common obstetric complications amongst study population was Preterm delivery (15%) followed by PROM (9%), Abortion (5%), LBW (4%) and IUD (1%), normal vaginal delivery was the most common mode of delivery

followed by LSCS (28.2%) and Instrumental delivery (2.6%), most of the study population had birth weight of 2 to 3 kg (66.7%) followed by 3 to 4 kg (25%) and less than 2 kg (8.3%).

Discussion

Fever followed by Cough and Headache were the most common manifestations of pregnant women with infections. The most common type of infections amongst study population was UTI followed by acute gastroenteritis, URTI. Normal vaginal delivery was the most common mode of delivery followed by LSCSand Instrumental delivery. The most common obstetrics complications amongst study population was Preterm delivery followed by PROM and Abortion,LBW and IUD.Normal vaginal delivery was the most common mode of delivery followed by LSCS and Instrumental delivery, most of the study population had birth weight of 2 to 3 kg followed by 3 to 4 kg and less than 2 kg.

Conclusion

Pregnancy is a condition in which adaptive immunity of mother decreases with progression of pregnancy and with increasing maternal age and associated comorbidities this immune status decline progressively so mother becomes more vulnerable for infections and diseases. So all pregnant women must be evaluated at primary care centers properly in their antenatal visits for their parity status, any associated risk factors and diseases , by doing this we can reduce many infections, complications and maternal mortality in early stage of pregnancy.

Keywords:- UTI, URTI, LRTI, LSCS, PROM, LBW, IUD

## Introduction

Increased age, number of childbirths, number of intercourses per week, diabetes, recessive sickle cell anemia, previous history of UTI, immunodeficiency and urinary tract abnormalities can increase the risk of UTI in pregnant women.[4,5] Bacterial organisms, which cause this disease, include *Escherichiacoli*, *Klebsiellapneumonia*, *Proteus*, *Acinetobacter*, *Saprophyticus*,*Staphylococcus*, *Streptococcus* Group B and *Pseudomonas aeruginosa*.[4,5,6,7] The incidence of UTI increases by pregnancy. Based on pervious researches, the probability of UTI initiated by the sixth week. This probability peaks at 22 - 24 weeks of gestational age. The reasons for increased probability of infection in pregnant women are probably increased bladder volume and its expansion and expanded ureter.[4,8] Anatomical and physiological changes occurring during pregnancy alter the course of bacteriuria and make pregnant women more susceptible to UTI complications such as pyelonephritis.[9]

## Material and Methods

The present study was conducted at Mahatma Gandhi Medical College & Hospital in Jaipur Rajasthan over a period of one and half year (June 2022 to December 2023) after getting approval from institutional ethics committee. In this study 250 pregnant patients admitted in

medicine wards, nephrology wards, obstetrics & gynecology wards, ICU with symptoms and signs of infections and age more than 18 years who gave written informed consent were included where as those who expired before the presence or absence of infection in them would have been established were excluded.

**Results**

**This prospective observational study was conducted on 250 pregnant women with signs and symptoms of infections were enrolled in the study after matching inclusion and exclusion criteria.**

Table no 1:- Age distribution amongst study population

| Age group | Frequency of infection | Percent |
|---|---|---|
| 20 to 24 years | 104 | 41.7 |
| 25 to 29 years | 100 | 40 |
| 30 to 35 years | 46 | 18.3 |
| Total | 250 | 100 |

As seen in the above table, the most common age group amongst study population was 20 to 24 years (41.7%) followed by 25 to 29 years (40%) and 30 to 35 years (18.3%).

Table no 2:-Gestational age amongst study population

| Gestational Age | Frequency of infection | Percent |
|---|---|---|
| 1 to 12 weeks | 154 | 61.66 |
| 13 to 28 weeks | 79 | 31.66 |
| More than 28 weeks | 17 | 6.7 |
| Total | 250 | 100 |

As seen in the above table, most of the study population had gestational age of 1 to 12 weeks (61.66%) followed by 13 to 28 weeks (31.66%) and more than 28 weeks (6.7%)

Table no 3:- Parity status amongst study population

| Parity | Frequency of infection | Percent |
|---|---|---|
| One | 108 | 43.3 |
| Two | 117 | 46.7 |
| Three | 17 | 6.7 |
| Four | 8 | 3.3 |
| Total | 250 | 100 |

As seen in the above table, most of the study population had parity two (46.7%) followed by parity one (43.3%), parity three (6.7%) and parity four (3.3%).

