Original Research Paper

Obstetrics & Gynaecology

STUDY OF BACTERIAL VAGINOSIS IN PREGNANCY

Dr. Archana Kumbhar	Assistant Professor, Department Of Obstetrics And Gynaecology, Dr. D.Y. Patil Hospital And Research Centre, Kolhapur, Maharashtra.
Dr. Coleen Jain*	Post Graduate Resident, Department Of Obstetrics And Gynaecology, Dr. D.Y. Patil Hospital And Research Centre, Kolhapur, Maharashtra. *Corresponding Author
Dr. Vasudha Sawant	Professor & HOD, Department Of Obstetrics And Gynaecology, Dr. D.Y. Patil Hospital And Research Centre, Kolhapur, Maharashtra.

ABSTRACT

AIM
- To screen and diagnose bacterial vaginosis during first two trimesters of pregnancy.
- To give early treatment for bacterial vaginosis during first two trimesters of pregnancy and prevent obstetric complications.

METHODS – Pregnant women fitting in the inclusion criteria are recruited and explained about the procedure. Informed consent and ethics committee clearance is obtained. Vaginal smear is sent for microscopy. Vaginal pH is detected. Amine (fishy) odour in wet mount examination is identified. AMSELS score and NUGENTS criterion are applied. Positive specimens are sent for antibiotic culture and sensitivity and treatment is initiated accordingly. A follow up is kept for all patients diagnosed as bacterial vaginosis to see the outcome of their pregnancy.

CONCLUSION - Prevalence of Bacterial vaginosis in my study is 29.2%. BV in pregnancy is common among low socioeconomic status, multigravida, and less educated females. It is associated with significant risk of miscarriages, preterm labour and PROM. Universal screening of all pregnant women at booking visit may be recommended to initiate treatment with metronidazole / clindamycin in those women at risk for preterm delivery, symptomatic women and before surgical abortions.

KEYWORDS : Bacterial vaginosis, pregnancy, preterm delivery, premature rupture of membranes

INTRODUCTION

The prevalence of BV in pregnant women was 16.5 % in a study conducted on Iranian women. Bacterial vaginosis is mostly asymptomatic.(1)

This is a condition characterized by an imbalance in the vaginal flora. The other anaerobic bacteria are in excess in this condition and normally plentiful peroxidase-producing bacteria (Lactobacillus) are scarce. Two typical symptoms, secretions and odours, have been reported.(2)

It can cause conditions such as pelvic inflammatory disease, endometritis, amniotic fluid infection, early preterm labor, PROM, and even results in spontaneous abortion.

Women with socioeconomic status under lower category and with higher psychosocial stress levels also have increased rates. (3)

The prevalence of pregnant females with BV with abnormal vaginal discharge in a tertiary health institution in south west Nigeria was 16.6%. Age group 25-34yrs and multiparity were significantly associated with BV, p < 0.05. Symptoms such as dyspareunia, vulvar itching, characteristic vaginal discharge such as colour and consistency and lower abdominal pains were significantly associated with BV, p < 0.05. Females with BV significantly presented with prelabour rupture of membrane.(4)

Ascension of microorganism into the deciduas, chorioamnion, or amniotic fluid, results in infection and inflammation which can initiate labour and result in preterm delivery. BV was detected in 37 out of 152 women with preterm labor (24.34%) in a study conducted in lady hardinge medical college.(5)

Considering the large spectrum of maternal and fetal morbidity associated with this disease, and rapid inexpensive diagnostic tests that are available, it may be prudent to screen BV in pregnancy, so that it can be treated early and hence prevent the adverse outcomes.

AIM

- To screen and diagnose bacterial vaginosis during first two trimesters of pregnancy.
- To give early treatment for bacterial vaginosis during first two trimesters of pregnancy and prevent obstetric complications.

METHODOLOGY

All antenatal women fitting in the inclusion criteria are recruited and explained about the procedure. Informed consent is obtained and ethics committee clearance is obtained. Vaginal smear is obtained by per speculum examination and sent for microscopy. Vaginal pH is detected using pH strips. Amine (fishy) odour in wet mount examination is identified for bacterial vaginosis. AMSELS score and NUGENTS criterion are applied for diagnosis. Positive specimens are sent for antibiotic culture and sensitivity and treatment is initiated accordingly. A follow up is kept for all patients diagnosed as bacterial vaginosis to see the outcome of their pregnancy.

