

INFECTION AND PRE-TERM LABOR. A PROSPECTIVE CROSS-SECTIONAL STUDY.

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Abstract.

Background:

Infections of the vaginal canal have been linked to an increased risk of preterm labour. Prenatal screening for genitourinary infections, particularly in high-risk cases, prompt recognition, and treatment reduce the incidence of premature labour.

Methods:

From January 2021 to December 2022, a cross-sectional study was done in the Department of Obstetrics and Gynaecology at Narayan Medical College and Hospital in Jamuhar, Sasaram, Bihar. A detailed clinical history was collected, including the patient's age, level of education, duration of antenatal care, parity, and obstetrical history. There was a general examination, a systemic examination, and an obstetric examination. Hb, total leucocyte count, blood sugar, blood grouping, HIV, HBsAg, and VDRL tests were performed.

Results:

The prevalence of UTI in preterm labour was 30.1% in 264 cases of preterm labour investigated. The majority of responders (49.4%) were between the ages of 25 and 29. In 77.2% of cases, the patients were booked. UTI was shown to be more common in multipara in my study. The prevalence of UTI in illiterates was 92.4%. The majority of responders were late preterm, with gestational ages ranging from 34 to 37 weeks. E. coli was the most often isolated organism in urine culture.

Conclusion:

To avoid difficulties, all pregnant women should be evaluated for UTI, treated with suitable antibiotics if the culture is positive, and then retested for cure. Furthermore, providing health information to all pregnant women, particularly those from low socioeconomic backgrounds, will aid in the prevention of urinary tract infections.

Recommendation:

Checking for infections in pregnant women needs to be done to avoid infections before labour. Patients need to be given antibiotics in preterm labour to stop group B streptococcal transmission.

Keywords: Chorioamnionitis, UTI, uterine anatomical deficiency, placental abnormalities,

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1. INTRODUCTION.

Preterm labour is defined as the commencement of regular uterine contractions coupled with cervical changes between weeks 28 and 37 of pregnancy [1]. Chorioamnionitis, UTI, uterine

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anatomical defect, placental abnormalities, and conceptus defect are the most commonly known causes of preterm labour. Other etiological factors include hydramnios, multiple pregnancies, malpresentation, significant maternal illness, and psychological disorders [2].

The reason for premature labour is often unknown, but various illnesses have been linked to an increased risk of preterm delivery. Preterm birth is induced in 30-40% of cases due to maternal or fetal problems. The remaining 60-70% are most likely caused by subclinical infectious or inflammatory causes, including genitourinary tract, cervical dysfunction, multiple gestations, idiopathic, and possibly social, environmental, and dietary connections [3].

UTIs are the most frequent bacterial infections found during pregnancy. UTIs are among the most prevalent bacterial illnesses in humans [4]. A few of the gestational changes in the urinary tract that lead to an increased predisposition to UTI in pregnancy are dilatation of the urinary collecting system, mechanical obstruction of the ureter and bladder by the gravid uterus causing hypotonia, congestion, and some degree of vesicoureteric reflux (VUR) [3]. UTI is frequently diagnosed based on clinical findings of bacteriuria (bacteria in midstream urine) counts greater than 10⁵ colony-forming units (CFU)/mL, as well as patient-reported symptoms [5]. When urine is collected via catheterization, lower bacterial counts are deemed clinically important. Cystitis, or bladder infection, is characterized by painful urination (dysuria), urgency, and frequent urination. A more serious infection of one or both kidneys, known as pyelonephritis, is frequently accompanied by fever and flank discomfort, in addition to cystitis symptoms [6, 7, 8].

The present study was undertaken to study the role of vaginal infections in preterm labour. The main objective is to study the occurrence of vaginal infections in preterm labour.

2. METHODS.

This cross-sectional study was carried out at Narayan Medical College and Hospital in Ja-

muhar, Sasaran, Bihar, at the Department of Obstetrics and Gynaecology. This study lasted two years, from January 1st, 2021, to December 31st, 2022. The study population included 264 women hospitalized at Narayan Medical College and Hospital with spontaneous preterm labour who met the inclusion and exclusion criteria.

2.1. Inclusion criteria.

Patients in preterm labour, defined as being less than 37 weeks of gestation and more than the time of viability, have regular uterine contractions that occur once every 5-8 minutes or less and are accompanied by one or more of the following:

- Progressive changes in the cervix
- Cervical dilatation of more than or equal to 1cm
- Cervical effacement of more than or equal to 80%

2.2. Exclusion criteria.

- Cases with uterine anomalies and congenital anomalies of the fetus
- Cases of intrauterine fetal death
- Cases with chronic systemic diseases like uncontrolled hypertension, diabetes, nephritis, and decompensated heart lesions
- Induced preterm labour
- Patients who were already on antibiotics

2.3. Study Procedure.

A detailed clinical history was collected, including the patient's age, level of education, duration of antenatal care, parity, and obstetrical history. Menstrual history from the first day of the last menstrual period in a 28-day cycle and/or early ultrasound examination were used to establish gestational age. There was a general examination, a systemic examination, and an obstetric examination. Hb, total leucocyte count, blood sugar, blood grouping, HIV, HBsAg, and VDRL tests were performed. All patients had clean catch

midstream urine samples taken in a sterile container. Thus, two samples were collected: one for microscopic evaluation and the other for culture and sensitivity.

