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Original Research Article

BACTERIAL VAGINOSIS ASSOCIATED WITH SPONTANEOUS PRETERM DELIVERY

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Abstract

Background: Preterm deliveries always pose a major problem as the neonatal complications occurs in severe form. Bacterial vaginosis is a syndrome which is polymicrobial**.** As Bacterial Vaginosis always have an impact on the maternal and the neonatal outcome in pregnancy it is important to evaluate the pathological vaginal discharge appropriately and treat it adequately. The aim of the study is to find out the prevalence of the bacterial vaginosis among the preterm labour and to find out its association with the maternal and the neonatal outcome. **Materials and Methods:** The study was conducted among all the pregnant women admitting in labour room >28 weeks of gestations during the study period were recruited in our study in the Institute of Obstetrics and Gynaecology, Egmore, Chennai, it is a Case Control study. The sample size was found to be 110 in each group. The data was collected using a predesigned and pretested questionnaire. Detailed history, PH test, Amine test, clue cells and Gram staining and vaginal swab will be carried out. The collected data will be entered in the excel sheet and analysed using SPSS 23.p value <0.05 is considered statistically significant. **Result:** The most common age group in our study was found to be 21-25 years in both the group. Bacterial vaginosis was found to be more in Preterm births 27.3% compared to Term births. The results portrayed that the sensitivity is 100% for the PH>4.Maternal complications and neonatal complications was found to be more in preterm group compared to term group. **Conclusion:** Our study concludes that it is important to do routine screening for all the antenatal women so we can detect the bacterial vaginosis early as possible and can start the treatment immediately so that we can decrease the adverse outcome of pregnancy.

INTRODUCTION

The major cause of the perinatal mortality and the morbidity is the preterm labour and delivering the premature baby. The incidence was remaining constantly 10-15% inspite of the advances in the obstetric and the neonatal care in over the past decades. Preterm deliveries always pose a major problem as the neonatal complications occurs in severe form like the respiratory distress syndrome, sepsis and necrotizing enterocolitis leading to death. It is caused due to multiple factors and the most common cause is found to be the infections which constitute about 40%. Preterm labour can either be a physiological process which occurs too early or a pathological process as a result of abnormal cause like infections.

In Pregnant women an increase in vaginal discharge is not pathological in many instances. But if the vaginal discharge is found to be abnormal than it may be due to vulvo vaginal infections.[1,2,3] Our vaginal flora consist of the normal lactobacillus predominantly. If it is replaced by the anaerobic bacteria known as gardnerella vaginalis and myoplasma hominis, this condition is termed as the bacterial vaginosis. When these anerobes outnumber the aerobic organisms with the ratio of 10:1⁵.[4] Bacterial vaginosis is a syndrome which is polymicrobial. Thus the nature of the vaginal flora is shifted. It is one of the most common prevalent condition present commonly in both the pregnant and the non-pregnant women. Bacterial vaginosis is found along with some diseases like Genitourinary infections and Sexually transmitted diseases all over the world.[5,6] Bacterial vaginosis is found to be diagnosed in women who had preterm labour or in labour with preterm rupture of the membranes. It is generally found to be associated with premature rupture of membrane, preterm delivery, intrauterine growth retardation,chorion and amnion infections ,histologic chorioamnionitis ,missed abortion and the amniotic fluid infection.[7-9] The common causative factors which cause the following

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complications are the anerobic gram negative rods like Gardnerella vaginalis and the M.hominis.

It was also known that all over the world around 70% of the perinatal mortality occurs due to preterm delivery and it leads to adverse perinatal outcome. Prematurity, neonatal infections with neurodevelopmental problems like cerebral palsy and the low birth weights have also been encountered as neonatal complications. As Bacterial Vaginosis always have an impact on the maternal and the neonatal outcome in pregnancy it is important to evaluate the pathological vaginal discharge appropriately and treat it adequately.

The studies on the bacterial vaginosis are few in the developing countries though the prevalence of the bacterial vaginosis is found to be 20% according to the data's published. Due to paucity of data this study was done to find out the prevalence of the bacterial vaginosis among the preterm labour and to find out its association with the maternal and the neonatal outcome.

