

THE ASSOCIATION OF BACTERIAL VAGINOSIS WITH ADVERSE PREGNANCY OUTCOMES*Jalagadugula Venkata Narasimha Rao¹, Jalagadugula Chandini²*¹*Assistant Professor, Department of Obstetrics and Gynaecology, Gitam Institute of Medical Sciences and Research, Visakhapatnam.*²*Postgraduate Student, Department of Obstetrics and Gynaecology, Gitam Institute of Medical Sciences and Research, Visakhapatnam.***ABSTRACT****BACKGROUND**

Bacterial Vaginosis (BV) is a vaginal disease in which lactobacilli-dominated vaginal flora is exchanged with an abundant complex flora dominated by strict and facultative anaerobic bacteria. It has been associated with significant obstetric complications such as preterm delivery, Premature Rupture of Membranes (PROM), chorioamnionitis and postpartum endometritis.

The aim of the study is to assess the prevalence of BV and evaluate its correlation with adverse pregnancy outcomes.

MATERIALS AND METHODS

An observational study was conducted in a tertiary care hospital from February 2015 to January 2017. Seven hundred and fifty antenatal patients admitted or attending antenatal outpatient department of a tertiary care hospital were included in the study. Appropriate clinical evaluation of BV was made and gram-stained vaginal smears were examined by application of Nugent's criteria. Adverse pregnancy outcomes associated with BV was evaluated.

RESULTS

Among the 750 women evaluated, 542 (72.26%) women had normal vaginal microflora, 64 (8.53%) had intermediate flora and 144 (19.2%) had BV. The study of BV associated adverse pregnancy outcomes revealed 72% preterm cases, 90% of PROM and 100% of postpartum endometritis cases were associated with BV.

CONCLUSION

Bacterial vaginosis was significantly associated with preterm labour, PROM and postpartum endometritis. Therefore, the screening of antenatal cases for BV and maintaining a high index of suspicion for the obstetric complications is a must in antenatal BV cases.

KEYWORDS

Bacterial Vaginosis, Amsel's Criteria, Nugent Score, Preterm Labour.

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BACKGROUND

Bacterial Vaginosis (BV) is one of the most prevalent cause of malodorous vaginal discharge and the most common lower genital tract disorder among women of reproductive age group.¹ The causative pathogenic organisms include *Gardnerella vaginalis*, *Mobiluncus* species, *Bacteroides* and *Prevotella* species and *Mycoplasma* species.²

The majority of BV cases remain asymptomatic, unreported and untreated.³ Previously, BV was considered benign, however, at present, it has been linked to certain obstetrical complications like preterm labour and preterm delivery.³ Premature Rupture of Membranes (PROM),⁴ amniotic fluid infections⁵ and postpartum endometritis.⁶ Environmental factors appear to be important in

development of bacterial vaginosis. Exposure to chronic stress, ethnic differences and frequent or recent douching are found to have an increased association with BV.⁷

BV can be diagnosed both clinically and microbiologically. Diagnostic criteria are the same for pregnant and nonpregnant women. Diagnosis is based on Amsel's criteria, Nugent score, Hay/Ison grading or bacterial vaginosis blue test, which measures vaginal fluid sialidase activity.^{8,9} The prevalence of BV varies from 10-41% among pregnant women.¹⁰ The treatment options include systemic and topical antibiotics. Spontaneous relapse is more common with topical in comparison to systemic antibiotics.⁹ The purpose of the present study was to study the prevalence of BV and its association with adverse pregnancy outcomes in a tertiary care hospital.

MATERIALS AND METHODS

An observational study was undertaken in the Department of Obstetrics and Gynaecology of a tertiary care hospital in Gitam Institute of Medical Sciences and Research from February 2015 to January 2017 over a period of two years. Seven hundred and fifty pregnant women (<28 weeks of gestation) were enrolled as study subjects. Women with

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history of previous preterm labour, threatened preterm labour, obstetrical complications such as antepartum haemorrhage, severe anaemia, pregnancy-induced hypertension, essential hypertension, multiple gestation, chronic urinary tract infection, pre-existing kidney or heart disease were excluded from the study. Written informed consent was taken in the patient's own understandable language before enrolling them for the study.

The diagnosis of BV was based on the Society of Obstetricians and Gynaecologists of Canada (SOGC) clinical practice guidelines.¹¹

All cases under study were subjected to routine antenatal examination and investigations after obtaining a detailed obstetric history. In the presence of adherent or homogenous vaginal secretion/discharge with/without foul odour, it was sent to the microbiology laboratory to detect BV by Nugent's criteria as depicted in Table 1. The cases were followed up to look for adverse pregnancy outcomes after their primary assessment. Statistical analysis was carried out using SPSS software (Version 16.0).

