

A Study Of Genito-Urinary Infections Among Pregnant Patients Diagnosed As Threatened Preterm Labor And Its Fetal Outcome

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ABSTRACT

Background: Preterm delivery is a major cause of perinatal morbidity and mortality in developing countries. Maternal urogenital tract infection is a common cause of preterm labour. Infection with *Trichomonus vaginalis*, *Bacteroids* species or *Urea plasmaurelyticum* has been found to be associated with increased risk of preterm birth, preterm delivery and PROM.

Aim and Objective: The present study was aimed to study Genito-urinary infections among pregnant patients diagnosed as threatened preterm labour and its fetal outcome

Methodology: At Santosh Medical College and Hospital in Ghaziabad, this case control observational study took place between April 19 and September 30, 2020. There were 120 pregnant women recruited, of whom 60 had threatened preterm delivery and were placed in the case group. The other 60 antenatal women, who had reached 37 weeks but were still under 40 weeks, and who had not experienced any pregnancy complications during the current pregnancy, were placed in the control group. Pregnant women were screened for data by considering their medical histories, physical examination results, and test results.

Result: Preterm was in 3.33% of controls and in 41.66% of cases. LBW were 16.66% in controls and 45% in cases. There was statistically significant ($p=0.03$) difference in adverse fetal outcome between cases and controls.

Conclusion: Our study revealed that there is a significant impact of urogenital infection on preterm labour as well as adverse fetal outcome.

Keywords: Preterm labor, Genito-urinary infections, PROM, Urogenital infection.

INTRODUCTION

The complications of preterm birth (PTB) cause approximately 70% of neonatal deaths and nearly half of all long-term neurological morbidity [1,2]. PTB could be categorized by its clinical presentation: spontaneous preterm labor (PTL) leading to spontaneous PTB (S-PTB), preterm premature rupture of the membranes (PPROM), and medically induced PTB (M-PTB) due to maternal or fetal complications [3].

Intrauterine infection has been proposed as one of the most important risk factors for complications in pregnancy, such as premature rupture of membrane, PTL, PTB, and perinatal infections. The genitourinary system comprises of the urinary system as well as the reproductive system. Both the organ systems are in close proximity to each other and therefore, there are high chances of diseases to occur that affect both the organs.

Medina and Castillo-Pino, (2019) [4] also reported this from their epidemiological study that women were more prone to different diseases and majority of these diseases were healthcare-associated infections. Some of the most common diseases of the urogenital system of female include, “vaginitis”, “infection of the pelvis”, “urinary tract infection (UTI)”, “post-gynaecological surgery infections”, and “pelvic inflammatory disease (PID)” (Tay, 2018 [5]; McGowin et al. 2012 [6]). Ronald and Alfa, (1996) [7] state that the main source of infection in the female vaginal region is unsafe sex or lack of hygiene that leads to mucosal ulceration. Verma Indu, Avasthi, and Berry, (2014) [8] stated that infection in the vaginal or the urogenital region leads to the risk of preterm labour and delivery and hence cause neonatal morbidity and mortality.

Based on the literature and the published papers on the relationship between genitourinary infections and preterm labor and its impact on the foetus; the most important problem found is that, no study mentions a specific guideline or framework for the prevention and control of these infections especially in case of pregnancy. Another problem statement identified from the study is that there is no statistical assessment on the relationship between genitourinary infections and preterm labor and there are no studies that relate genitourinary infections to neonatal mortality or foetal outcomes. Therefore, this study will aim to explore both the aspects using statistical significance and hypothesize the relationship between these factors.

MATERIALS AND METHODS

The Department of Obstetrics and Gynecology at Santosh Medical College and Hospital in Ghaziabad conducted this case control research from April 2019 to September 2020. Initial screening for study inclusion involved 364 participants in total.

All pregnant patients who visited the department of obstetrics and gynecology made up the study's sample population. Out of 971 patients that were initially registered, 364 pregnant

women in total were screened. According to the inclusion and exclusion criteria, 120 subjects overall were randomly chosen. Patients with obstetric problems and other diseases of the genital tract were not excluded from the case group. In the patient's native tongue, well-informed consent was obtained. Two groups of patients were created.