MATERIALS AND METHODS

Study Title
Institute of Obstetrics and Gynaecology, Egmore, Chennai-08.
Study Design
Case Control study
Study Period
March 2021 to January 2022
Selection of study population
All those pregnant women admitting in labour room >28 weeks of gestations during the study period were recruited in our study and are divided into preterm and Term group based on their gestational weeks. Thus each case has one control.
Inclusion criteria Cases:
● All Pregnant women with singleton pregnancy 28-37 weeks
● Booked, unbooked and referral
● Primigravida and multigravida
Control:
● All Pregnant women with singleton pregnancy 37-40 weeks
● Booked, unbooked and referral
● Primigravida and multigravida
Exclusion Criteria
● All Pregnant women who have taken antibiotics for less than 2 weeks
● Gestational age <28 weeks
● Taking long term therapy
● History of sepsis in the antenatal period
● High risk pregnancy
● Multiple pregnancy

A semistructured pretest Questionnaire in the regional language (Tamil) was used as data collection tool. Which consist of
1) Section 1-Baseline characteristics of the study participants like menstrual history, obstetric history, last menstrual period were taken

2) Section 2- Abdominal examination, vaginal and speculum examination were done

Data collection was done in the study area after obtaining permission from

the Institute Ethical Committee. Detail history taking done with regards to menstrual cycles, previous obstetric history, last menstrual period, history of previous preterm labour. Obstetrical, medical and surgical history obtained. Ultrasound examination was done to confirm the gestational weeks. Speculum examination of vagina was done to find the nature of the discharge and then vaginal swab taken for the bacteriologic study.PH test, Amine test, clue cells and Gram staining was done.

Sample Size:
The sample size was calculated based on the reference study with proportion of cases as 27% and that of controls is 12% with 95% confidence interval and 80% power and 5% alpha error the total sample attained for cases and controls were 110 in each group. Thus the total sample size is 220.

Sampling Method
Convenient (non-probability) sampling method was used

Statistical Analysis
Descriptive statistics was done for all data and were reported in terms of mean values and percentages. statistical tests of comparison were done. Continuous variables were analyzed with the unpaired t test. Categorical variables were analyzed with the Chi-Square Test and Fisher Exact Test. Sensitivity.

Specificity, Accuracy and Positive predictive value and negative predictive value were calculated using the following formula and taking 48 hours positivity result within 10 mm duration as cut off value as the gold standard.

RESULTS

Among the study participant's majority belongs to 21-25 years of age (Preterm- 66(60%) and Term 60(54.5%) followed by 26-30 years of age (Preterm-30(27.2%) and Term 40(36.3%). Majority of the study participants in both the groups were primigravida (Preterm -60(54.5%) and Term 65(59.1%). Majority belongs to Class V 55(50%) in Preterm group and Class IV in Term group 55(50%).

Bacterial vaginosis was found to be more in Preterm births 27.3% compared to Term births. There is a statistically significant difference between the two groups.

Previous abortion and previous preterm delivery history was found to be more in Preterm group compared to term group and it is found to be statistically significant. Among the study participants 12(85.7%) underwent spontaneous abortion in the Preterm group.

The results portrayed that the sensitivity is 100% for the PH>4.5 which is highest compared to other

parameters. The specificity was more in the Amsel criteria (Specificity =99.09%), Clue cells. (Specificity =97.27%) and Amine (Specificity =97.1%).Amine and Amsel has a good sensitivity and specificity which is correlated with the Nugent's score.

Majority of the study participants in both the groups delivered through labour natural. The presence of bacterial vaginosis doesn't favours instrumental deliveries or LSCS among the study participants. Low birth weight was more in the Bacterial vaginosis mothers compared to the others and the

difference is found to be statistically significant. 2(4.5%) have maternal complication in the bacterial vaginosis group which is more compared to bacterial vaginosis negative group and it is statistically significant. Neonatal complications in the bacterial vaginosis positive mothers were doubled compared to the negative group 12(27.2%). There is a difference between them and it is found to be statistically significant. NICU admissions also found to be more in the Bacterial vaginosis positive patients 20(45.6%) which is more than the negative group and it is statistically significant.

Table 1: Distribution of the study participants based on their age.

Variables	Preterm	Term	P value
Age category <20 21-25 26-30 31-35 >35	2(2%) 66(60%) 30(27.2%) 8(7.2%) 4(3.6%)	2(2%) 60(54.5%) 40(36.3%) 5(4.5%) 3(2.7%)	0.63
Parity Primigravida Multigravida	60(54.5%) 50(45.5%)	65(59.1%) 45(40.9%)	0.2
Socioeconomic status Class III Class IV Class V	5(4.5%) 50(45.5%) 55(50%)	25(22.7%) 55(50%) 30(27.2%)	<0.0001*
Antenatal status Booked Unbooked	88(80%) 22(20%)	107(97%) 3(3%)	<0.001
Weight <45 Kg >45Kg	44(40%) 66(60%)	4(4%) 106(96%)	<0.001

Table 2: Prevalence of Bacterial vaginosis among the study participants.

