Original Article

Role of Bacterial Vaginosis in Patients with Idiopathic Pre-Term Labour.

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ABSTRACT

Background: To find out the correlation of bacterial vaginosis (BV) in idiopathic preterm labour and find its association with an adverse pregnancy outcome in patients with idiopathic preterm labour. Methods: This is a comparative study, comprising of 150 pregnant females in study group admitted with preterm labour without any obvious cause and 150 pregnant women with singleton pregnancy at term in the control group. Both the groups were tested for BV by using Amsel's criteria and Nugent's criteria. Diagnosis of BV was stamped based on gram staining of vaginal discharge smear. All patients were followed till delivery. Results: In the study group, significantly large number of women tested positive for BV on gram staining of vaginal discharge as compared to control group (20.6% vs 8.0%). In the study group, an adverse pregnancy outcome in the form of preterm delivery (<37 weeks) was noted in 93.4% women testing positive for BV and only in 47.9% women testing negative for BV. The majority of women with BV +ve were more likely to deliver before or at 34 weeks (58.06%) compared to women with BV-ve (14.28%). Conclusion: BV was significantly associated with preterm labour and preterm delivery and adverse perinatal outcomes.

Keywords: Bacterial vaginosis, preterm labour (PTL), preterm delivery.

INTRODUCTION

Bacterial Vaginosis (BV) is a polymicrobial disorder of the vaginal ecosystem characterized by a shift in the vaginal flora from the normally predominant Lactobacillus to one dominated by a mixed flora including Gardnerella vaginalis and Mobiluncus, Prevotella, Bacteroides and Mycoplasma species[1]. Lactobacillus is a normal flora in the vagina that produces an acidic medium via hydrogen peroxide (H₂O₂), which transforms glycogen in vaginal epithelium to lactic acid. The acidic medium produced by Lactobacillus suppresses the growth of other micro-organisms[2]. Bacterial Vaginosis accounts for 40-50% cases[3]. The exact mechanism for the onset of bacterial vaginosis remains a mystery. It is associated with a reduction in Lactobacilli and Hydrogen peroxide production, a rise in the vaginal pH and the overgrowth of bacterial vaginosis associated organisms [Figure 1].

Pre-term labour (PTL) with subsequent delivery of a premature baby remains a major cause of perinatal morbidity and mortality in India. The aetiological factor responsible for PTL, is obscure in a large percentage of cases leading to an increased incidence of idiopathic PTL. Recently the lower genital tract infection especially the bacterial vaginosis, has been strongly suspected to be the offending agent in a number of serious obstetrics complications like preterm labour, preterm delivery, premature rupture of membranes (PROM), Low Birth weight (LBW), postpartum endometritis, postpartum sepsis, Lower segment Caesarean section (LSCS) and episiotomy wound infection. The widespread use of effective screening and treatment have the potential to significantly limit these adverse maternal and perinatal outcomes and reduce the health costs and economic burden associated with Bacterial Vaginosis suffering pregnant women. Therefore, the present study was undertaken to evaluate the role of Bacterial Vaginosis in idiopathic PTL and preterm delivery.

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Figure 1: Associated changes with Bacterial Vaginosis
MATERIALS AND METHODS

The cross sectional study was performed on pregnant women attending OPD and those admitted in the Department of Obstetrics and Gynaecology, RMCH, Bareilly, Uttar Pradesh, India over a period of six months as per the selection criteria mentioned below.

Inclusion Criteria
- Singleton pregnancy.
- Gestational age between 28-36 weeks.
- Intact membranes.
- Painful uterine contractions > 2 in 10 min, each lasting for > 45 sec.
- Cervical dilatation < 4 cm.
- Cervical effacement > 25%.

Exclusion Criteria
- Gestational Age < 28 weeks.
- History of APH (Ante Partum Haemorrhage).
- Congenital anomaly of uterus.
- Multiple pregnancy.
- Intrauterine foetal death.
- IUGR (Intra Uterine Growth Restriction).
- Women with chronic hypertension, pregnancy induced hypertension, diabetes mellitus, chronic heart disease, chronic renal disease, moderate to severe anaemia.
- Antibiotic therapy within 15 days of enrolment.
- History of leaking per vaginum or absent membranes.

The Study included 2 groups-
- **Study Group**- The study group included 150 women with preterm labour without any obvious cause for the same
- **Control Group**- 150 women carrying singleton pregnancy at term gestation are included in control group.

Detailed history was taken especially to include the history of previous abortion, pre-term delivery, still birth and neonatal death. A thorough general and systemic examination was done to exclude exclusion criteria. A detailed obstetrical examination was done to note the fundal height of the uterus, abdominal girth, presentation, uterine contractions (frequency, intensity and duration) and FHR. Speculum Examination was done to exclude leaking and bleeding per vaginum. Samples of vaginal discharge were taken and the diagnosis of bacterial vaginosis was made by using Amsel’s criteria, and by gram staining of the vaginal discharge. Accurate clinical diagnosis was based on the presence of minimum three of the four clinical criteria described by Amsel et al.[4]

Amsel’s criteria-
1. Thin homogenous white vaginal discharge.
2. Vaginal pH > 4.5.
3. Positive Whiff test (Amine test)-Offensive Amine odour when 10% KOH is added to the vaginal discharge.
4. Presence of clue cells (Vaginal Epithelial Cells with borders obscured by adherent coccobacilli on wet mount preparation or gram stain).