3. RESULTS.

Cross-sectional research of 264 preterm labour cases was done to investigate the prevalence of UTI in preterm labour about chosen characteristics of interest. At the initial stage, 302 patients were examined for eligibility, however, 38 patients were excluded from this study due to not being eligible. In addition to the number of cases complicated by pyelonephritis, the most common organism isolated was analyzed.

The prevalence of UTI in preterm labour was 79 patients (30.1%) out of 264 cases of preterm labour investigated. The bulk of responders (49.4%) were between the ages of 25 and 29. In 77.2% of cases, the majority of the patients were booked. Approximately 91.8% were from rural areas. Around 75.9% of the population belonged to the lower socioeconomic class. UTI was shown to be more common in multipara in my study. The prevalence of UTI in illiterates was 92.4%. The majority of responders were late preterm, with gestational ages ranging from 34 to 37 weeks. *E. coli* was the most often isolated organism in urine culture, accounting for 69% of the samples. Only 1.3% of the cases evaluated were complicated by pyelonephritis (Table 1).

4. DISCUSSION.

Preterm labour is a major cause of newborn illness and mortality around the world. According to the WHO, 9.6% of all births (about 13 million) occurred prematurely in 2005. Nearly 11 million came from Africa and Asia [3]. Infection may play a role in the pathophysiology of preterm labour and delivery, according to evidence. Lockwood observed that UTI was responsible for around 50% of spontaneous preterm deliveries [7]. In the present study, 30% of patients experienced premature labour due to UTI. Chhabra and Patil reported in 2001 that 28% of patients in preterm

labour had positive urine cultures, which was also seen in our study (29%). In vivo and in vitro research has shown that UTIs cause premature labour. As a result, completing this study was critical to determine the prevalence of UTI-causing preterm labour in our population [8]. Asymptomatic UTI is quite common during pregnancy and has been associated with preterm delivery. Asymptomatic UTI was found in 78% of the participants in our study. Burning micturition was the most prevalent symptom, accounting for 43% [9]. If bacteriuria without symptoms in pregnant women is not treated, it can develop into severe cystitis and pyelonephritis in 20-40% of cases. In their study published in 1989, Romero et al determined that nonbacteremic patients had around two-thirds the risk of low birth weight and half the risk of preterm delivery compared to those with untreated symptomatic bacteriuria and that antibiotic therapy lowered the risk of low birth weight [10]. Recognizing and treating patients with genitourinary infections while they are not clinically obvious will minimize the proportion of patients who go into premature labour, resulting in lower morbidity and death in neonates born to such mothers [11].

In the current study, 58 (73.42%) of the 264 women who delivered prematurely had one or more risk factors. In the current study, 30.1% of the women had vaginal infections. *Candida* species were the most commonly isolated organisms in HVS cultures. *Staphylococcus aureus* and mixed microorganisms were the other organisms. The incidence of vaginal infections in women with preterm labour was 58.06% in research conducted by Pradeep et al [12]. The rate of vaginal infections was high when compared to Fernandes F et al's study, which revealed an incidence of 8.29% [5]. Samim A et al found that 7.24% of women in premature labour had vaginal infections [9]. UTI was discovered in 27.58% of the patients. *E. Coli* was the most commonly isolated organism (15.51%). *Candida*, *Acinetobacter*, and *Staphylococcus aureus* were also isolated. In their study, Samim A et al. found a 40% incidence of UTI, while Pandey Kiran et al. observed a 20.34% incidence of UTI [9, 13]. Fernandes F et al found

Table 1: Clinical history of patients.

Variables	Frequency	Percentage
Urine routine examination		
UTI	79	30%
Within normal limits	185	70%
Parity		
G4	26	33.5%
G3	15	19%
G2	25	31%
Primi	13	16.5%
Urine Culture and sensitivity		
E.Coli	55	69%
S.Aureus	8	10%
Coagulase negative Staph	9	11%
Klebsiella	3	3.8%
GBS	4	
Period of gestation		
28-30	3	3.2%
30-34	11	14.7%
34-37	65	82.1%
Complications		
No complication	78	98.7%
Pyleonephritis	1	1.3%

a 13.65% UTI incidence [5]. The disparity could be attributed to discrepancies in the criteria employed to diagnose UTI, whether clinically or by urine culture. Anaemia was found in 20.69% of the patients.

5. CONCLUSION.

Urinary tract infection is the most frequent bacterial illness during pregnancy. Untreated UTI might lead to obstetric problems. Bacteriuria was found in 30% of pregnant women who had preterm labour. The findings show that there is a link between bacteriuria and gestational age, education, age, and socioeconomic status. Hence, to avoid difficulties, all pregnant women should be evaluated for UTI, treated with suitable antibiotics if the culture is positive, and then retested for cure. Furthermore, providing health information to all pregnant women, particularly those from low socioeconomic backgrounds, will aid in the prevention of urinary tract infections.

6. LIMITATIONS.

The limitation of this study is the small sample size that was included. Due to a smaller study population, the findings might be deemed relevant for a larger cohort.

7. RECOMMENDATIONS.

Checking for infections in pregnant women needs to be done to avoid infections before labour. Patients need to be given antibiotics in preterm labour to stop group B streptococcal transmission.

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9. LIST OF ABBREVIATIONS.

HIV- Human immunodeficiency virus
Hbsag- Hepatitis B surface antigen
VDRL- Venereal disease research laboratory
UTI- Urinary tract infection
VUR- Vesicoureteric reflux
CFU- Colony forming units
GBS- Guillain-Barré syndrome
WHO- World Health Organisation

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11. Conflict of Interest.

The authors report no conflicts of interest in this work.

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