Bacterial Vaginosis	Preterm	Term	P value
Positive	30(27.3%)	14(12.7%)	0.003*
Negative	80(72.7%)	96(87.3%)	
Total	110(100%)	110(100%)	

Table 3: Previous obstetric history of the study participants.

Previous obstetric history	Preterm	Term	P value
Previous abortion Previous preterm delivery	14 8	11 1	0.03*
Type of abortion Spontaneous Induced	12(85.7%) 29(14.3%)	10(90.9%) 1(9.1%)	0.3

Table 4: Diagnostic accuracy of the study participants.

Tests	Sensitivity	Specificity	Accuracy	Positive predictive value	Negative predictive value
Discharge nature	77.27	97.16	93.18	87.18	94.48
PH>4.5	100	82.95	86.36	59.46	100
Amine test	95.45	95.9	95.91	87.04	98.83
Clue cells	90.91	98.86	97.27	95.24	97.75
Amsel criteria	95.45	100	99.09	100	98.88

Table 5: Bacterial vaginosis impact on the mode of the delivery.

Mode of Delivery	Bacterial vaginosis (Positive = 44)	Bacterial vaginosis (Negative = 176)	P value
Labour Naturalis Instrumental deliveries LSCS	42(95.5%) 2(4.5%) 0(0%)	148(84%) 6(3%) 22(13%)	0.02
Mode of Delivery <2.5Kg 2.5-3 Kg >3 Kg	24(55%) 12(27%) 8(18%)	23(13%) 108(61%) 45(26%)	<0.0001
Maternal complications Present Absent	2(4.5%) 42((95.5%)	1(0.5%) 175(99.5%)	0.02*
Neonatal complications Present	12(27.2%)	27(13.3%)	0.03*

Absent	32(72.8%)	149(84.7%)	
NICU Admission Present Absent	20(45.6%) 22(54.4%)	46(26%) 130(74%)	

DISCUSSION

In our study the mean age is 25.45±4.072 for preterm group and 25.15±3.374 for the Term groups which is little higher than the study done by Iams et al study and Mc Donald et al,[10] study. The most common age group of the study participants were of 21-25 years of age followed by 26-30 years in both the groups. Chitti Sudha et al study the most common presentation was 20-24 years of age. It is found in our study that with increasing age the incidence of bacterial vaginosis decreases which is similar to the findings The prevalence of bacterial vaginosis in our study among the preterm were 30(27.3%) and in Term group it is found to be 14(12.7%) which is similar to Holst et al,[11] study where in preterm 31% and in term 11% have bacterial vaginosis.

Similary in Chaijarcenont et al,[12] in his study found bacterial vaginosis among 36% in the preterm group an 8% in the term group.Similar results also seen in the Sharon et al.[13] study. Mathew R et al,[14] stated stated that the bacterial vaginosis was symptomatic pregnant 98.5% women.

Majority of the study participants were of Primigravida 60(54.5%) in Preterm and in Term 65(59.1%) group. Whereas in a study done by Chitti Sudha A et al,[15] multigravida was more in the study participants. Majority of the study participants belongs to class 4 category in both groups (Preterm50(45.5%) and in Term 55(50%).The sensitivity was more in the PH>4.5 compared to other tests. The specificity was found to be more in the Amsel criteria. clue cells. Amine test and the amsel test has the good sensitivity and specificity and was found to be statistically significant. The Maternal and Neonatal complications was found to be more in the preterm group. The NICU admissions was more in the bacterial vaginosis study participants 20(45.6%) which is more than the bacterial vaginosis negative participants. and it is found to be statistically significant.[16]

CONCLUSION

Bacterial vaginosis is considered as one of the major public health problem and it has an impact on the perinatal outcome adversely. In our study we found the association between the bacterial vaginosis and the maternal and neonatal outcome. So it is

important to do routine screening for all the antenatal women so we can detect the bacterial vaginosis early as possible and can start the treatment immediately so that we can decrease the adverse outcome of pregnancy.

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