Section: Obstetrics and Gynaecology

Original Research Article

PREVALENCE OF BACTERIAL VAGINOSIS IN PRETERM LABOUR

Sakthi V[1], Ramya T.V[2], Nithya Priya darshini K[3]

[1]*Junior Resident, Department of Obstetrics and Gynecology, Government Medical College and ESI Hospital, Coimbatore, TamilNadu, India*
[2]*Senior Resident, Department of Obstetrics and Gynecology, Government Medical College and ESI Hospital, Coimbatore, TamilNadu, India*
[3]*Assistant Professor, Department of Obstetrics and Gynecology, Government Medical College and ESI Hospital, Coimbatore, TamilNadu, India.*

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Corresponding Author:
Dr. Nithya Priya darshini .K,
Assistant Professor, Department of Obstetrics and Gynecology, Government Medical College and ESI Hospital, Coimbatore, TamilNadu, India..
Email: nithi.murali16@gmail.com

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ABSTRACT

Background: One of the important cause of preterm labour is abnormal vaginal flora which leads to delivery for preterm newborn which is found to be associated with significant morbidity and mortality. In bacterial vaginosis there is a decrease in concentration of Lactobacillus but increase in pathogenic bacteria.The aim of the study is to assess the effects of pre pregnancy obesity on duration of first and second stages of labour and to compare with nonobese pregnant women who undergo labour in tertiary care centre, Theni.

Materials and Methods: The study was conducted in the Department of Obstetrics Gynecology, in Tertiary care hospital, Coimbatore. It is a Prospective comparative study conducted for a period of one year. Based on inclusion and exclusion criteria the study participants were recruited. The total sample size was. The data was collected using a predesigned and pretested questionnaire. Detailed history regarding menstrual and obstetric history, clinical examination, ultrasonographic gestational age. previous history of preterm labour was carefully analysed. pervaginal, perspeculum examination was done and vaginal swabs were taken for bacteriological study. The collected data will be entered in the MS excel sheet Windows 10. The analysis was done using SPSS 23.p value <0.05 was considered statistically significant.

Results: The study concludes that Prevalence of bacterial vaginosis was 39% in study group of preterm labour and 13% in the control group of term labour. The mean age of preterm mothers was 24.13+_3.5 years and the term mothers was 25.02+-3.2 years . Women < 50kg are 4 times more prone for preterm labour. Primigravida was found more in Preterm whereas Multigravida was found more in Term. History of induced abortion was found equal in both Pre-term and Term group. Previous history of Preterm Labour was found more in Preterm and the difference was found to be statistically significant. Babies born to BV Positive mothers had more admissions in NICU. Significant association between bacterial vaginosis and preterm labour.

Conclusion: The prevalence of bacterial vaginosis was 39% in preterm group and 13% in term group. There was a significant association between bacterial vaginosis and preterm labour. There was also significant association of various factors like low socio economic status, low maternal weight and history of previous preterm deliveries to the study group (pre term labour).

Keywords: Preterm Labour, Term Labour, Bacterial vaginosis, Obstetric outcome.

INTRODUCTION

An alteration in the vaginal ecology is observed in Bacterial vaginosis where the normal flora dominated by lactobacilli is replaced by mixed bacterial flora like Mobiluncus species, Gardnerella vaginalis ,Bacteroides species ,Mycoplasma hominis and other anaerobes.[1] Half of the patients with Bacterial vaginosis remains asymptomatic.[2] It is one of the common medical problem which is found to

be associated with significant morbidity and complications to both baby and the mother. It is the most common cause for vaginal discharge during pregnancy. When left untreated it may lead to serious complications like premature rupture of membrane, spontaneous abortion, preterm premature rupture of membrane, preterm labour and delivery and chorioamniotis, subclinical pelvic inflammatory disease, postpartum endometritis and low birth weight in neonate. Pregnancy with bacterial vaginosis found to be associated with higher risk of preterm delivery.[3]

Parturition that happens between the weeks of 20 and 36+7 days of pregnancy is known as Preterm labour. It is generally divided into two categories: early preterm and late preterm.3.6 million babies born prematurely each year in India. Globally out of the newborn fatalities 40% contributed by Preterm birth thus it affects one out of every 10 births each year.Preterm births has longterm repercussions that will extend from infancy to adolescence and adulthood 4.40% of preterm labour is due to infectionThe incidence of Bacterial vaginosis is found to be 50% in pregnant women and 15%-30% in non pregnant women. using variety of techniques we will find out Bacterial vaginosis.[5] Amsel's criteria Nugent score, Hay Ison Grading and BV blue test helps in analysing vaginal fluid sialidase activity are some of the test used.[6,7]

Considering the vast spectrum of maternal and fetal morbidity associated with this infection, and the availability of rapid inexpensive diagnostic tests it may be prudent to screen BV in pregnancy, so that it can be treated early and hence prevent the adverse outcomes. The aim of the study is to find out the incidence of bacterial vaginosis and its association with preterm labour.