Group I consisted of 60 pregnant patients diagnosed as threatened preterm labor and preterm labor between 28 to 37 completed weeks of gestation.

Group II consisted of 60 pregnant women with 37 weeks of gestation or more with no history of preterm labor.

Lastly, the neo-natal outcomes from both the groups were also compared on the basis of birth related issues or mortality of the neonate.

Demographic details, details on obstetric history, physical measurements like BMI, and others make up the majority of descriptive data. Each woman underwent a thorough medical evaluation, with particular attention paid to her medical history, including any prior preterm births, problematic obstetrical history, and urogenital infections. Each woman got a complete medical examination as well as systemic and obstetrical checks. Prior to the first vaginal examination, a sample from the posterior fornix of the vagina was collected using two sterilized swabs and examined under direct vision with a Cusco/Sims speculum for gram stain characteristics, culture-sensitivity using conventional methods, and saline wet mount for BV, VC, and trichomoniasis. A sample of midstream urine was sent for cytology and culture-sensitivity testing. The Department of Microbiology at our institute performed microbiological analysis and antibiotic sensitivity testing on urine and high vaginal swabs. When necessary, tocolytics or steroid therapy was administered to preterm laboring women who had been admitted.

The study's findings were gathered and tabulated for presentation. Chi-square statistical analysis was carried out with the aid of the SPSS program. Statistical significance was defined as a P-value less than 0.05.

RESULTS

120 women in the department of obstetrics and gynecology at Santosh Medical College & Hospital participated in the current prospective case control research. The participants were split into the case group (60 women) and the control group (60 women).

Table1: Demographic data distribution of study subject.

Demographic Distribution		Number (Percentage)	
		Control(n=60)	Case(n=60)
Age Group(Years)	20-24	24 (40%)	27 (45%)
	25-29	31 (51.7%)	29 (48.33%)
	>30	5 (8.33%)	4 (6.66%)
Parity	Primigravida	13 (21.66%)	11 (18.33%)
	Multigravida (>2)	47 (78.33%)	49 (81.66%)
Body Mass Index (BMI)	Underweight	18 (30%)	32 (53.33%)
	Normal	34 (56.66%)	22 (36.66%)
	Overweight	6 (10%)	6 (10%)
	Obese	2 (3.33%)	0 (0%)

The majority of patients in the control group and case group, or 51.7% and 48.3%, respectively, were between the ages of 25 and 29. In the control group, 21.66% of patients were primigravida and 78.33% were multigravida, compared to 18.3% in the case group and 81.7% in the control group. In the control group, the majority of patients (56.66%) fell into the Normal category according to BMI, whereas the majority of patients in the case group (53.33%) were underweight.

Table2: Urinary tract, Genital and Genito-urinary infection between cases and controls.

		Number (Percentage)		P value
		Control(n=60)	Case(n=60)	
Urinary tract infection	Present	8 (13.3%)	35 (58.3%)	0.0001 (S)
	Absent	52 (86.7%)	25 (41.6%)	
Genital infection	Present	14 (23.33%)	45 (75%)	0.0001(S)
	Absent	46 (76.66%)	15 (25%)	
Genito-urinary infection	Present	5 (8.33%)	21 (35%)	0.0009(S)
	Absent	55 (91.66%)	39 (65%)	

As shown in Table 2, It was found that in control group 13% patients had Urinary Tract Infection (UTI) where as in case group 58.3% patients had UTI. There was significant (p=0.0001) difference in UTI between cases and controls. Genital infection was present in 23.33% of patients in control group where as genital infection was present in 75% of the patients in case group. There was significant (p=0.0001) difference in genital infection

between cases and controls. Genito-urinary infections (co-infection) were seen in 8.33% of control patients where as in the case group it was observed that 35% patients had Genito-urinary infections. There was significant ($p=0.0009$) difference in genito-urinary infection between cases and controls.

Table 3: Adverse fetal outcome between cases and controls

Adverse fetal outcome	Number (Percentage)		Pvalue
	Control (n=60)	Case (n=60)	
Preterm	2 (3.33%)	25 (41.66%)	0.03(S)
PPROM	0 (0%)	12 (20%)	
LBW	10 (16.66%)	27 (45%)	
NICUadmission	2 (3.33%)	27 (45%)	
Perinataldeath	1 (1.66%)	10 (16.66%)	

In Table 3, Preterm birth occurred in 3.33% of controls and in 41.66% of cases. Low Birth Weight (LBW) babies were 16.66% in controls and 45% in cases. There was significant ($p=0.03$) difference in adverse fetal outcome between cases and controls.

