



## ASSOCIATION OF GENITOURINARY TRACT INFECTION IN PRETERM LABOUR

**Shakti Jain\***

Assistant Professor, Department Of Obstetrics And Gynaecology, MLN Medical College, Prayagraj. \*Corresponding Author

**Urvashi Barman Singh**

Associate professor, Department of obstetrics and gynaecology, MLN Medical College, Prayagraj.

**Yashi Srivastava**

Resident, Department of obstetrics and gynaecology, MLN Medical College, Prayagraj.

**ABSTRACT** **Background:** Pre term labour (PTL) is responsible for 75-80% of admission to intensive care neonatal units. Causes of PTL have not been established but several risk factors are associated with it

**Aim:** The aim of this study is to find association of genitourinary tract infections in aetiopathogenesis of preterm labour.

**Subject and methods:** This was case control study conducted over one year. 100 pregnant women having PTL without risk factors with intact membrane were compared with 100 pregnant women having labour at > 37 weeks. The two groups were screened for urinary and vaginal infections. At delivery further swabs were taken from foetal surface of placenta.

**Conclusion:** Our study demonstrated that genitourinary tract infection is the major factor in aetiopathogenesis of preterm labour. Therefore screening for genitourinary tract infection is strongly recommended to be included in prenatal care.

**KEYWORDS :** Preterm labour, risk factors, genitourinary tract infection**INTRODUCTION**

Preterm labour is defined as labour starting spontaneously before 37 completed weeks of gestation. Preterm birth causes most of neonatal mortality and morbidity. Any strategy which aims at reducing incidence of PTL will go a long way in decreasing perinatal and early neonatal mortality, reducing financial burden and making more bed available in NICU for managing children with other problems.

The causes of PTL in most cases have not been established but several risk factors have been identified associated with it. These factors include poor socioeconomic status, illiteracy, multiparity, maternal age < 20 years and > 35 years, previous PTL and genitourinary tract infections. In last 10-15 years a number of studies were conducted to search for infections as possible aetiology for preterm labour.

Romero et al (1993)<sup>1</sup> found evidence of infection in 9.2 % of 120 women with PTL with intact membranes. Zahra et al (2014)<sup>2</sup> have been studied maternal concentration of CRP value diagnosing subclinical infections in women with PTL. In order to evaluate the role of genitourinary infections in the aetiology of PTL, we carried out a study of women admitted with preterm labour in department of obstetrics and gynaecology, SRN hospital, Prayagraj.

**MATERIALS AND METHODS**

This case control study was performed in pregnant women who were in labour and admitted in department of obstetrics and gynaecology, SRN hospital, Prayagraj. The women were enrolled from April 2018 to March 2019. The study group (PTL group) consisted of 100 women admitted for PTL (< 37 gestational weeks) with intact membrane. The control group (Term labour group) consisted of 100 women admitted for term labour (>37 gestational weeks) without any complications of pregnancy. The gestational age was based on last menstrual period combined with ultrasonographic data.

**Exclusion Criteria**

Women with any of the following factors were excluded from the study group. Gestational age less than 20 weeks, any congenital foetal anomaly, placenta previa, abruptio placentae, polyhydramnios, intrauterine death, medical complications, Rh isoimmunization, abdominal trauma, suspected or proven rupture of membranes.

**Data collection and sampling**

A detailed history was taken with special reference to age, parity, education, occupation, addiction to smoking and alcohol intake and socioeconomic status. A detailed obstetric history with reference to parity, preterm pain, number of preterm delivery, number of abortions and multiple pregnancy was taken. Menstrual history regarding first day of last of menstrual period, expected date of delivery and previous

menstrual cycle was taken. Clinical examination and routine investigations were done.

Urine sample of each woman was collected for routine and bacteriological examination. The counts were calculated as colony forming units CFU/ml. Growth of 1 or 2 isolates of possible pathogens at a concentration of > 10<sup>5</sup> CFU/ml was considered and these isolates were identified.

A sterile speculum was used to take cervical and high vaginal swabs and put into media for transport to pathological unit.

At delivery, further swabs were taken from foetal surface of placenta put into media and sent to pathological unit.