Table no 4:- Clinical features amongst study population

| Clinical features | Frequency | Percent |
|---|---|---|
| Fever | 155 | 62 |
| Diarrhea | 67 | 26.8 |
| Vomiting | 45 | 18 |
| Nausea | 77 | 30.8 |
| Cough | 85 | 34 |
| Pain in abdomen | 66 | 26.4 |
| Burning Micturition | 54 | 21.6 |
| Increased frequency of Urination | 54 | 21.6 |
| Arthralgia | 41 | 16.4 |
| Petechiae | 65 | 26 |
| White Discharge | 19 | 7.6 |
| Headache | 82 | 32.8 |
| Itching/pruritis | 55 | 22 |
| Difficulty in breathing | 49 | 19.6 |
| Abdominal distension | 39 | 15.6 |
| Hematemesis | 4 | 1.6 |
| Malaena | 15 | 6 |
| Altered sensorium | 7 | 2.8 |
| Hemoptysis | 18 | 7.2 |

| | | |
|---|---|---|
| vesicular eruption | 7 | 2.8 |

As seen in the above table, the most common clinical features amongst study population was fever (62%) followed by Cough (34%), Headache (32.8%), Nausea (30.8%), Petechiae (26%), Diarrhea (26.8%) and Pain in abdomen (26.4%)

Table no 5:- Type of infections amongst study population

| Infections | Frequency | Percent |
|---|---|---|
| Dengue | 20 | 8 |
| Malaria | 28 | 11.2 |
| Leptospirosis | 15 | 6 |
| Acute gastroenteritis | 54 | 21.6 |
| Enteric fever | 13 | 5.2 |
| UTI | 56 | 22.4 |
| URTI | 45 | 18 |
| LRTI | 21 | 8.4 |
| HAV | 4 | 1.6 |
| HBV | 15 | 6 |
| HCV | 3 | 1.2 |
| HEV | 7 | 2.8 |
| HIV | 12 | 4.8 |
| varicella zoster | 7 | 2.8 |
| TORCH group | 3 | 1.2 |
| Vaginal Candidiasis | 14 | 5.6 |

As seen in the above table, the most common type of infections amongst study population was UTI (22.4%) followed by Acute gastroenteritis (21.6%), URTI (18%), Malaria (11.2%) and LRTI (8.4%) Dengue (8%), HBV (6%), Vaginal Candidiasis (5.6%) and HIV (4.8%)

Table no 6:- Obstetrics Complication amongst study population

| Obstetrics Complication | Frequency | Percent |
|---|---|---|
| Abortion | 13 | 5 |
| PROM | 23 | 9 |

| | | |
|---|---|---|
| LBW | 10 | 4 |
| IUD | 3 | 1 |
| Preterm | 38 | 15 |
| No complications | 165 | 66 |
| Total | 250 | 100 |

As seen in the above table, the most common obstetrics complications amongst study population was Preterm delivery (15%) followed by PROM (9%), Abortion (5%), LBW (4%) and IUD (1%).

Figure 1

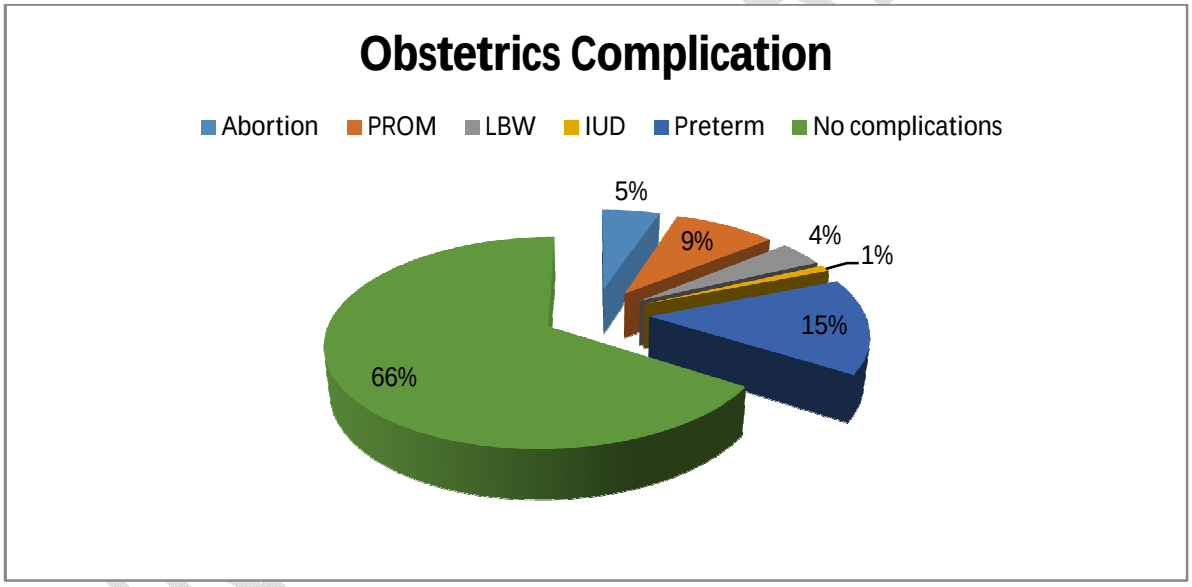



Table no 7:-Mode of deliveryamongst study population

| **Mode of delivery** | Frequency | Percent |
|---|---|---|
| Instrumental | 7 | 2.6 |