RESULTS

The median (IQR) age, vaginal pH, POG based on LMP date and birth weight of the participants in our study were 23 (22,26.8) years, 4.1 (3.9,4.6), 38.5 (37.5,39.2) weeks and 2.7 (2.4,3.0) kgs, respectively.

The prevalence of bacterial vaginosis in the present study was 29.2%.

There was a significant association between education status and the presence of bacterial vaginosis. ($p = 0.006$)

BV positive cases are more commonly associated low socio-economic status and multigravida. However, there was no significant association between socio economic status or gravida and the presence of bacterial vaginosis. ($p > 0.05$)

There was a significant association between presenting symptom and the presence of bacterial vaginosis. ($p = 0.002$)

Most of the cases positive with BV presented in the second trimester of pregnancy but no association was seen.

There was a significant association between presenting symptom at the time of delivery and pregnancy outcomes with the presence of bacterial vaginosis. ($p = 0.010$)

Significantly higher proportion of the bacterial vaginosis positive cases had preterm labor and PROM than the ones tested negative for bacterial vaginosis. ($p = 0.031$) ($p = 0.017$)

Bacterial vaginosis positive women had significantly higher vaginal pH and shorter period of gestation than their counterparts. ($p = 0.002$) ($p = 0.009$)

Table : Association between Preterm labor, PROM and Bacterial vaginosis

		Positive	Negative	p value
Preterm Labor	Yes	38.5 %	9.1%	0.031
	No	61.5%	90.9%	
PROM	Yes	35.7%	5.9%	0.017
	No	64.3%	94.1%	

Among the positive cases who took treatment, there was decrease in percentage of preterm, abortions and IUD as pregnancy outcome but there was no significant association between treatment taken and the pregnancy outcomes. (p>0.05)

Among the bacterial vaginosis positive cases, metronidazole (42.9%) followed by ciprofloxacin were found to be sensitive.

DISCUSSION

Bacterial vaginosis occurs due to changes in the vaginal flora mainly featured by the anaerobic overgrowth and decline in the natural flora of lactobacillus keeps the vaginal tissue healthy. Literature shows that the occurrence of BV during pregnancy has been linked with various complications such as spontaneous abortions, preterm labour, and PROM. This condition also favours the transmission and acquisition of STDs such as HIV in the pregnant others. The present study was conducted to screen, diagnose and estimate the prevalence of BV, to study the associated factors of BV and provide timely treatment.

The prevalence of BV in the present study was 29.2%, by both the Nugent's and Amsel's criteria. Shayo et al (6) in their study done at Bugando Medical Centre at Tanzania observed a similar prevalence of 28.5%. The current study showed lower prevalence of BV than the studies done in various settings like Zimbabwe (32.5%), Egypt (33%), Kenya (37%), Botswana (38%), and Sudan (49.8%) (7)(8)(9). The lower prevalence in our study might be due to various factors such as non-practice of vaginal douching in study participants, increased gestational age etc. Researchers from All India Institute of Medical Sciences, New Delhi (10) in their study 502 asymptomatic pregnant women reported a prevalence of 8.6% which was relatively lower compared to our study. In the current study, the prevalence of BV as per Nugent's criteria was 27.1% which was much higher to the prevalence reported by the study done at All India Institute of Medical Sciences, New Delhi (10) by the same method. The prevalence remained higher in our study as per the Amsel's criteria as well when compared to Dadhwal et al (22.9% vs 6.7%). Wide variations in prevalence of BV might be due to demographic, socio-economic conditions, education levels, method of diagnosis, skill of laboratory staff, and behavioural variations in different settings.

The present study revealed that the median age (IQR) of pregnant females who were positive for BV is 25 (22.3 – 29.8) which was higher than the median age for BV negative subjects but the difference was not found to be significant. Kamga et al observed that most of the females with BV were in the age group of 18 – 22 years (29.2%) which was comparable with our findings. In Addis Ababa, Ethiopia, the research work of 195 pregnant mothers revealed high prevalence of BV in age group of 21 – 29 years. All these findings were consistent with our study findings. Adinma et al (11) observed a relatively lower age group of 16 – 20 years. Also, Bhattarai et al. and a Nigerian study (12) reported a higher prevalence of BV in the age group of 31 – 40 years. Though there are variations in the age group, it is interesting to note that overall, the prevalence was more in the reproductive age group which is more sexually active period and with increased risk of STDs.

