To Examine the Link between Bacterial Vaginosis and Previous Spontaneous Abortion during Pregnancy

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Abstract:

Background: Bacterial Vaginosis (BV) is the most common cause of abnormal vaginal discharge among women of reproductive age, accounting for 40 to 50 per cent of all cases of vaginal discharge. BV is a polymicrobial disorder.

Methods: Hospital based observational study. The Department of Obstetrics and Gynaecology, at Patna Medical College and Hospital, Patna.

Results: In the present study 75.30% women had history of previous one abortion. Among them 25% women had BV. Women who had prior history of two or three and more than three abortions had BV in 40% and 40% proportion subsequently.

Conclusion: In the present study, the author also studied the association between previous reproductive outcome and BV. No statistically significant association between history of previous one abortion and the presence of BV was found.

Keywords: BV, Abortion, Reproductive Outcome.

Introduction

Bacterial Vaginosis (BV) is the most common cause of abnormal vaginal discharge among women of reproductive age, accounting for 40 to 50 per cent of all cases of vaginal discharge. BV is a polymicrobial disorder. It does not follow Koch's postulate that a single pathogen is responsible for a specific disease. BV is referred to as "one of the most prevalent enigmas in the field of medicine." [1] Bacterial Vaginosis is, defined as the disruption of the normal vaginal ecosystem and marked by the depletion of lactobacilli and overgrowth of anaerobic bacteria. In the United States, the National Health and Nutrition Examination Survey (NHANES), estimates the prevalence of BV is 29 per cent in the general population of women aged 14 to 49 years and 50 per cent in African-American women. [2] This included both symptomatic and asymptomatic infection. BV is a special public health concern in India because of the high burden of reproductive and pregnancy-related morbidity. In India, an estimated prevalence of BV is around 19 per cent. BV is the most common lower genital tract disorder among women of reproductive age, either pregnant or nonpregnant. Prevalence rates vary 13% to 31% in pregnant women. [3]

Material and Method

Hospital based observational study. The Department of Obstetrics and Gynaecology, at Patna Medical College and Hospital Patna, Bihar. Study duration: April 2018 to March 2019. Study population: Women between the age of 18-39 years, attending Gynaecological Out-Patient Department, with a history of spontaneous abortion 2 to 6 weeks back. 81 cases at 95% confidence interval and 10% absolute error was used to verify the expected 27.9% occurrence of Bacterial Vaginosis in recent abortion cases.

Inclusion Criteria

- Woman with history of spontaneous abortion 2 to 6 weeks back.
- Participants were chosen between the age of 18-39 years.
- Participants who were willing to participate in the study.

Exclusion Criteria

- Women who were pregnant.
- Woman with history of induced abortion either by medical or surgical method.
- Women who were taking hormonal contraceptives.

The Pre structured questionnaire was used. The questionnaire included questions regarding baseline data for age, residence, socioeconomic status,

education, previous obstetric history, history of recent abortion, other significant medical history. AMSEL's criteria and Nugent's criteria were used to assess Bacterial Vaginosis. Written informed consent was taken from each patient before including them in study.

Statistical Analysis

• Continuous data were summarized in form of MEAN and S.D.

• Difference in two MEANs was analyzed using STUDENT T TEST.

• Continuous data were expressed in form of proportion. Difference in proportion was analyzed using CHI SQUARE TEST.

The level of significance was kept 95% for all statistical analysis.

Results

Table 1: Association of number of previous abortions with Bacterial Vaginosis in recent abortion cases

History of previous abortion		BV Present	BV Absent	Total
	1	15	46	**61**
		24.59%	75.40%	
	2	6	9	**15**
		40%	60%	
	≥3	2	3	**5**
		40%	60%	
	Total	N=23	N=58	**81**
		(21.39%)	(71.61%)	
Chi-square	**P= value**			
1.7591	0.4150			

In the present study 75.30% women had history of previous one abortion. Among them 25% women had BV. Women who had prior history of two or three and more than three abortions had BV in 40% and 40% proportion subsequently.

Table 2: Association of Bacterial Vaginosis (AMSEL criteria) according to gestational age in recent abortion cases.

Gest. Age	Bacterial Vaginosis according to AMSEL criteria		**Total**
	BV Present	BV Absent	
Abortion <12weeks POG	14	42	**56**
	25%	75 %	
Abortion>12weeks POG	9	16	**25**
	36 %	64 %	
Total	**N=23**	**N=58**	81
	21.39 %	**71.61 %**	
Chi-square = 1.559 **P value= 0.455**			

This table depicts that among all 81 women with recent abortion history 69.14% women had abortion in 1st trimester and 30.86% women had 2nd trimester abortion. Among all BV (+) 60% women belonged to 1st trimester abortion and 39% women belonged to 2nd trimester abortion. In our study we didn't find any statistically significant association. Maximum proportion (36%) of BV observed among women who had history of 2nd trimester pregnancy loss.

