



**ORIGINAL RESEARCH PAPER**

**Obstetrics & Gynaecology**

**TO STUDY THE CORRELATION OF C-REACTIVE PROTEIN & BACTERIAL VAGINOSIS WITH PRETERM LABOR**

**KEY WORDS:** C-reactive protein, bacterial vaginosis, preterm, neonates.

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**ABSTRACT**

**INTRODUCTION**-Preterm labour with subsequent delivery of the premature baby is the major cause of perinatal morbidity and mortality. Measurement of circulating inflammatory markers may provide an alternative method of detecting women at high risk of preterm delivery. **AIMS** -To study the correlation of C - reactive protein and Bacterial Vaginosis with preterm labor and to study early neonatal outcome of these preterm neonates. **MATERIAL AND METHODS**-The study was conducted in the labour ward of Rajkiya Mahila Chikitsalaya, Ajmer. Two groups, the case group and the control group were formed. Each one was consisted of 75 pregnant women. **RESULTS AND DISCUSSION**-Maximum participants (66.70% overall, 61.30% in case group and 72.00% in control group) were from 25-30 yrs. age group. Patients were almost equally distributed among various socio-economic classes. No significant difference was there. Uterus height and vertex presentation were significantly associated with preterm cases. Very mild action of uterus was more prevalent in preterm cases. The mean value of C reactive protein was found to be 1.18 mg/dl in preterm cases and was significantly associated. Vaginal pH and Nugent score was also associated with preterm delivery. Bacterial vaginosis was present in 74.6% subjects in case group. Regarding type of delivery vaginal delivery was more common in the subjects. Neonatal complications were more in case group and likewise NICU admission were also more there. **CONCLUSION**- CRP and bacterial vaginosis plays significant role in causation of preterm labour using simple diagnostic procedure. Besides, other factors such as low birth wt., NICU admission and neonatal complications were also found to be associated with preterm delivery.

**INTRODUCTION**

The etiology of preterm labor (PTL) is multifactorial with increasing evidence that infection is a possible cause in upto 40% of cases. PTL may either be a physiological process occurring too early in pregnancy or a pathological process as a result of an abnormal signal such as infection.

Despite major advances in obstetric and neonatal care over the past decade the incidence remained constant at 10-15%. Preterm premature rupture of membranes and spontaneous preterm labour, account for approximately 80% of preterm deliveries. The remaining 20% are indicated deliveries for maternal or fetal reasons. Preterm deliveries poses a problem because of the severe neonatal complications which often occur afterwards that includes death, respiratory distress syndrome, sepsis and necrotizing enterocolitis. According to WHO, every year about 15 million babies are born prematurely around the world and that is more than one in 10 of all babies born globally. Almost 1 million children die each year due to complications of preterm birth (2013). Across 184 countries, the rate of preterm birth ranges from 5% to 18% of babies born. In India, out of 27 million babies born every year (2010 data), 3.5 million babies born are premature. (1)

The term bacterial vaginosis was introduced to describe increased vaginal discharge without signs of clinical inflammation and noticeable absence of leucocyte. (2) The vaginosis was called bacterial because of absence of fungi and parasites as cause of syndrome.

Bacterial vaginosis is a clinical condition caused by replacement of the normal hydrogen peroxide producing Lactobacillus sp. in the vagina with high concentrations of characteristic sets of aerobic and anaerobic bacteria. Bacterial vaginosis is the most prevalent cause of vaginal discharge or malodor, although 50 percent of women who meet the criteria for this condition are asymptomatic

that remains stable in serum. Elevated concentrations of CRP in peripheral circulation, has been associated with the presence of intrauterine infection. There are findings that suggest that very high CRP levels in early pregnancy are associated with preterm delivery. Inflammation without infection may cause preterm birth on its own, as intra amniotic infusion of interleukin-1B cause's uterine contractility in primate. (3)

C-reactive protein (CRP) is a sensitive marker of systemic inflammation and is primarily synthesized in hepatocytes in response to infection and tissue injury. (4) Production of CRP is stimulated by the release of proinflammatory cytokines including interleukin-1, interleukin-6, and tumor necrosis factor-alpha. Although sometimes referred to as an acute-phase reactant, CRP accompanies both acute and chronic inflammatory disorders.

The widespread clinical use of amniotic fluid and umbilical cord blood is limited because of the invasive nature of amniocentesis. Measurement of circulating inflammatory markers may thus provide an alternative method of detecting women at high risk of preterm delivery. The present study will be conducted to find out the correlation of C-Reactive Protein and Bacterial Vaginosis with preterm labor.

**MATERIAL AND METHOD**

This study was conducted in department of Obstetric & Gynaecology, JLN Medical College & Attached Group of hospitals, Ajmer, Rajasthan (RAJKIYA MAHILA CHIKITSALAYA). This study was carried out on 150 pregnant women with preterm labour i.e. (>28weeks and <37weeks). Out of which 75 were as case study and 75 were of control cases.