Majority of the women (33.3%) in our study were educated up to 12th standard and we observed a significant association between education status and the presence of bacterial vaginosis, p<0.05. Our observation was consistent with the findings reported by Ranjit et al (13) in that the women who were illiterate had high BV prevalence of 29.1%. High levels of education might translate into behavioural outcomes that in general they practice good behavioural practices such as use of soap for washing clothes, drying pants in sunlight, use of disinfectants, ironing etc.

Majority of the participants (58.3%) in our study belong to a lower socio-economic status. Also, BV positive cases are more commonly seen in low socio-economic status, however, there was no significant association was seen. Similarly, high occurrences of BV in low socio-economic status were observed by Mengistie et al (14) and Ranjit et al (13). Poverty affects good hygiene practices and individual hygiene has been reported to influence prevalence of BV.

Multigravida mothers constituted nearly three-fourth (75%) of the subjects in our study. Though BV is more commonly seen in multigravida, the difference was not significant statistically. Similar findings were observed in a study by Ibrahim et al. (15) and Dadhwal et al. (10) in that the incidence of BV was higher in multigravida than primigravida (10.6 vs 6%) but the difference was not significant statistically. In multigravida, the possible explanation would be the increased coital frequency resulting in reduction of physiological barrier and increased growth of commensal in vagina. Increased commensals facilitate the occurrence of vaginosis. By contrast, in the study done by Kamga et al (16) the prevalence of BV was higher in primigravida than multigravida (30.9% vs 24.6%). Multigravida women being exposed to antenatal care and hygiene practices earlier than primigravida might have a positive behavioural impact on multigravida consequently lower prevalence of BV in them.

Most of the cases positive with BV presented in the second trimester of pregnancy however there was no significant association between time of presentation and the presence of bacterial vaginosis. The findings are consistent with the findings of Ibrahim et al (15) and Awoniyi et al (17). Lata et al reported that majority of the BV incidence occurred between the gestational ages 11-20 weeks corresponding to late first and early second trimester. Since BV has been associated with second trimester miscarriages (18), the highest prevalence in women in the second trimester in present study is a concern.

Majority of the women reported pain in abdomen (54.2%) as the presenting complaint at the time of delivery in our study. Symptoms were predominantly more in the BV negative mothers and difference was found to be significant.

With regards to the culture sensitivity, metronidazole was found to be the most sensitive, which was only 42.9%, while Bitew et al in their study from Ethiopian referral hospitals reported a 93-95% susceptibility of BV positive cases for cipro floxacillin and gentamycin. Major organism detected were staphylococcus aureus and E coli. (19) Tarana et al., in a similar study among the vaginal swab samples from Dhaka, Bangladesh reported that 91-96% of the positive cases were sensitive to colistin and imipenem. (20) However, the study settings and methodology of these studies were different from that of our study. In the previous studies, sensitivity of the antibiotics was assessed for each organism detected from the samples.

Bacterial vaginosis adversely impacts the outcome of pregnancy. In the present study, majority of the women had LSCS (58.3%), followed by FTND (22.9%) and PTVD (10.4%). There was a significant association between mode of delivery and the presence of bacterial vaginosis.(p value 0.039). Few of the subjects (4.2%) had abortion and intrauterine death (IUD). However, the treatment taken for the BV did not significantly impact the pregnant outcomes, warranting further studies. In the infants, the median (IQR) birth weight was 2.7 (2.4 - 3.0) kgs. Nearly one-fifth of the subjects (17.4%) had preterm labor and those who were positive for BV had significantly more occurrence of preterm labor than those who were negative. Also, PROM was observed significantly more (14.6%) in the BV positive subjects. Coherent to our findings, a prospective cohort study by Lata et al.(21) reported that adverse pregnancy outcomes were significantly higher in the BV positive pregnant mothers. Mechanisms by which bacterial vaginosis causes adverse pregnancy outcomes are poorly understood however there are some evidences that BV causes infection in the upper genital tract which leads to adverse outcomes.

CONCLUSION
1. Prevalence of Bacterial vaginosis among pregnant women attending the out patient Department of Obstetrics and Gynaecology, Dr. D.Y. Patil Hospital Kolhapur; India is 29.2%.
2. Amsel's criteria in combination with Gram stain is a simple, inexpensive, easily reproducible, method for diagnosis.
3. BV in pregnancy is commoner among low socioeconomic status, multigravida, and less educated females and associated with significant risk of miscarriages, preterm labour and PROM.
4. Universal screening of all pregnant women at booking visit may be recommended to initiate treatment with metronidazole / clindamycin in those women at risk for preterm delivery, symptomatic women and before surgical abortions.

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