Section A-Research paper

Bacterial vaginosis and preterm labour

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Abstract

Background: To evaluate the association between preterm labor and bacterial vaginosis.

Materials & methods:A total of 100 pregnant women who had no known medical risk factors for preterm delivery were enrolled. At 23 to 26 weeks' gestation, bacterial vaginosis was determined to be present or absent on the basis of the vaginal pH and the results of Gram's staining. The principal outcome variable was the delivery at less than 37 weeks' gestation of an infant with a birth weight below 2500 g. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

Results: Bacterial vaginosis was detected in 23 percent of the 100 women. The women with bacterial vaginosis were more likely to be unmarried and low socio-economic status. In a multivariate analysis, the presence of bacterial vaginosis was related to preterm delivery of a low-birth-weight infant. Out of 53 subjects with presence of preterm labour, bacterial vaginosis was seen in 7.55 percent of the patients. **Conclusion:**Bacterial vaginosis was associated with the preterm delivery of low-birth-weight infants independently of other recognized risk factors.

Key words: Bacterial, Vaginosis, Labour

INTRODUCTION

Bacterial vaginosis is a condition caused by an overgrowth of normal vaginal flora. Most commonly, this presents clinically with increased vaginal discharge that has a fish-like odor. The discharge itself is typically thin and either gray or white. After being diagnosed with bacterial vaginosis, women have an increased risk of acquiring other sexually transmitted infections (STI), and pregnant women have an increased risk of early delivery.[1, 2]

Although bacterial vaginosis is not considered a sexually transmitted infection, the role of transmissibility is yet to be completely understood. The spread of bacteria among individuals through sexual intercourse may alter the natural balance of bacterial flora within the vagina, and this imbalance appears to lead to the development of bacterial vaginosis. Typically, this condition is caused by a decrease in the number of normal hydrogen peroxide-producing Lactobacilli with an overgrowth of anaerobic bacteria.[3, 4]

Preterm labor is parturition that occurs when birth occurs between 20 0/7 weeks of gestation and 36 6/7 weeks. It further categorizes into early and late preterm. Early preterm is when the baby is born before 33 weeks, and late preterm is when a baby is born between 34 and 36 weeks.[5, 6]Hence; the present study was conducted for evaluating the association between preterm labor and bacterial vaginosis.

MATERIAL AND METHODS:

A total of 100 pregnant women who had no known medical risk factors for preterm delivery were enrolled.Complete demographic and clinical details of all the subjects was obtained. At 23 to 26 weeks' gestation, bacterial vaginosis was determined to be present or absent on the basis of the vaginal pH and the results of Gram's staining. The principal outcome variable was the delivery at less than 37 weeks' gestation of an infant with a birth weight below 2500 g. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

RESULTS

Bacterial vaginosis was detected in 23 percent of the 100 women. The women with bacterial vaginosis were more likely to be unmarried and low socio-economic status. In a multivariate analysis, the presence of bacterial vaginosis was related to preterm delivery of a low-birth-weight infant. Out of 53 subjects with presence of preterm labour, bacterial vaginosis was seen in 7.55 percent of the patients.

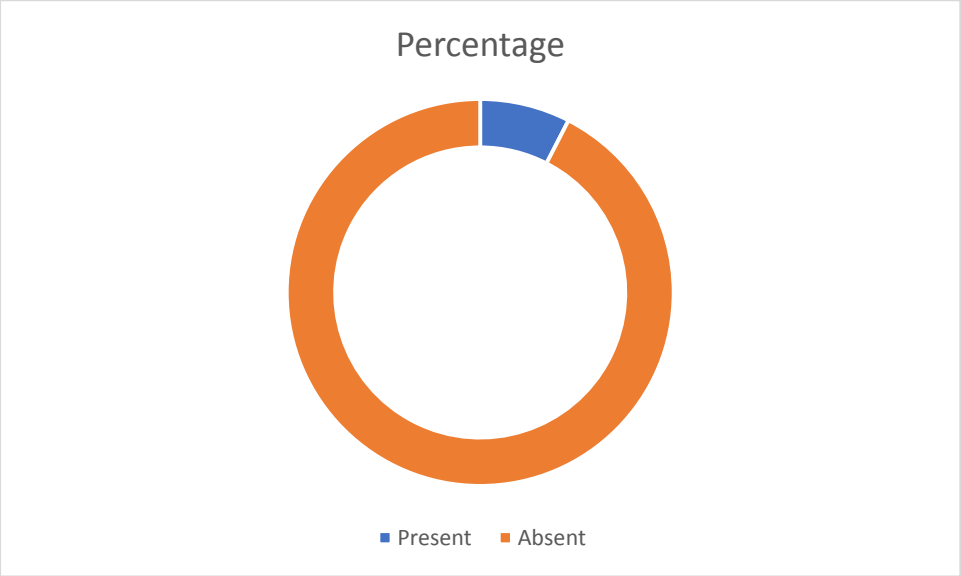
Table 1: Prevalence of bacterial vaginosis among pregnant women.

