

Study of Prevalence of Bacterial Vaginosis in Pelvic Inflammatory Disease

Dr. S. Pallavi

Assistant Professor, Department of Obstetrics and Gynecology, Maheshwara Medical College, Hyderabad, Telangana State.

Address for communication:

Dr.S.Pallavi, E 101, Vasavi Dreams, Street No 2, Near Poojitha Hospital, Czech Colony, Sanathnagar, Hyderabad-500018. Email Id: pallaviswamigari@gmail.com Mobile: 9573020053

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ABSTRACT

Background: Pelvic Inflammatory Disease (PID) is the infection and inflammation of the female genital tract. Bacterial vaginosis is due to the alteration of vaginal flora that has been implicated in PID. We in the present study tried to evaluate the relation of bacterial vaginosis and PID.

Methods: This prospective study was carried out in the Departments of Obstetrics and Gynecology and Microbiology, Maheshwara Institute of Medical Sciences, Hyderabad, Telangana. N=100 Cases with vaginal discharge and itching and those with signs and symptoms suggestive of PID were included in the study.

Results: Of the n=100 patients, 24% were found to be positive for BV according to Amsel's clinical criteria. 23% were found to be positive for BV based on Gram stain Nugent criteria. 25% were found to be positive by Amsel's criteria. Culture was positive for Gard. Vaginalis in 25% of cases. Out of 24% of acridine orange stain positive, the same was also positive according to Amsel's criteria. Based on Gram stain Nugent criteria n=2 cases were found to be negative compared with the Amsel's criteria. Similarly, the culture was also found to be positive in n=22 cases and negative in n=2 cases.

Conclusion: Within the confines of the present study it can be concluded that Bacterial vaginosis is a commonly prevalent condition in PID. In most of the cases, the signs and symptoms of PID and BV may vary, and patients may be asymptomatic, and some may report with problems of infertility. Therefore, all the patients with signs and symptoms of PID and infertility must be subjected to the detection of Bacterial vaginosis.

Keywords: Bacterial Vaginosis, Pelvic Inflammatory Disease, Vaginal discharge

INTRODUCTION

Bacterial vaginosis (BV) is a common vaginal disorder of women in the reproductive age group. Studies have shown BV occurs when lactobacillus spp the predominant species of the healthy vaginal flora is replaced by anaerobic bacteria such as G.vaginalis, M.curtisii, M.mulieris, etc. It has been estimated that 20–30% of women of reproductive age attending sexually transmitted clinics suffer from BV.^[1] Prevalence of BV varies with age, ethnicity, socioeconomic status, and education. The prevalence ranges from 5–50% in the population of the US,

Europe, and Southeast Asian countries.^[2] BV is clinically suspected in cases where there is a thin, grey/offwhite homogenous, malodorous adherent vaginal discharge and it is more noticeable after intercourse and menses. The pH is > 4.5. A fishy odor is noticed on the addition of 10% of KOH to the vaginal fluid; it is called the Whiff test and the presence of clue cells or no lactobacilli and a small number of polymorphonuclear leucocytes.^[3] Since there is only malodorous vaginal discharge with no inflammatory complaints, it is referred to as vaginosis and not vaginitis.^[4] In pregnant women BV is associated with the presence of fibronectin which directly correlates with a 16 times increase in clinical Chorioamnionitis, a 6-fold increase in neonatal sepsis. It is also associated with intraamniotic infection. BV in women at 23 to 26 weeks of gestation is associated with intraamniotic fluid infection at term.^[5] Pelvic inflammatory disease (PID) is infection and inflammation of the uterine lining (endometritis) and fallopian tubes (salpingitis), is a frequent condition among young women.^[6] The diagnosis of PID is challenging because often PID signs and symptoms vary and it may be mild or completely absent and diagnosis is generally based on the clinical findings.^[6, 7] Decrease in the normal lactobacilli of the vagina is one of the risk factors for bacterial vaginosis. BV organisms are isolated from the urethra of male partner; organisms are isolated from the urethra or male partner of women with BV.^[8] With this background we in the current study tried to investigate the prevalence of bacterial vaginosis in patients with PID.

MATERIAL AND METHODS

This prospective study was carried out in the Departments of Obstetrics and Gynecology and Microbiology, Maheshwara Institute of Medical Sciences, Hyderabad, Telangana. Institutional Ethical committee permission was obtained for the study. Written consent was obtained from all the participants of the study. N=100 cases attending the gynecology OPD were included in the study.

Inclusion criteria: Women aged 25 to 40 years, History of abnormal vaginal discharge and itching suspected cases of BV and PID were included in the study.

Exclusion criteria: Pregnant females, patients on systemic antibiotic therapy, or local vaginal antimicrobial therapy within 2 weeks, menstruating females, vaginal bleeding.