Diagnosis of BV was stamped on the basis of Nugent’s Criteria[5] on Gram stain, which identified the various morphotypes as Lactobacillus type, Gardnerella and Bacteroides type, or the Mobiluncus type; and then quantified each type into Scores 0 to 4+ with regards to number of each Morphotype seen in Oil immersion under 1000X magnification [Table 1].

A Score of ≥7 indicates BV infection. All patients testing positive for BV were treated with oral Metronidazole 400 mg TDS for seven days; and followed to know the overall outcome of present episode, the outcome of pregnancy and the development of puerperal and neonatal complications. Statistical analysis was done by using SPSS software, and the result was subjected to appropriate statistical analysis by employing tests like Chi-Square test & t-test.

RESULTS

Table 1: Nugent’s Scoring System

<table>
<thead>
<tr>
<th>Score</th>
<th>Lactobacillus Type</th>
<th>Gardnerella/Bacteroides Type</th>
<th>Mobiluncus type</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>&gt;30</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>5-30</td>
<td>&lt;1</td>
<td>1-5</td>
</tr>
<tr>
<td>2</td>
<td>1-4</td>
<td>1-4</td>
<td>&gt;5</td>
</tr>
<tr>
<td>3</td>
<td>&lt;1</td>
<td>5-30</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>&gt;30</td>
<td></td>
</tr>
</tbody>
</table>

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Table 2: The association of adverse obstetric event in past.

<table>
<thead>
<tr>
<th>Obstetric Problem in past</th>
<th>Study Group (n=150)</th>
<th>Control Group (n=150)</th>
<th>P-value</th>
</tr>
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<tr>
<td></td>
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The study and control groups were statistically compared with respect to age, parity and socio-economic status. The majority of women in both groups were of age group 26-32 years and majority of them belonged to low socio-economic status. In majority of women, parity was ≥P3

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DISCUSSION

Bacterial vaginosis is a very common condition characterised by alterations of the vaginal flora with acquisition of diverse communities of anaerobic and facultative bacteria and depletion of the usually dominant Lactobacillus flora (Sobel, 2005)\(^6\). Accurate diagnosis of BV is important as it is associated with adverse pregnancy outcome (Myziuk et al., 2003)\(^1\).

In present study BV was significantly associated with preterm labour (p value 0.00001). In a similar study performed by Kurki et al.\(^7\), bacterial vaginosis was associated with 2.6 times increased risk for preterm labour, 6.9 times increased risk for preterm delivery and 7.3 fold risk for preterm PROM. Sheehan et al. 1996, in their study on BV concluded that the occurrence of BV in early pregnancy led to 5-fold increased risk of late miscarriage or preterm delivery. In current study,
BV was more common in the low socioeconomic status. Rauh VA et al.[9] in his study also found higher prevalence of bacterial vaginosis in low socioeconomic status.

A history of prior preterm delivery has been associated with a 2 to 6 fold risk of recurrence of preterm delivery[9,10]. Also in the present study, a significantly higher frequency of previous preterm delivery was found among PTD women than among controls (p <0.0001). Other studies have also reported a similar association[10,12]. In the present study, number of BV +ve subjects of the study group delivered preterm as compared to BV- subjects. It was also found that BV+ve subjects were more likely to deliver very preterm i.e., <34 wks as compared to BV-ve (p=0.00001). Similar results have been reported by other workers[10-13]. The positive case in the control group had been given treatment for BV. Today, metronidazole is generally accepted as the drug of choice for treatment of BV[14]. Since metronidazole is contraindicated in the first trimester because of a possible teratogenic effect, amoxicillin, although less effective than metronidazole has been given as an alternative treatment in women during this time period of the pregnancy.[15] Also, cefadroxil might be an alternative therapy against BV in pregnant women.[16]

CONCLUSION

Bacterial vaginosis is associated with PTL, PROM and PTD. It is also associated with poor pregnancy outcome in the form of the LWB, postpartum endometritis, postpartum sepsis, and postpartum wound infection. It is even more strongly associated with very preterm delivery (<34wks). The true magnitude of BV is not known as more than half of cases are asymptomatic. Therefore, during prenatal care standard practice should be applied for screening of BV in patients with high risk for preterm labour and preterm delivery. Infections and altered vaginal flora are modifiable risk factors that can be curtailed. Hence, health care providers should monitor even asymptomatic pregnant women for BV and other cervicovaginal infections and prescribe appropriate antibiotics to reduce the burden of maternal and foetal morbidity.

Acknowledgement

I am thankful to Dept. of Obst and Gynec for allowing me to perform this study. I thank Rohilkhand Medical College and Hospital for providing patients. My hearty thanks to the Patients for their kind cooperation. My special thanks to my Colleagues, Seniors and Juniors and my Son (Sarvath) and daughter (Aayushi).

REFERENCES


Source of Support: Nil, Conflict of Interest: None declared