

Association of Bacterial Vaginosis and Preterm Labour: An Observational Study

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Abstract

Original Research Article

Background: Bacterial infection is recognized as a major factor for preterm birth and neonatal morbidity and mortality. Prevalence of bacterial vaginosis is 15-30% among non pregnant women and upto 50% in pregnant women. **Objectives:** To find out the prevalence of bacterial vaginosis in pregnant women presenting with preterm labour and its neonatal outcome and the risk factors associated with bacterial vaginosis. **Methodology:** A total of 100 patients with preterm labour admitted in the Department of Obstetrics And Gynaecology, Gauhati Medical College and Hospital, Guwahati were enrolled in this hospital based observational study. Bacterial vaginosis was diagnosed according to Amsel's criteria. Cases were analysed in relation to age, parity, gestational age, socioeconomic status, booked/unbooked status, neonatal outcome and maternal outcome. **Results:** Prevalence of bacterial vaginosis in preterm labour was found to be 26%. Majority of bacterial vaginosis cases were from lower socioeconomic group, parity more than 2, belonging to rural habitat and was seen more in unbooked cases. All the baby were found to be low birth weight. **Conclusion:** Preterm delivery is the largest contributor to perinatal mortality and morbidity. Bacterial vaginosis is the important risk factor for preterm delivery and therefore early identification and treatment.

Keywords: Bacterial vaginosis, preterm delivery, Amsel's criteria, clue cell.

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INTRODUCTION

Bacterial vaginosis is associated with disappearance of normal vaginal flora i.e. Lactobacilli and its replacement by a mixed flora of aerobic, anaerobic and microaerophilic species. It is a polymicrobial condition and it involves various organisms such as Gardnerella vaginalis, Mycoplasma hominis, Mobiluncus species [1, 2].

Preterm birth is the leading cause of perinatal mortality and morbidity. Preterm birth may be defined as birth between 28weeks to 36completed weeks of gestation. The incidence of preterm birth ranges from 5% to 8% in most of the developed and developing countries, but it still increasing [3].

Etiology of preterm labour is complex, multifactorial and not completely understood. Bacterial infection is recognized as a major factor for preterm birth and neonatal mortality and morbidity. A percentage of 40-50% is often given as the fraction of cases of premature delivery that may be due to infection [3].

MATERIALS AND METHODS

This was a hospital based observational study conducted in the Department of Obstetrics and Gynaecology, Gauhati Medical College from 1st August, 2018 to 31st July, 2019. 100 patients admitted with preterm labour were taken up for the study. The study excluded patients with multiple gestation, cervical encrclage, pregnancy with fibroid, antepartum haemorrhage, and preterm premature rupture of membrane. Bacterial vaginosis has been diagnosed using Amsel's criteria [4]. Amsel's criteria includes:1) Increased homogenous grayish white vaginal discharge, 2) Increased vaginal pH more than 4.5, 3) A fishy smell on addition of 10% KOH to vaginal fluid (whiff test), 4) Presence of clue cells on wet mount preparation.

Presence of at least three or more out of the four criteria is diagnostics of bacterial vaginosis. Cases were analysed according to the following parameters after evaluation.

RESULTS

Table-1: Prevalence of bacterial vaginosis (according to Amsel's criteria)

Total number of patients	Total number of patients with bacterial vaginosis (%)
100	22(26%)

Out of 100 patients included in this study, 26 patients were diagnosed to be cases of bacterial

vaginosis using the clinical composite criteria as suggested by Amsel *et al.*, [4].

Table-2: Age distribution of cases

Age group of patients	Number of cases with bacterial vaginosis	%
15-20yrs	2	7.7%
21-25yrs	4	15.4%
26-30yrs	13	50%
31-35yrs	7	26.9%

Cases were divided into four age groups. Cases with bacterial vaginosis were found maximum in the age group of 26-30yrs.

Table-3: Distribution of patients with bacterial vaginosis according to socioeconomic status

Socioeconomic status	No. of patient with bacterial vaginosis	%
Lower (LL)	16	61.5%
Upper lower(UL)	8	30.8%
Lower middle(LM)	2	7.7%
Upper middle(UM)	0	0
Upper(UU)	0	0

Bacterial vaginosis was more common in patient with lower socioeconomic status.

Socioeconomic status were find out as per Modified Kuppuswami's classification.