MATERIALS AND METHODS

This prospective comparative study was carried out in the Department of obstetrics and gynaecology at Tertiary care hospital, Coimbatore during the period from February 2020 to January 2021.

Inclusion Criteria

1)study group comprises 200 pregnant women with 100 women in preterm labour (ie) gestational age between 28-37 weeks with painful uterine contractions 2 or more in 10 mins lasting for 45 sec ,cervical dilatation less than or equal to 3cm and cervical effacement of 75% or more but with intact membranes and 100 women of term gestation in labour.

2)Both primi and Multigravida were included.

Exclusion Criteria

Those women having,

- Fever
- Urinary tract infections
- Anemia
- Diabetes
- Multiple pregnancy
- Pregnancy induced hypertension
- Antepartum haemorrhage
- Hydraminos
- Cervical incompetence treated with cervical encerclage.
- Antibiotic therapy within last 30 days
- Absent membranes.

Data Collection

A Complete history including menstrual and obstetric history was taken. The gestational age was confirmed from last menstrual period and correlated with clinical examination and ultrasonographic gestational age.previous history of preterm labour was carefully analysed.pervaginal, perspeculum examination was done and vaginal swabs were taken for bacteriological study.

Bacteriological Study

Under all aseptic precautions, the posterior vaginal wall was retracted with sims speculum .The vaginal swabs from posterior fornix was taken with 3 sterile cotton swabs. 1)Ph of vaginal discharge was measured by Nitrazine paper.care taken to avoid cervical mucus.ph >4.5 was considered alkaline and was suggestive of bacterial vaginosis.

2)Wet mount preparation –vaginal swab stirred in 0.2ml of physiological saline,the drop of it was put on clean glass slide and examined for the presence of clue cells.

3)Amine test: A drop of 10% potassium hydroxide added to wet mount specimens and fishy odour was noted.

4)Gram staining:A direct smear done on clean glass slide and gram staining was done ,then the smear was examined for the presence of clue cells and gram negative coccobacilli.

Table 1: Sociodemographic profile of study participants

AGE	Term	Pre. Term	P value
< 22	23	32	0.067
23 - 25	38	47	
26 - 30	32	13	
> 30	7	8	
WEIGHT			
< 50	4	35	<0.001
51 - 60	37	64	
61 - 70	45	0	
> 70	14	1	
SES			<0.001

III	27	6	
IV	57	52	
V	16	42	

The mean age of preterm mothers was 24.13+_3.5 years and the term mothers was 25.02+-3.2 years . Women < 50kg are 4 times more prone for preterm labour.The mean weight of the study participants in the Term group was found to be 63.31±7.286 and in Preterm group was 52.69±4.819.None of the patients studied were in class I & II socioeconomic class.42% of the study group belonged to class V compared to 16% of the control group.

Table 2: Distribution of subjects according to Antenatal and Obstetric details

BOOKED/UNBOOKED	**Term**	**Pre. Term**	**P value**
BOOKED	91	90	1.0
UNBOOKED	9	10	
OBSTETRIC CODE			
PRIMI	47	60	0.11
G2	28	31	
G3	25	9	
PREV H/O PTL/ABORTION			
INDUCED ABORTION	1	1	0.057
SPONTANEOUS ABORTION	11	14	
PREV H/O PRETERM LABOUR			
YES	1	9	0.04

Majority of the study participants in both the group were booked .Primigravida was found more in Preterm whereas Multigravida was found more in Term.History of induced abortion was found equal in both Pre-term and Term group. Previous history of Preterm Labour was found more in Preterm and the difference was found to be statistically significant.

Table 3: Efficacy Of Homogenous White Discharge

CLINICAL FEATURES	**BACTERIAL VAGINOSIS POSITIVE (n=52)**	**BACTERIAL VAGINOSIS NEGATIVE (n=148)**
Homogenous Discharge		
Present (n=45)	33	12
Absent (n=155)	19	136
pH		
Present (n=60)	52	8
Absent (n=140)	0	140
Amine Test		
Present (n=55)	48	7
Absent (n=145)	4	141
Clue Cells		
Present (n=47)	43	4
Absent (n=153)	9	144

Table 4: Sensitivity, Specificity, PPV, NPV and Accuracy

Parameters	**Homogenous Discharge**	**PH**	**Amine Test**	**Clue Cells**
True positive	73	86	87	91
False positive	12	13	13	8
True negative	87	100	97	94
False negative	27	0	2	5
Sensitivity	63	100	92	82
Specificity	92	95	95	97
Accuracy	84	96	94	93
PPV	73	86	87	91
NPV	87	100	97	94

45 cases (including term and preterm) had homogenous discharge characteristic of bacterial vaginosis. The sensitivity was 63% specificity was 92%,positive predictive value 73%,Negative predictive value of 87%.60 cases had Ph >5.5.of these only 52 cases were positive for bacterial vaginosis .The sensitivity was 100%.specificity was 95%.positive predictive value was 86%.negative predictive value 100%.55 cases were positive for amine test of these 48 cases were positive for bacterial vaginosis according to amsel's criteria .The sensitivity was 92%,specificity was 95%,positive predictive value 87% negative predictive value 97%.47 cases were positive for clue cells .of these 43 cases had BV according to amsels criteria . The sensitivity was 82% specificity of 97% .positive predictive value was 91% negative predictive value was 94%.