| | | |
|---|---|---|
| LSCS | 71 | 28.2 |
| NVD | 173 | 69.2 |
| Total | 250 | 100 |

As seen in the above table, normal vaginal delivery was the most common mode of delivery followed by LSCS (28.2%) and Instrumental delivery (2.6%).

Figure 2

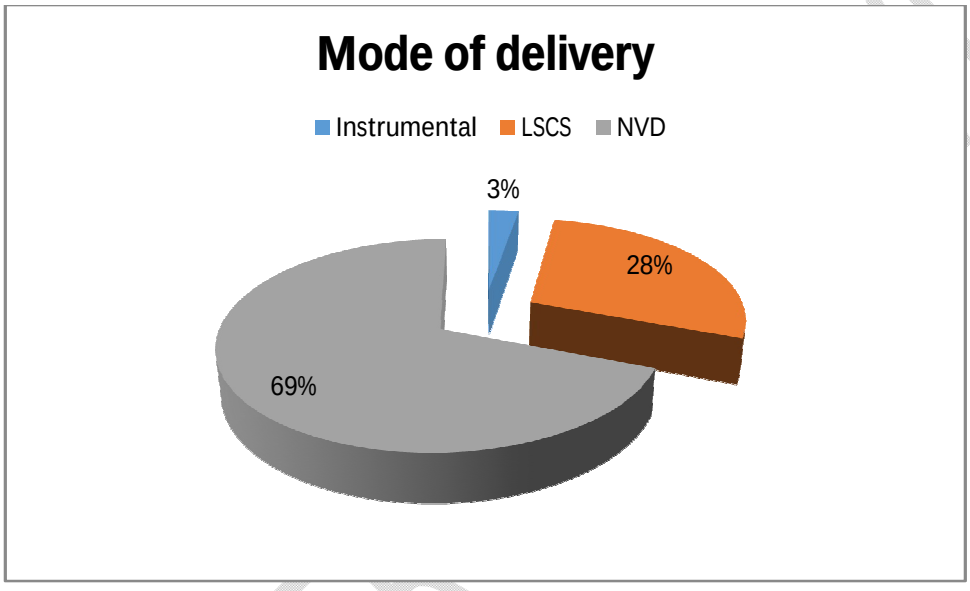
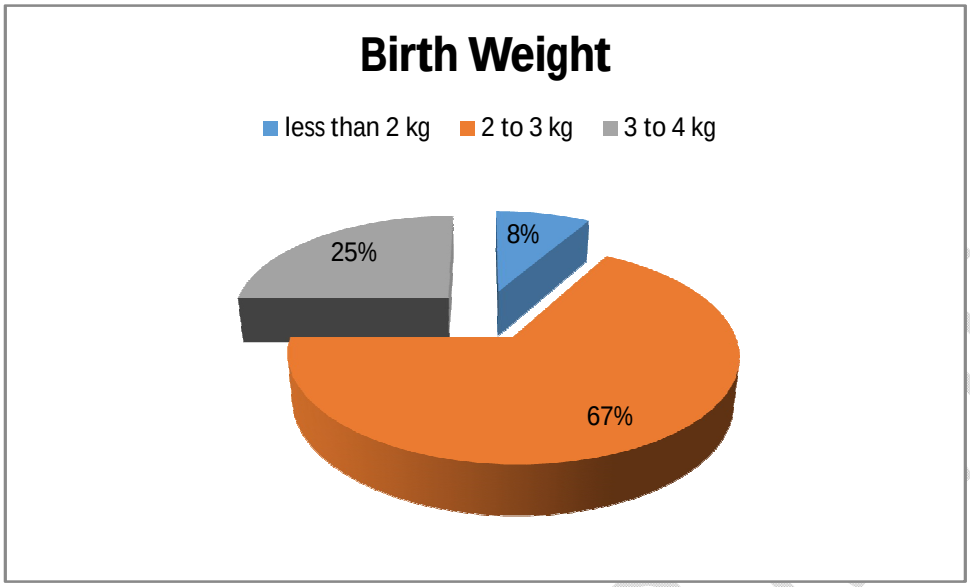



Table no 8:- Birth Weight amongst study population

| Birth Weight | Frequency of infection | Percent |
|---|---|---|
| less than 2 kg | 21 | 8.3 |
| 2 to 3 kg | 167 | 66.7 |
| 3 to 4 kg | 63 | 25 |
| Total | 250 | 100 |

As seen in the above table, most of the study population had birth weight of 2 to 3 kg (66.7%) followed by 3 to 4 kg (25%) and less than 2 kg (8.3%).