**Observations**

The age of women in our study lie between 20 to 40 years and most of the patients were primigravida of low socioeconomic status.

**Table-1 shows that the maximum number of women presented between 28-32 weeks of gestation.**

S No.	Gestational age (weeks)	No. of women	Percentage %
1.	<28 weeks	16	16
2.	28-32 weeks	60	60
3.	33-36 weeks	24	24
Total		100	100

**Table- 2 shows the incidence of bacteriuria in study and control group (>10<sup>5</sup>CFU/ml)**

Type of bacteria	Study group(n=100)		Control group(n=100)	
	No.	%	No.	%
E.coli	25	25	8	8
Klebsella	6	6	2	2
Strept. faecalis	5	5	3	3
B.proteus	3	3	1	1
Strept. viridans	5	5	3	3
Total	44	44	17	17

**Table-3 shows the incidence of positive bacterial culture of high vaginal and cervical swabs in study and control groups.**

Type of bacteria	Study group(n=100)		Control group(n=100)	
	No.	%	No.	%
Strept. viridans	7	7	1	1
Strept. faecalis	7	7	1	1
Anaerobic streptococci	6	6	-	-

E.coli	7	7	1	1
Klebsiella	5	5	-	-
Bacteroids	4	4	-	-
Trichomonas vaginalis	20	20	1	1
Candida albicans	16	16	10	10
Mycoplasma hominis	7	7	-	-
Ureaplasma ureolyticum	8	8	1	1
Total	87	87	14	14

9. A. Jakovljevic, M. Bogavac, A.Nikolic, M.M.Tosic, Z. Novakovic, Z. Stajic The influence of bacterial vaginosis on gestational week of the completion of delivery and biochemical markers of inflammation in the serum *Vojnosanit Pregl*, 71 (2014), pp.931-935

**Table-4 shows distribution of cases according to histopathological examination.**

Group	Study group(n=100)		Control group(n=100)	
	No.	%	No.	%
Aggregation of neutrophils under chorionic plate	10	10	2	2
Neutrophil permeation of chorionic plate	6	6	-	-
Inflammation of umbilical cord and membranes	3	3	1	1
Total	19	19	3	3

Incidence of significant bacteraemia was 44% in study group as compared to 17% in control group (table1). Incidence of positive bacterial culture of high vaginal and cervical swabs was quite high i.e. 87% compared to control group (14%) (table2). Table 4 shows that chorioamnionitis was present in 19% of study group compared to 3% in control group.

## DISCUSSION

In our study incidence of urinary tract infections was twice more common in women who delivered before 37 gestational weeks compared to antenatal term control (table 2). S.R. Dimetry et al (2007)<sup>3</sup> also explained role of urinary tract infections in the aetiopathogenesis of PTL. In our study incidence of positive bacterial culture of high vaginal swabs and cervical swabs was quite high i.e. 87% in women with PTL compared to control group 14% (table 3). This view was supported by Holst et al (1994)<sup>4</sup>, J.C. Carey et al (2005)<sup>5</sup> and A. Jakovljevic et al (2014)<sup>9</sup>.

Our study showed that the incidence of chorioamnionitis was significantly higher in women with spontaneous PTL compared to control (table 4). Zahra et al (2014)<sup>2</sup> also described in their study that abnormal colonisation of genital tract leads to preterm delivery. It is suggested that the infection of the foetal membrane occurs as an ascending infections from maternal cervical and vaginal flora. Hence maternal genital infections have an important role in etiopathogenesis of preterm labour. This view was supported by Romero et al (1993)<sup>1</sup>, Kubota (1998)<sup>7</sup> and Gractacos et al (1998)<sup>8</sup>

## CONCLUSION

In our study we concluded that genitourinary tract infection is a major cause of spontaneous preterm labour. The current evidence suggests that for women in preterm labour antibiotics may be of help particularly if used in conjunction with tocolytics. More extensive studies are required to support our findings.

## Compliance with ethical standards

**Conflict of interest:** None.

**Disclaimer:** nil

**Informed consent:** informed written consent was received from all the participants.

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