Table 5: Bacterial Vaginosis Based on Amsel Criteria

BACTERIAL VAGINOSIS BASED ON	Term	Pre. Term
Present	13	39
Absent	87	61
Total	100	100

Table 6: Impact Of Bacterial Vaginosis on Mode of Delivery and Neonatal Outcome

PARAMETERS	BACTERIAL VAGINOSIS POSITIVE (n=52)	BACTERIAL VAGINOSIS NEGATIVE (n=148)
Mode of Delivery		
LN	44	121
Outlet Forceps	1	3
LSCS	7	24
B.W in KG		
< 2.5 kg	42	14
≥ 2.5 kg	10	134
Admission (NICU)		
Present	30	10
Absent	22	138

DISCUSSION

In our study the Prevalence of bacterial vaginosis was 39% in study group of preterm labour and 13% in the control group of term labour. Our study corresponds to Holst et al (2007), Sharon et al (2004) and chijrcenont et al (2007)

STUDY	Study group	Control group
Holst et al (2007) Dept. of microbiology lund university Sweden[8]	31%	11%
Sharon et al [9](2004) University of Pittsburgh, PA 32	32%	14%
Chaijarcenont et at [10] (2004) J. Med assoc. Thai	36%	8%
Thanavuth et al [11] (2007) Deportment of O.G. Siriraj hospital, Mahidol University	28%	9%
Our study	39%	13%

Demographic

In our study group, mean age in study group is 24.1+_3.5 yrs and in control group was 25.02+_ 3.2 yrs. The age distribution of cases in the study and control study did not vary much which corresponds to that of Mc Donald et al 12(1991). In our study, there was a significant association of women in very low socio economic status (class v) and preterm labour (p<0.001).

In our study, the distribution of cases according to the parity in the study and control group did not vary much(p -0.11) which is in accordance to Robert L Goldenberg et al.[13] In our study, the mean maternal weight in study group was 52.6+_4 .8 kg whereas in control group the mean maternal weight was 63.3+_7.2 kg. Out of 100 patients in the preterm group 35(35%) patients were <50kg whereas in term group only 4 patients (4%) were < 40kg .so there was a significant association between maternal weight less than 50 kg and preterm labour (p<0.001). This corresponds to the study of Andrews WW et al[14] (2006).

In our study there was a significant association of previous preterm birth (9%) to preterm labour (p - 0.004) this corresponds to that of Cunningham et al15.

SNO	STUDY	STUDY GROUP	CONTROL GROUP
1	MC Donald et al (1997)[16]	17%	4%
2	MC Gregor et al (2001)[17]	30%	6.8%
3	Cunningham et al (2005)	10%	2%
4	Present study	9%	1%

On analysing efficacy of various tests homogenous discharge was present in 45 patients of these 33 were positive for bacterial vaginosis.19 cases of bacterial vaginosis positive cases did not have homogenous discharge, the sensitivity was 63% specificity was 92%.Ph >5.5 found in 60 patients and diagnosed all of bacterial vaginosis positive cases with the false positivity rate of 15%.ph>5.5 has the highest sensitivity (100%) and specificity of 95% .However it is economical ,extremely simple and a useful tool to rule out bacterial vaginosis. Amine test was positive in 55 cases of which 48 patients were positive for bacterial vaginosis. amine test has a sensitivity of 92% and specificity of 95%. In the absence of microscope, amine test can be used as a specific and relatively sensitive method of detecting Bacterial vaginosis. Detection of clue cell is the single most specific test but not a sensitive one. Specificity is 97% and sensitivity is 77%. It has high PPV (91%) and NPV (94%).

Out of 52 patients with bacterial vaginosis 42 patiemts have babies of less than 2.5 kg and only 10 patients have babies >2.5 kg. Out of 148 patients without bacterial vaginosis only 14 patients have babies <2.5kg and 134 patients have babies >2.5kg.This shows that bacterial vaginosis is usually associated with LBW babies. Among 40 babies admitted in NICU (for birth asphyxia, RDS, Meconium aspiration syndrome, hyperbilirubinemia) 30 babies were born to bacterial vaginosis mother and 10 babies mothers were negative for bacterial vaginosis. Out of 160 well babies 22 babies were born to bacterial vaginosis positive patients and 138

babies mothers were negative for BV. Hence babies born to BV Positive mothers had more admissions in NICU. From the study we have confirmed significant association between bacterial vaginosis and preterm labour..

CONCLUSION

The prevalence of bacterial vaginosis was 39% in preterm group and 13% in term group. There was a significant association between bacterial vaginosis and preterm labour. There was also significant association of various factors like low socio economic status, low maternal weight and history of previous preterm deliveries to the study group (pre term labour). The neonatal and maternal outcome in the bacterial vaginosis positive and negative group did not differ much.

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