Figure 3




## Discussion

In the present study, the most common clinical features amongst study population was fever (62%) followed by cough (34%), headache (32.8%), nausea (30.8%), petechiae (26%), diarrhea (26.8%) and pain in abdomen (26.4%). This study is in accordance with the observations made byParvaiz A. Koul in which fever and cough were the most common clinical features. In our study majority of patients had UTI, Acute gastroenteritis, respiratory tract infections, malaria, dengue in which the common manifestations is fever, cough, headache, the most common type of infections amongst study population was UTI (22.4%) followed by Acute gastroenteritis (21.6%), URTI (18%), Malaria (11.2%) and LRTI (8.4%), Dengue (8%). HBV (6%), vaginal candidiasis (5.6%) and HIV (4.8%). The incidence of UTI was 12.3% in a study done by Soleymanizadeh et al. on 1500 pregnant women in the city of Bam. In another study conducted by Mobbasheri et al. on 900 pregnant women in the city of Gorgan, the incidence of UTI was 3.7% among them. This study is in accordance with the observations made byS Sangeetha et al. This study is in accordance with the observations made by Punjabi *et al.*, where majority of pregnant women had vaginal candidiasis (67%).It differs from observations made by Jeyasingh *et al.*, where majority of pregnant women had Trichomoniasis of 47.2%. Pregnant women have a risk of severe malaria that is three times as high as that among nonpregnant women; a median maternal mortality of 39% has been reported in studies in the Asia–Pacific region.In the present study, the most common obstetrics complications amongst study population was Preterm delivery (15%) followed by PROM (9%), Abortion (5%), LBW (4%) and IUD

(1%). Bacteriuria triggers preterm labour and delivery. Bacterial endotoxins released is believed to provoke labour directly or through a prostaglandin mediated cascade. This findings was in agreement with the study conducted by Prasanna Byna et al., in which preterm labour was seen in 18% patients with bacteriuria and 7% in control group.[11] Association between bacteriuria and preterm labour was statistically significant (P=0.03) and correlates with the study done by Sheiner et al. [12]

This findings was in agreement with the study conducted by Prasanna Byna et al., in which PROM was seen in 14% patients with bacteriuria and 5% patients in control group.[11] The association between bacteriuria and PROM was statistically significant (P=0.03) which correlates with other studies by Jain et al.[13] and Sheiner et al. [12] PROM is an accepted complication of bacteriuria which leads to preterm labor, chorioamnionitis, endometritis, feto-maternal sepsis ultimately leading to an adverse fetomaternal outcome.[14]
This findings was in agreement with the study conducted by Prasanna Byna et al., Association between bacteriuria & IUGR was statistically significant (P=0.03) and correlates with the study done by Jain et al. This emphasizes the need for early detection and aggressive treatment of bacteriuria in pregnancy. [13] His findings was in agreement with the study conducted by Prasanna Byna et al., in which low birth weight babies were seen in 20% of bacteriuria group and 8% of control group.[11] A significant relation between bacteriuria and low birth weight (P=0.04) which correlates with the study done by Jain et al. [13]This significant low birth weight in this study is explained by higher incidence of preterm and IUGR in bacteriuria group.

**Conclusion**

Fever followed by Cough and Headache were the most common manifestations of pregnant women with infections. The most common type of infections amongst study population was UTI followed by acute gastroenteritis, URTI. Normal vaginal delivery was the most common mode of delivery followed by LSCSand Instrumental delivery. The most common obstetrics complications amongst study population was Preterm delivery followed by PROM and Abortion,LBW and IUD. Normal vaginal delivery was the most common mode of delivery followed by LSCS and Instrumental delivery, most of the study population had birth weight of 2 to 3 kg followed by 3 to 4 kg and less than 2 kg.Pregnancy is a condition in which adaptive immunity of mother decreases with progression of pregnancy and with increasing maternal age and associated comorbidities this immune status decline progressively so mother becomes more vulnerable for infections and diseases. So all pregnant women must be evaluated at primary care centers properly in their antenatal visits for their parity status, any associated risk factors and diseases , by doing this we can reduce many infections, complications and maternal mortality in early stage of pregnancy.

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