ORIGINAL ARTICLE

FREQUENCY OF BACTERIAL VAGINOSIS AMONG WOMEN PRESENTING WITH PRETERM LABOUR

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Background: Preterm delivery is of major medical, economic, and social importance worldwide. The incidence is between 5–10% in most developed countries. Both short-term and long-term issues may arise from preterm delivery. Preterm delivery is the cause of almost 85% of long-term disabilities in healthy babies and 75% of new-born deaths. This study aimed to determine the frequency of bacterial vaginosis among women presenting with preterm labour. **Methods:** This cross-sectional descriptive study was conducted in Department of Obstetrics & Gynaecology, Women Medical College, Abbottabad, and Women & Children Hospital Abbottabad from Jun to Dec 2023. A total of 174 women with preterm labour were included in the study. All women were examined as per Amsel's clinical diagnostic based on four factors, i.e., Thin grey homogeneous vaginal discharge, fishy smell on Amine test, clue cells of >20% on microscopy, and vaginal *p*H>4.5. **Results:** Age limit 15–45 years with mean age of 27.471±3.77 years, mean gestational age 29.546±3.45 weeks, mean parity 1.396±1.45 and mean Gravida was 2.396±1. Bacterial vaginosis was seen in 11.5% patients. **Conclusion:** There is a correlation between premature labour and bacterial vaginosis. It requires attention to lower morbidity and mortality.

Keywords: Preterm labour, Bacterial vaginosis, Frequency

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INTRODUCTION

Preterm delivery carries significant global implications in the realms of medicine, economics, and society, with an incidence ranging from 5 to 10% in most developed countries. This eventuality can lead to immediate and enduring complications, contributing to over 85% of long-term disabilities in healthy infants and 75% of newborn deaths.[1,2] The multifactorial aetiology of preterm birth includes factors such as poor diet, strenuous manual labour, anxiety, genitourinary tract infections, cervical incompetence, placental abruption, and multiple pregnancies. Notably, mounting evidence supports the role of infections, particularly bacterial vaginosis, as a potential cause of preterm labor.[3–5]

Bacterial vaginosis, a prevalent lower genital tract infection affecting women reproductive age, exhibits a prevalence of 10–61%. This polymicrobial syndrome results in reduced lactobacilli concentration, elevated vaginal *p*H, and an increase in *Gardnerella vaginalis*, *Mobiluncus* species, bacteriods, *Prevotella* species, and *Mycoplasma* species. This condition has been linked to upper genital tract infection, inflammation, and preterm labour and delivery. Numerous studies have demonstrated that pregnant women with bacterial vaginosis have a higher risk of late miscarriage and preterm delivery than those with normal vaginal flora.[5,6] The diagnosis of bacterial vaginosis can be clinical (using Amsel's criteria) or microbiological, and treatment options include metronidazole or clindamycin. Studies indicate a 13% frequency of bacterial vaginosis in preterm delivery cases. Another study highlights a 43% proportion of bacterial vaginosis in the African population.[7–12] Recent evidence supports routine screening and treatment of bacterial vaginosis in women at both low and increased risk of preterm birth. The aim of this study was to ascertain the frequency of bacterial vaginosis in preterm labour.

MATERIAL AND METHODS

From Jun to Dec 2023, a descriptive case study was carried out at the Department of Obstetrics and Gynaecology, Women & Children Hospital/Women Medical College, Abbottabad on 174 patients.

Inclusion criteria was all women with preterm labour, singleton pregnancy, age 15–45 years and any gravidity and parity. Exclusion criteria was polyhydramnios diagnosed on ultrasound with maximum vertical pool of >8 Cm, cervical incompetence diagnosed by history and TVS, placental abruption and placenta previa diagnosed by ultrasound, and any other condition which could lead to preterm labour. Approval of the Hospital Scientific and Ethical Committee was obtained prior to the study. Through OPD, all expectant mothers who fulfilled the inclusion criteria were enrolled in the trial and were admitted in the Obstetrics Department for further evaluation. The diagnosis of preterm labour was made based on gestational age between 24–37 weeks and onset of regular and painful uterine contractions every two minutes for the last 2 hours with dilatation and effacement of the cervix. Written informed consent was acquired from the patients.

All women were subjected to complete history followed by complete physical and vaginal examination. All women underwent routine tests, including ultrasound, to rule out illnesses listed in the exclusion

criteria. All women were evaluated according to Amsel's clinical diagnostic criteria for the diagnosis of bacterial vaginosis based on any three of the four criteria, i.e., thin grey homogeneous vaginal discharge, fishy smell on Amine test, Clue cells >20% on microscopy, and vaginal *p*H >4.5. All information including name, age, gravidity, parity and address was recorded on a pre-designed proforma.

Data was analysed on SPSS-22. Mean±SD was calculated for quantitative variable like age, gravidity, parity and period of gestation. Frequencies and percentages were calculated for categorical variables like bacterial vaginosis. Bacterial vaginosis was stratified by age, period of gestation, gravidity, and parity to see the effect modifications. Post-stratification Chi-square test was used at 5% level of significance. Results were presented in the form of tables and graphs.