All pregnant women fulfilling the eligibility criteria during the study period from January 2020 to December 2020 was enrolled.

**INCLUSION CRITERIA:** Gestational age between 28 weeks

C-reactive protein (CRP) is a sensitive marker of inflammation

to 37 weeks. (<259 days, calculated by LMP or by 1<sup>st</sup> USG), Single viable fetus, Women with preterm labour i.e. uterine contractions occurring at a frequency of 4 in 20 mins or 8 in 60 min with cervical effacement more than or equal to 80% and cervical dilatation >1 cm, With intact membranes.

**EXCLUSION CRITERIA:** Multiple gestations, Gestational age < 28 weeks and >37 weeks, History of leaking per vaginum, Pregnancy induced hypertension or HTN, Antibiotic therapy in last one month or any recent Bacterial infections, Uterine abnormalities, cervical incompetence, APH, SLE, CHRONIC ILLNESS of Renal, Respiratory or CVS, Infections like diarrhea, urinary tract infections, Gestational diabetes mellitus.

**RESULTS**

**Table 1: PRESENTATION AND DISTRIBUTION OF STUDIED PARTICIPANTS**

Presentation		Br	Vx	Total	
Groups	Case	N	11	64	75
		%	14.7%	85.3%	100.0%
	Control	N	4	71	75
		%	5.3%	94.7%	100.0%
Total		N	15	135	150
		%	10.0%	90%	100%

**Table 2: BACTERIAL VAGINOSIS AND DISTRIBUTION OF STUDIED PARTICIPANTS**

Groups	Case	N	Bacterial Vaginosis		Total
			ABSENT	PRESENT	
	Control	N	45	30	75
		%	60%	40%	100.0%
Total		N	64	86	150
		%	42.6%	57.3%	100%

**Table 3: S CRP (MG/DL) VALUE AMONG THE GROUPS**

	Mean	Std. Dev.	Minimum	Maximum	P value
Case	1.18	.54	.11	2.60	0.001 (S)
Control	.37	.15	.10	.81	

**DISCUSSION**

For this study, two groups were formed. The case group was formed of 75 pregnant women with preterm labour and the control group was formed of 75 patients without any feature of preterm labour. Most of these patients (66.70% overall, 61.30% in case group and 72.00% in control group) were from 25-30 yrs. age group that is of reproductive age group. These results are in line with the findings of Aruna and Jyoti (2007),<sup>(6)</sup> Malpekar et al. (2016),<sup>(9)</sup> Rajan et al. (2015)<sup>(7)</sup> and Sharma (2020).<sup>(8)</sup>

The mean value of C-Reactive protein was significantly higher in the case group and it was 1.18±0.54 mg/dl. Similar to this, many studies have reported serum CRP as good indicator of preterm delivery.<sup>(9,10)</sup> CRP is an acute phase reactant protein synthesised primarily in liver cells in response to pro-inflammatory cytokines including IL-6 and alpha TNF. C reactive protein in maternal peripheral circulation is associated with presence of intrauterine infection.

Bacterial vaginosis was prevalent in 56% subjects in case group and 40% in control group. This difference between groups in prevalence of bacterial vaginosis was significant. Bacterial vaginosis is known to be a strong independent risk factor for adverse pregnancy outcomes. There is wide range of variation in the prevalence of bacterial vaginosis. The prevalence of BV during pregnancy has been reported as 20-30% in various studies which is higher than the findings of this study.

S.No.	Study	Prevalence of BV
1.	Darwish et al. (2005) <sup>(11)</sup>	33.30%
2.	Desai et al. (2009) <sup>(12)</sup>	18.70%
3.	Nelofer et al. (2006) <sup>(13)</sup>	55.38%

4.	Aruna and Jyoti (2007) <sup>(5)</sup>	30.35%
5.	Sharma (2020) <sup>(8)</sup>	16.00%

Regarding type of delivery, C-section was prevalent in 10% subjects in case groups and 53.30% subjects in control group. No significant difference was found. Similarly Sharma (2020)<sup>(8)</sup> reported half of the patients 12(50%) underwent Normal Vaginal Delivery (NVD) and another half underwent C-Section, which shows insignificant relation between BV and mode of delivery. In contrary to this study done by Shetty and Davis (2012),<sup>(14)</sup> Bijeta (2015)<sup>(15)</sup> majority of the patient with preterm underwent VD.

**SUMMARY AND CONCLUSIONS**

From this study, it can be concluded that CRP and bacterial vaginosis plays significant role in causation of preterm labour using simple diagnostic procedure. Besides, other factors such as low birth wt., NICU admission and neonatal complications were also found to be associated with preterm delivery.

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