DISCUSSION

Preterm labor (PTL) is the beginning of labor with intact membranes after 28 weeks of gestation but before 37 weeks. Two thirds of preterm births occur between 34 and 37 weeks of pregnancy, making up roughly 6-8% of all deliveries. Prematurity is one of the leading causes of newborn and infant illness and mortality, and it frequently strikes low risk women without warning.

Although a multifactorial etiology has been proposed, the pathophysiology of preterm labor is not well understood. Preterm labor is thought to be caused by inflammation and infection, according to a substantial quantity of evidence (Lumley, 1993) [9]. According to Verma Indu et al. (2014) [8], urogenital infections are one of the major avoidable causes of preterm labor.

The current case control study was conducted at Department of Obstetrics & Gynaecology, Santosh Medical College and Hospital, Ghaziabad with the objective to study Genito-urinary infections among pregnant patients diagnosed as threatened preterm labour and its fetal outcomes. In our study, the majority of patients in the control group and case group were between the ages of 25 and 29, or 51.7% and 48.3%, respectively. The mean age group in the study by Patel et al (2015) [10] was 22.88 years in the cases (preterm labor), compared to 23.82 years in the control group. In the Nsereko et al (2020) [11] study, the participants' average age was 28.12 ± 6.01 years, and 82.8% ($n = 303$) of them were between 20 and 35.

In our study, patients in the control group made up 21.66% of the population whereas those in the case group made up 18.3% of the population and 78.33% were multigravida. According to a study by Patel et al (2015) [10], primipara women made up 72% of the case group while 74% of the control group. PTL and nulliparous women, as well as past premature deliveries or abortions, have been linked in previous research (Ezechi et al, 2003[12]; Kozuki et al, 2013[13]).

Our study found that in control group 13% patients had Urinary Tract Infection (UTI) whereas in case group 58.3% patients had UTI. This difference was found to be statistically significant ($P=0.0001$). Ghunage et al (2017) [14] found that urinary tract infection was present in 11 (22%) women in group A while it was only 3 (6%) in group B. The difference was statistically significant (<0.01).

This study showed that genital infection was present in 23.33% of patients in control group whereas genital infection was present in 75% of the patients in case group. There was significant ($p=0.0001$) difference in genital infection between cases and controls. The presence of genital infection was higher in our study than the study by Patel et al (2015) [10] in which genital tract infection was present in 44% women in case group, and 10% women in control group. In study of Bhalla and Chawla (2007) [15], prevalence of urogenital infection seen in urban slum was (38.6%) followed by rural (28.8%) and urban middle class community (25.4%), on an average it was 30.93%.

In the present study, Genito-urinary infections (co-infection) were seen in 8.33% of control patients whereas in the case group it was observed that 35% patients had Genito-urinary infections. There was significant ($p=0.0009$) difference in Genito-urinary infection between cases and controls.

This study found that preterm birth occurred in 3.33% of controls and in 41.66% of cases. LBW babies were seen in 16.66% of controls and 45% of cases. There was significant ($p=0.03$) difference in adverse fetal outcome between cases and controls. Patel et al (2015) [10] found out that in case group, 80% babies were low birth weight while in control group, 24% babies were low birth weight. This difference was statistically significant. Nsereko et al (2020) [11] reported that the percentage of LBW was 2.1% ($n = 7$) among infants delivered at term, 59.5% ($n = 22$) among infants born preterm and 7.9% ($n = 29$) among term and preterm combined. No statistically significant associations were found between PTB and maternal obstetrical history or delivery specifics.

CONCLUSION

In our study we found that urogenital tract infection was 3.2 (75%) times more in case group than in control group with 2.7 times more adverse fetal outcome in case group than in control group, which is statistically significant. Hence, it is imperative to screen and treat pregnant

women at the first antenatal visit for urogenital infections to decrease the incidence of preterm labour, preterm birth and associated maternal and fetal morbidities.

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