RESULTS

A total of 174 subjects were stratified into age groups ranging from 15 to 45 years. Their mean age was 27.471±3.77 years, while mean gestational age was 29.546±3.45 weeks, the parity was 1.396±1.45 and mean Gravida was 2.396±1.45. (Table-1).

Bacterial vaginosis was determined with standard protocol. It was observed that 11.5% patients were suffering from bacterial vaginosis while 88.5% didn't show the condition. (Table-2).

The presence of vaginosis among the subjects was stratified to evaluate the presence of vaginosis in different age groups. It was interesting to note that all the patients of vaginosis fell into age group 15–30 years. (Table-3).

Bacterial vaginosis was found to be present during gestation period 24–36 weeks. We further divided the gestational age-related vaginosis into two subgroups: 24–30 weeks and 31–36 weeks. The vaginosis was recorded 12% in age groups 24–30 years and 12.3% in gestation age group 31–36 weeks. (Table-4).

Table-5 and 6 depict the stratification of bacterial vaginosis with respect to parity and gravida. The differences between subgroups were significant (p<0.05).

Table-1: Demographics of patients (Mean±SD), (n=174)

Demographics	Mean±SD
Age (Years)	27.471±3.77
Gestational age (Weeks)	29.546±3.45
Parity	1.396±1.45
Gravida	2.396±1.45

Table-2: Frequency of patients according to bacterial vaginosis n=174

Bacterial Vaginosis	Frequency	Percentage
Yes	20	11.5%
No	154	88.5%
Total	174	100%

Table-3: Stratification of bacterial vaginosis with respect to age

Age (Years)	Bacterial Vaginosis		*p*
	Yes	No	
15–30	20 (14.2%)	121 (85.8%)	<0.05
31–45	0 (0%)	33 (100%)	
Total	20 (11.5%)	154 (88.5%)	

Table-4: Stratification of bacterial vaginosis with respect to gestational age

Gestational Age (Week)	Bacterial Vaginosis		*p*
	Yes	No	
24–30	12 (11%)	97 (89%)	0.795
31–36	8 (12.3%)	57 (87.7%)	
Total	20 (11.5%)	154 (88.5%)	

Table-5: Stratification of bacterial vaginosis with respect to parity

Parity	Bacterial Vaginosis		*p*
	Yes	No	
0–2	20 (14.3%)	120 (85.7%)	<0.05
>2	0 (0%)	34 (100%)	
Total	20 (11.5%)	154 (88.5%)	

Table-6: Stratification of bacterial vaginosis with respect to gravida

Gravida	Bacterial Vaginosis		*p*
	Yes	No	
1–3	20 (14.3%)	120 (85.7%)	<0.05
>3	0 (0%)	34 (100%)	
Total	20 (11.5%)	154 (88.5%)	

DISCUSSION

Preterm labour has several unknown causes. In many obstetric cases, the pathophysiology of preterm labour is unknown. As time goes on, healthcare facilities undergo significant improvements that lead to a significant increase in the survival rate of preterm new born with extremely low birth weights. Bacterial vaginosis was significantly correlated with patient's age (p<0.05). Hancock *et al*[13] showed no correlation between age and presence of bacterial vaginosis. But they reported 38.3% occurrence of bacterial vaginosis in urban areas. One of the causative organisms for bacterial vaginosis were gram negative diplococci as reported by previous studies[14–16]. Tracnomoiasis was found in a small number of cases, but it was not the reason for the preterm labour. Bacteriods were present in one case and *Gardenella*, *Mobiluncus* species, curved gram-positive rods in 21% of the cases.[17,18] *Mobiluncus* species were also found with bacterial vaginosis. Yadav K, *et al*[19] reported that women who had both *Mobiluncus* morphotypes and bacterial vaginosis were more likely to have preterm labour than those who did not have either of these conditions. The presence of *T. vaginalis* in women experiencing preterm labour was found in a study conducted by Coudray MS, *et al*.[20] We used Amsel's clinical criteria for diagnosis of bacterial vaginosis. These patients had previous history of low-birth-weight babies. In 23% of patients with bacterial vaginosis a

previous history of premature birth and low birth weight babies was reported.

Bacterial vaginosis was also associated with gravida and parity. Different clinical characteristics such as copious malodorous vaginal discharge, premature rupture of membranes, poor personal hygiene, and uterine anomalies were observed. *Gardnerella*/ Bacteriods/*Mobiluncus* morphotypes and gram negative rods were present more frequently as cause of bacterial vaginosis. Bacterial vaginosis is very common in the reproductive age group. In many cases women have no symptoms but show signs of infection. In our study 20% cases had poor personal hygiene. Preterm delivery is associated with bacterial vaginosis in mid and late gestation. Bacterial vaginosis is a risk factor for prematurity and chorioamnionitis.[16–19] In other studies bacterial vaginosis was detected in 49% preterm cases and 24% in full term patients. They also have developed bacterial vaginosis with chorioamnionitis and preterm labour.[20,21] Numerous studies have found a prevalence of BV during pregnancy ranging from 10 to 30%. The findings of current study are consistent with prior research.

CONCLUSIONS

There is a correlation between premature labour and bacterial vaginosis. One of the main causes of premature labour is bacterial vaginosis, and it requires attention to lower morbidity and mortality rates.

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