Table-4: Distribution of patient with bacterial vaginosis with habitat

Habitat	Bacterial vaginosis	
	+	-
Rural	19(73.1%)	53
Urban	7(26.9%)	21

In our study, we have found that, 73.1% of the cases with bacterial vaginosis belong from rural habitat.

Table-5: Prevalence of bacterial vaginosis according to parity

Parity	Bacterial vaginosis		Total
	Present (%)	Absent (%)	
≤2	10(10%)	49(49%)	59
>2	16(16%)	25(25%)	41
Total	26	74	100

16% of clinically diagnosed bacterial vaginosis cases had parity more than 2 whereas patient with parity

less than or equal 2, the prevalence is only 10%. This difference is significant (p value-0.024).

Table-6: Relation of bacterial vaginosis with preterm delivery

Gestational age at the time of delivery (weeks)	Bacterial vaginosis		Total
	Present (%)	Absent (%)	
28-33	18 (18%)	30 (30%)	48
34-36	8(8%)	44 (44%)	52
Total	26	74	100

In this study, Bacterial vaginosis seen in early preterm (28-33weeks). 18% of clinically diagnosed case of bacterial vaginosis had preterm delivery at the

gestational age of 28-33weeks. Another 8% cases delivered in between 34-36weeks of gestation. This association is significant (p-value 0.02).

Table-7: Relation of bacterial vaginosis with puerperial sepsis

Puerperial sepsis	Bacterial vaginosis	
	No	%
Present	3	11.5%
Absent	23	88.5%

Out of all bacterial vaginosis cases, 11.5% had puerperial sepsis, whereas 89% of them doesn't shows any sign of puerperial sepsis.

Table-8: Neonatal outcome in patients with bacterial vaginosis

Birth weight(kg)	No. of neonate	NICU admission	No of neonatal death
≥2.5	0	0	0
1.5-2.4	(53.8%)	8(30.8%)	0
<1.5	12(46.2%)	12(46.2%)	2(7.7%)

Out of 26 babies born from mother with bacterial vaginosis, 20 were admitted in NICU and there was 2 neonatal death recorded in this study.

In this study, 77% of babies born to patients with bacterial vaginosis needed NICU admission. Neonatal death was found in 7.7%.

DISCUSSION

The etiology of bacterial vaginosis is multifactorial. Although with an unclear mechanism, bacterial vaginosis influences the outcome of labour activity and induces preterm labour. It seems that anaerobic bacteria through specific products stimulate the decidual tissue, an increase in cytokine level and of the release of A2 phospholipase and prostaglandins will lead to uterine contraction and preterm labour activity [5].

The prevalence of bacterial vaginosis in patients with preterm labour was found 26% in this study. Similar to this study, Nejad VM *et al.*, [6] found 25%, Deepa Masand *et al.*, [7] found 36%, Javed Ali *et al.*, [8] found the prevalence of bacterial vaginosis was 28% among the preterm labour.

In this study we have found that the prevalence of bacterial vaginosis was highest in the age group of 26-30years. Aruna *et al.*, [9] and Chawanpaiboon S *et al.*, [10] found that the mean maternal age was 23.8yrs and 26.7yrs respectively. However Amsel *et al.*, [11] and Bhalla *et al.*, [12], found no significant association between the age of the patient and the prevalence of bacterial vaginosis.

From this study we got that, higher the parity, i.e parity more than 2 had a significant association with bacterial vaginosis. This is also supported by the study of Bhalla *et al.*, [12], who found a significant correlation between bacterial vaginosis and a parity of more than 2. Bacterial vaginosis was associated with early preterm delivery i.e between 28-33weeks as compared to preterm delivery between 34-36weeks. Javed Ali *et al.*, [8], Aruna *et al.*, [9] Chawanpaiboon *et al.*, [10] also found that the mean gestational age at the time of delivery was 31.787weeks, 31.7weeks and 33.6weeks respectively.

CONCLUSION

- From this study we have found that, bacterial vaginosis is more prevalent in the age group between 26-30yrs, with parity more than 2, belonging from lower socioeconomic status and from rural habitat.
- As evident from this study, preterm deliveries represents significant burden of the disease.
- Preterm delivery is the largest contributor to perinatal mortality and morbidity, which generates significant healthcare cost.
- Bacterial vaginosis is an important risk factor for preterm delivery and therefore requires early identification and treatment.
- The screening for bacterial vaginosis as a routine in high risk group pregnancy and its prompt treatment may reduce the risk of preterm labour and related morbidity.

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