RESULTS

Seven hundred and fifty (750) pregnant women were recruited for the present observational study. Evaluation of vaginal microflora was based on Nugent's criteria. Among the 750 women evaluated, 542 (72.26%) women had normal vaginal microflora, 64 (8.53%) had intermediate flora and 144 (19.2%) had BV.

The prevalence of BV was found to be 40.2% in the age group of 26-30 years as depicted in Figure 1. However, present study found no significant ($p > 0.5$) association of BV with any particular age group. Hundred and seven (74.3%) of the cases belonged to the lower socioeconomic strata.

This distribution highlighted the significant ($p < 0.05$) association of BV with the lower socioeconomic strata.

The period of gestation did not have any significant association with the prevalence of BV. Ninety eight (68.05%) women with BV were primigravida and the remaining forty six (31.94%) were multiparous women ($p < 0.05$).

The patients were followed up to study the adverse pregnancy outcomes. Thirty six (25%) of the 144 patients with BV manifested with preterm delivery (Table 2) and were delivered before 37 completed weeks of gestation. In comparison, only 12 (2.2%) of the women with normal vaginal flora manifested with preterm delivery. The occurrence of preterm delivery in patients of BV was found to be statistically significant ($p < 0.05$). Premature Rupture of the Membranes (PROM) was evident in 21 among the 750 subjects under study. Nineteen among the 21 PROM positive cases were significantly positive ($p < 0.05$) for BV (Table 2). Postpartum endometritis was evident in only 3 subjects in the population under study and all three subjects were positive for BV.

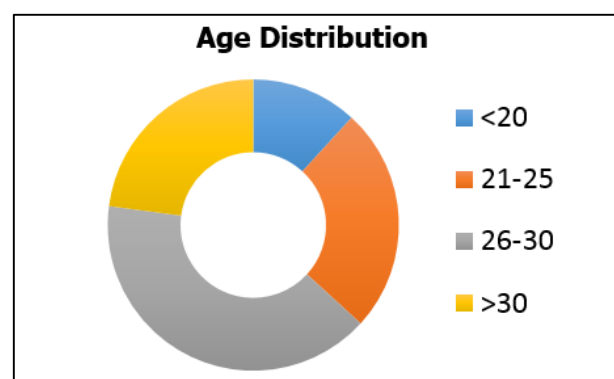


Figure 1. Age Distribution

Score	Lactobacillus Morphotypes	Gardnerella and Bacteroides Morphotypes	Curved Gram-Variable Rods
0	4+	0	0
1	3+	1+	1+ or 2+
2	2+	2+	3+ or 4+
3	1+	3+	
4	0	4+	

Table 1. Scoring System for Gram-Stained Vaginal Smears

Category	Study Population	Preterm Delivery Percentage	PROM Percentage	Postpartum Endometritis Percentage
Normal vaginal microflora	542	12 (2.2%)	2 (0.36%)	0
Intermediate	64	2 (3.125%)	0	0
BV	144	36 (25%)	19 (13.2%)	3 (2.08%)
Total	750	50	21	3

Table 2. Distribution of Adverse Pregnancy Outcomes

DISCUSSION

BV is a syndrome that can be diagnosed both clinically and microbiologically. Our study was conducted among asymptomatic as well as symptomatic pregnant women. Among the 750 women recruited for the present observational study, 72.26% women had normal vaginal flora, 8.53% had intermediate flora and 19.2% had BV. Studies by Afolabi et al¹² recorded prevalence rate of BV of

26% among pregnant women. A study by Gupta et al¹³ showed a prevalence of 19.6% of BV in pregnancy.

The study used Nugent criteria for diagnosis of BV, which has been found to have a higher sensitivity and specificity on comparison with Amsel's criteria by a number of studies.^{14,15} Demographic data of the present study suggested no significant association of any particular age group with BV and was similar to studies by Gupta et al.¹³ Present study showed positive correlation of BV with low

socioeconomic similar to studies by Gupta et al¹³ and Balla et al.¹⁶

Kurki et al observed that BV was associated with 2-6 fold increased risk for preterm labour, 6-9 fold increased risk for preterm birth and 7-3 fold increased risk of PROM. Present study showed 72% association of BV with preterm labour. A study by Gupta et al¹³ showed 76.6% association of BV with preterm labour. It was observed that 90% of the PROM cases were associated with BV and 100% of postpartum endometritis cases were associated with BV.

Medical treatment of BV involves the use of oral antibiotics or vaginal preparations. The application of vaginal preparations alone has been ineffective in prevention of obstetric complications. The addition of oral antibiotics has been found to increase the cure rates ranging from 33% to 86%¹¹ and to effectively prevent the associated adverse pregnancy outcomes.

CONCLUSION

In the current scenario, there is no consensus as to whether to screen for or treat bacterial vaginosis in the general pregnant population in order to prevent adverse outcomes. The present study shows that screening for lower genital tract infections (vaginal and cervical) can predict the possibility of obstetric complications and the effective management of BV can help overcome the adverse pregnancy outcomes.

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