Table 3: Association of history of mode of Previous Delivery (Full term FT/preterm PT) with Bacterial Vaginosis (AMSEL criteria) in recent abortion cases.

History of mode of Previous Delivery (Full term FT/preterm PT)* Bacterial Vaginosis according to AMSEL criteria			
History of Previous Delivery (Full term FT/preterm PT)	BV Present	BV Absent	Total
Full Term Delivery	13	30	43
	30.23%	76.92%	
Pre-term Delivery	6	9	15
	40%	23.08%	
Total	19	39	58
	21.36%	71.61%	
Chi-square	**P value**		
3.1057	0.3756		

According to above table, 58 women out of 81 had previous pregnancy outcome as preterm or full-term delivery. In present study 25.86% women had history of preterm delivery. Among 15 women who had preterm delivery, 6 women had BV. Maximum proportion of BV was associated with women who had history of preterm delivery. However statistically they were insignificant.

Discussion

Women with a history of spontaneous abortion within 2 to 6 weeks, attending the OPD at Department of Obstetrics and Gynaecology in PMCH were studied. An association between Bacterial Vaginosis and demographic factors was studied. The culture profile of BV was also studied in those who had recently aborted. The women included were of the age group between 18 to 39 years. Women, who were pregnant, had a prior history of induced abortion either medical or surgical and taking hormonal contraceptives were excluded. The demographic factors used were age, religion, residence, socioeconomic status and educational level.

Among the various methods available for diagnosis of bacterial vaginosis, Amsel's criteria are easy to perform and often used by clinicians for establishing clinical diagnosis As India is a developing country so Amsel's criteria seem to be most useful for the low re-source country. In Nugent's method, we require a microscope and microbiologist which may not always be available especially in rural areas. Nugent score is considered as the gold standard method and culture is a specific method where etiological agent G. vaginalis is isolated but has its disadvantages like time, cost and requirement of perfection. In Amsel's criteria, its components are subjective and dependent upon the acuity of the physician. In our study, Amsel's criteria diagnosed 28.3% of females as having bacterial vaginosis. This is different to a study done by Ranjit et al[4] where Amsel's criteria were significant in 40% of subjects

Nugent score categorized nearly 59.25% women as having normal flora, 25.92% as having intermediate flora and 14.61% as bacterial vaginosis. A study conducted by Madhivanan et al (2008)[5] showed 65.4% had normal flora, 15.4% had intermediate flora and 19.1% had bacterial vaginosis. These proportion of three categories were compared with the results of the present study. About 19.15% of samples grew etiological agent G. vaginalis in the present study, which correlates well with the study by Ranjit et al [4] where culture positivity was 17.42%. In the present study, among the three methods, Amsel's criteria identified more positives than the other two methods. Detection of positivity by Amsel's criteria was more than a culture which was followed by Nugent scoring. A study by Ranjit et al [4] showed a difference in the order of positives with the same three methods where culture detected more positives followed by Amsel's criteria and Nugent score. That was one among the few studies where culture positivity outnumbered the positives by Nugent methods. [5] Initial difficulties faced in isolation of anaerobes could be the reason for the lower percentage of culture positivity in the present study. Another study by Udayalaxmi et al (2011) [6] which involved a comparison of Amsel and culture with Nugent as gold standard showed culture as the least sensitive method.

Conclusion

In the present study, the author also studied the association between previous reproductive outcome and BV. No statistically significant association between history of previous one abortion and the presence of BV was found.

References

1. Schwebke JR. Bacterial vaginosis--more questions than answers. Genitourinary medicine. 1997 Oct;73(5):333.
2. Allsworth JE, Peipert JF. Prevalence of bacterial vaginosis: 2001– 2004 national health and nutrition examination survey data. Obstetrics & Gynecology. 2007 Jan 1;109(1):11 4-20.
3. Modak T, Arora P, Agnes C, Ray R, Goswami S, Ghosh P, Das NK. Diagnosis of bacterial vaginosis in cases of abnormal vaginal discharge: comparison of clinical and

microbiological criteria. The Journal of Infection in Developing Countries. 2011;5(05):353-60.

4. Ranjit E, Raghubanshi BR, Maskey S, Parajuli P. Prevalence of bacterial vaginosis and its association with risk factors among nonpregnant women: a hospital based study. International journal of microbiology. 2018;2018.

5. Marconi C, Duarte MT, Silva DC, Silva MG. Prevalence of and risk factors for bacterial vaginosis among women of reproductive age attending cervical screening in southeastern Brazil. Int J Gynaecol Obstet. 2015; 131:137 – 41.

6. Liversedge N, Turner A, Horner PJ, Keay S, Jenkins J, Hull M. The influence of bacterial vaginosis on in-vitro fertilisation and embryo implantation during assisted reproduction treatment. Hum Reprod. 1999; 14:2411-5.