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Original Research Article

Pregnancy outcome in women with bacterial vaginosis

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ABSTRACT

Background: Bacterial vaginosis is a condition characterized by alteration in the vaginal flora. It is a common occurrence during pregnancy and is one of the established risk factors for preterm delivery, premature rupture of membranes and chorioamnionitis. The objective of the study was to study the prevalence and effects of bacterial vaginosis during pregnancy.
Methods: The study was a hospital based prospective study conducted in the department of obstetrics and gynaecology, RIMS, Imphal from January to December, 2021. 250 women between 20-28 weeks of gestation underwent examination and testing for bacterial vaginosis and were followed up till delivery. Pregnancy outcomes like pre-term labour, premature rupture of membrane; fetal outcomes like birth-weight, APGAR score, NICU admission, or any other complications were noted.
Results: Out of the 250 singleton pregnancies, 48 women (19.2%) were found to have bacterial vaginosis. Pregnancies associated with bacterial vaginosis had more chances of premature rupture of membranes, low birth weight babies. But there was no significant association of the same to preterm labor and to the rate of NICU admission of the newborns.
Conclusions: Vaginal infection during pregnancy should also be entertained seriously and treated well since bacterial vaginosis may directly or indirectly be related to preterm delivery and low birth weight babies.

Keywords: Bacterial vaginosis, Flora, Chorioamnionitis, Pre-term labour, Low birth weight

INTRODUCTION

Bacterial vaginosis the most common cause of vaginal discharge in the reproductive age group. It is a condition characterized by alteration in the vaginal flora rather than any specific infection. Normally, the vaginal epithelium is inhabited by *Lactobacillus* species which is responsible for the acidic environment. Colonization by pathogenic organisms or a shift in the vaginal flora is responsible for bacterial vaginosis. The various organisms responsible include *Gardenerella vaginalis, Ureaplasma urealyticum, Mobiluncus species, Mycoplasma hominis, Prevotella* species.[1] The symptoms include a malodourous, watery vaginal discharge, with minimal inflammation in the perineal region.

Bacterial vaginosis in pregnancy is a common occurrence and it is one of the established risk factors for preterm delivery, premature rupture of membranes and chorioamnionitis.[2] The prevalence of bacterial vaginosis among non-pregnant women ranges from 15-30% whereas in pregnancy, it ranges between 11-16% in developed countries. The diagnosis is per the Amsel's criteria. It enumerates four criteria out of which at least three criteria have to be met-1) presence of a milky, homogeneous watery discharge which may be grey or yellowish in colour, 2) pH of the vagina more than 4.5, 3) positive amine test {fishy odour from the vaginal fluid when alkali solution is added}, 4) presence of clue cells on microscopy.[3] Asymptomatic bacterial vaginosis may resolve spontaneously, while symptomatic patients require

treatment. Treatment can be topical or oral metronidazole or clindamycin, but oral metronidazole should be avoided during the first trimester of pregnancy.

METHODS

The study was a hospital based prospective cohort study conducted in the department of obstetrics and gynaecology, regional institute of medical sciences, Imphal, Manipur. The initial sampling was conducted from January to December, 2021. After taking proper written consent, 250 women pregnant between 20 to 28 weeks of gestation were enrolled in the study.

Inclusion criteria include pregnant women over 18 years of age, with singleton pregnancy between 20 to 28 weeks of gestation. Women in pre-term labour, presence of bleeding/leaking per vagina, women with other medical or obstetrics complications excluded from initial enrolment.

All the women were followed up till delivery. The diagnosis of bacterial vaginosis was as per the Amsel's criteria. Socio-demographic characteristics like age, gestation, parity, socio-economic status, religion; pregnancy outcomes like pre-term labour, premature rupture of membrane; fetal outcomes like birthweight, APGAR score, NICU admission, or any other complications were noted. The collected data were entered and analysed in SPSS (IBM) version 21.

RESULTS

A total of 250 participants were enrolled in the study. All of them were followed up till delivery. Of them, 105 participants (42%) were primigravida, while 145 (58%) were multigravida.

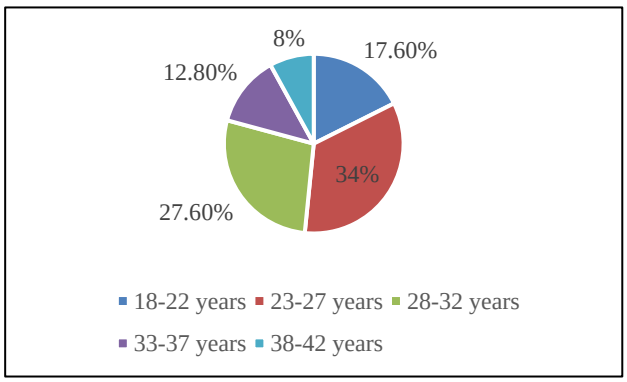

Figure 1: Distribution of participants according to age.

On examination and testing, 19.2% (48 participants) were found to have bacterial vaginosis.

Out of those 250 participants, 185 (74%) delivered vaginally, while the rest 26% had to undergo cesarean section. Ninety women (36%) had premature rupture of membrane.