Bacterial Vaginosis	N (%)
Present	23(23%)
Absent	77(77%)

Table 2: Prevalence of preterm labour among women having bacterial vaginosis

Preterm labour	N (%)
Present	4(7.55%)
Absent	49(92.45%)

Graph1: Prevalence of preterm labour among women having bacterial vaginosis



DISCUSSION

Bacteria such as Lactobacillus lactis have an intravaginal cleansing effect in normal pregnancies, minimizing the presence of common bacterial species1. Recent high-throughput sequencing of 16 S rRNA gene of the vaginal bacterial communities of pregnant women showed that vaginal microbiome becomes more stable and less diverse as pregnancy progresses, which confers a protective role against ascending infection of the genital tract. However, there are intravaginal microorganisms other than

Lactobacillus species in some pregnancies that cause chorioamnionitis. This is because the normal flora (commensal bacteria) that colonize the vagina during pregnancy do not cause inflammatory conditions or vaginitis, such as occurs with infection by pathogenic bacteria. An imbalance in the normal vaginal bacteria is therefore known as bacterial vaginosis (BV).[7, 8]The relationship between altered vaginal microflora and preterm birth is likely mediated by host immune responses. Because treatment of bacterial vaginosis during pregnancy does not improve preterm birth rates, and may in fact increase them, screening and treatment of asymptomatic pregnant women is discouraged. Symptomatic women should be treated for symptom relief.[9- 11]Hence; the present study was conducted for evaluating the association between preterm labor and bacterial vaginosis.

Oakeshott, Pet al estimated the relative risk of preterm birth in women with and without bacterial vaginosis, detected by self-administered vaginal swab at < 10 weeks' gestation. Ascertainment was 87% (937/1072). The mean age of the women was 31 years. Thirteen per cent (122/925) had bacterial vaginosis and 5% (44/897) had a spontaneous preterm birth. The relative risk (RR) of preterm birth in women with bacterial vaginosis was 0.9 (95% confidence interval [CI] = 0.4 to 2.2). However, bacterial vaginosis was associated with late miscarriage at 13-23 weeks (R = 4.0, 95%CI = 1.3 to 12.1). Preterm birth was not associated with previous preterm birth, black ethnicity, age < 20 years, low social class, single marital status, or chlamydial infection. However, it was more common in women who reported smoking in pregnancy (RR = 2.9, 95% CI = 1.5 to 5.5). Of 867 responders, 552 (64%) said that providing a vaginal swab was at least as easy as providing a urine specimen. In their low-risk community-based cohort, bacterial vaginosis was not a strong risk factor for preterm birth.[11]

Bacterial vaginosis (BV) affects millions of women, is extremely prevalent among low-income, urban pregnant women and is frequently chronic. In a healthy lower genital tract, Lactobacillus crispatus constitutes 95% of the bacteria present; among cases of BV, the levels of Lactobacillus crispatus are dramatically reduced and an overgrowth of various anaerobic bacteria exists.[7- 9]Shimaoka, M et al analyzed the relationship between the vaginal bacterial status and the preterm delivery rate. Without treatment, the preterm delivery rate was higher in the BV subgroup than in the I and normal (N) subgroups ($p = 0.021$) in the early gestational period (EGP), whereas the rates in the BV and I subgroups were higher than in the N subgroup in the middle gestational period (MGP) ($p = 0.0003$). Although treatment of BV by metronidazole vaginal tablets significantly increased the N subgroup in the MGP ($p = 0.020$), there was no significant improvement in the preterm delivery rate. Decreasing the rate of preterm delivery requires development of treatment methods that will further increase the percentage of patients who test N during the MGP after BV during the EGP.[12]

CONCLUSION

Bacterial vaginosis was associated with the preterm delivery of low-birth-weight infants independently of other recognized risk factors.

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