Out of the 250 newborns delivered to the participants, 65 newborns (26%) required admission to NICU, 10 (4%) had APGAR score <7 at the time of birth, 75 babies (30%) were delivered preterm. There was no neonatal mortality.

Table 1: Association between bacterial vaginosis and preterm delivery, (n=250).

Bacterial vaginosis	Preterm delivery, N (%)		P value
	Yes	No	
Yes	19 (39.5)	29 (60.5)	0.106
No	56 (27.7)	146 (72.3)	

There is no statistically significant association between bacterial vaginosis and preterm delivery (Table 1).

Table 2: Association between bacterial vaginosis and PROM, (n=250).

Bacterial vaginosis	PROM, N (%)		P value
	Yes	No	
Yes	28 (58.3)	20 (41.7)	0.000
No	61 (30.2)	141 (69.8)	

As is shown in Table 2, 58.3% of the women with bacterial vaginosis had PROM as compared to only 30.2% of the women without bacterial vaginosis, and the finding was statistically significant.

Table 3: Association between bacterial vaginosis and low birth weight, (n=250).

Bacterial vaginosis	Birth weight, N (%)		P value
	<2.5 kg	≥2.5 kg	
Yes	23 (47.9)	25 (52.1)	0.023
No	62 (30.7)	140 (69.3)	

It was also found that 47.9% of the newborns delivered to women with bacterial vaginosis had low birth weight as compared to only 30.7% of the newborns delivered to women without bacterial vaginosis (Table 3). The finding was also statistically significant.

Table 4: Association between bacterial vaginosis and NICU admission, (n=250).

Bacterial vaginosis	NICU Admission, N (%)		P value
	Yes	No	
Yes	18 (37.5)	30 (62.5)	0.074
No	50 (24.7)	152 (75.3)	

There was no statistically significant association between the bacterial vaginosis and the rate of NICU admission of the newborns (Table 4).

DISCUSSION

PROM and low birth weight were significantly associated with bacterial vaginosis in this study which is similar to

the findings of Adoloju et al where, women with bacterial vaginosis significantly had pre-labour rupture of membrane (63.6%) and their babies were born prematurely (71.4%) with low birth weight (76.9%).[4] Another study by Milkamo et al showed bacterial vaginosis was present in 72.9% of preterm labour. Pruwar et al also showed significant association between bacterial vaginosis and PROM in their study.[5,6] Lata et al reported significant association between PROM (26.8%) and low birth weight (60.9%) with bacterial vaginosis. Thus, this study finding of PROM and low birth weight significantly associated with bacterial vaginosis is in line with similar other studies.[7]

The 39.5% of the pregnant women who had bacterial vaginosis delivered preterm baby in comparison to only 27.7% of the pregnant women who did not have bacterial vaginosis, but the difference was not significant. Similarly bacterial vaginosis was present in 25.3% of the preterm delivery cases in comparison to only 16.5% among term pregnant women. In a study by Milkamo et al it was found that among the preterm delivery, the prevalence of bacterial vaginosis was reported as much as 51.5%.[5] Similarly, bacterial vaginosis was diagnosed in 31.6% of women in preterm labour and in 15% of term pregnancies in a study by Goyal et al.[8] In yet another study done by Thanavuth et al 25.8% of the patients with preterm labour were positive for bacterial vaginosis.[9] Similarly De Seta et al reported preterm delivery significantly associated with presence of bacterial vaginosis at an early gestational age.[10] Thus, bacterial vaginosis is often associated with pre-term labour. But whether this association is causative or whether bacterial vaginosis is associated with some unidentified factor that initiates preterm labor still remains inconclusive.

The prevalence of bacterial vaginosis was 19%. In a study by Thorsen et al they reported 13.7% prevalence of Bacterial vaginosis in their study population.[11] In another study by Pruwar et al the prevalence of bacterial vaginosis was 11.53%.[6] Svare et al showed a prevalence of 16% bacterial vaginosis in their study.[12] But the prevalence was higher among symptomatic pregnant (vaginal discharge) women as reported by Mathew et al wherein there was a 38.5% prevalence of bacterial vaginosis among symptomatic pregnant women.[13] Thus bacterial vaginosis is highly prevalent among pregnant women ranging from 10% to 30%.

NICU admission was more among the babies born to bacterial vaginosis positive patient (37.5%) than normal term pregnant women (24.7%) but it was not statistically significant. Adoloju et al also showed no significant association between bacterial vaginosis and admission of baby at special care unit.[4]

This high NICU admission can be directly due to low birth weight and preterm delivery without any direct correlation with bacterial vaginosis.

Even though there was significant association of premature rupture of membranes to bacterial vaginosis, whether this association is causative or whether bacterial vaginosis is associated with some unidentified factor that initiates preterm labour still remains inconclusive. The association to low birth weight of the babies born to women who had bacterial vaginosis may also be because of the preterm deliveries resulting from the premature rupture of membranes. As with many other studies, this study also has limitations that should be acknowledged. Firstly, as convenient sampling was implemented, the finding may not be able to represent the population. Secondly, as intervention was given in the form of treatment and management, true outcome of the disease could not be ascertained.

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