A detailed history of the patient was obtained concerning medical, reproductive, and sexual behavior. A non-lubricated speculum was inserted into the vagina to collect the discharge and an overall examination was done to observe the color, consistency, and odor. Vaginal samples were taken with sterile cotton swabs from the posterior and lateral vaginal fornix. The swabs were sent to the microbiology department in a sterile capped test tube for aerobic and anaerobic cultures in MacConkey agar, Blood agar, and chocolate agar for identification of bacterial isolates. The second smear was used for gram staining and wet mount microscopy. The Gram-stained slides were examined under oil immersion objective (1000x magnification). Then, the etiological agent and normal flora on the Gram-stained smear

were counted and were scored according to the standardized Nugent’s scoring method. PID patients were diagnosed clinically by classic triads such as pelvic pain, cervical excitation pain, adnexal tenderness, and often in the presence of fever along with elevated TLC and ESR. USG examination showing the presence of tubo-ovarian mass and collection in the Pouch of

Douglas.

Statistical analyses: All the available data was recorded in MS Excel spreadsheets and descriptive statistics were calculated by using IMB SPSS version 19 on windows format.

Results

All the cases of bacterial vaginosis were diagnosed by the presence of clue cells and two or more of the other three Amsel’s criteria. Of the n=100 patients, 24% were found to be positive for BV according to Amsel’s clinical criteria. 23% were found to be positive for BV based on Gram stain Nugent criteria 25% were found to be positive by Amsel’s criteria culture was positive for Gard. Vaginalis in 25% of cases. Out of 24% of acridine orange stain positive, the same was also positive according to Amsel’s criteria. Based on Gram stain Nugent criteria n=2 cases were found to be negative compared with the Amsel’s criteria. Similarly,

Table 1: Comparison of Amsel’s criteria with Gram Stain Nugent criteria, acridine orange stain, and culture of vaginal fluid for diagnosis of bacterial vaginosis

BV by Amsel’s criteria		Acute epididymitis		Acridine orange staining		Culture for Gard Vaginalis	
	Number of cases (n)	Positive	Negative	Positive	Negative	Positive	Negative
Bacterial vaginosis cases	24	22	24	0	0	22	24
Non-bacterial vaginosis cases	76	75	1	75	75	3	73
Total	100	77	25	75	75	25	75

The distribution of cases based on the complaints of only vaginal discharge and itching and compared to the women with the diagnosis of PID having vaginal discharge and itching is shown in table 2. Among the n=100 patients, 72% had vaginal discharge and itching without PID, and BV was found to be

positive in n=7 cases and negative in n=65 cases. Out of n=28 with PID showed BV positive in n=17 cases and negative in n=11 cases.

Table 2: Distribution of cases based on the symptoms and diagnosis

No of cases	Bacterial		Total
	Positive	Negative	
Cases with vaginal discharge and itching	7	65	72
PID cases with vaginal discharge and itching	17	11	28
Total	24	76	100

Discussion

Bacterial vaginosis is a common condition presented in gynecology clinics. For diagnosis at least three of the Amsel’s criteria are used: (1) thin, grey/white discharge (2) Malodorous fishy discharge on the addition of 10% KOH (3) high vaginal pH

(4) identification of vaginal epithelial cells heavily coated with bacteria "clue cells".[9] In research the bacterial vaginosis is diagnosed by Gram’s staining and evaluation of vaginal bacterial morphotypes using Nugent score, (= 7 indicates BV). [10]BV associated bacteria like G. vaginalis and M. hominis have been shown to produce oviduct damage in experimental

animals. [11, 12] In humans BV is found to be associated with endometritis and salpingitis. which shows that there is a role of BV in PID. [13-16] In the current study n=7 out of n=72 women having only vaginal discharge and itching were found positive for BV and n=17 out of n=28 with chronic vaginal discharge and itching associated with PID were found to be positive for BV. It has been found that N. gonorrhea and C. trachomatis are found to frequently coinfect patients with BV and BV also increases the risk of incident gonococcal and chlamydial infections.[17, 18] Amsel R et al; [16] have also reported that 23.9% of patients with a history of trichomoniasis, 4.3% of BV patients show a history of gonorrhea and 4.3% had a history of herpes virus infections. Bhalla P et al; [19] estimating the prevalence of BV in New Delhi found that 31.22% of BV presence from asymptomatic women, and 25.4% in the symptomatic group of middle-class people. E Ranjit et al; [20] in Nepal found the prevalence of BV was high among women of age group 30 – 40 years (8.8%) and least for 10 – 20 years and 50 – 60 years (8.3%). This is the reason why we in our study have included patients age 25 – 40 years. Garba et al; [21] in Nigeria found prevalence of BV mostly in 26 – 30 years (35.8%) and least in >40 age (10.5%). PID diagnostic methods often are found to vary and mostly diagnosis is based on clinical signs such as pelvic pain and are nonspecific. Visual inspection of fallopian tubes is considered a standard of PID diagnosis. However, it is an invasive method not widely accepted. Another area of concern is the isolation of organisms associated with BV. Most of the organisms *Bacteroides* and *Prevotella* are fastidious and require selective enriched media. The new organism associated with BV *A. vaginae* could not be isolated because it can be detected only with PCR. Despite these limitations, we have found an explicit association of BV with PID. Investigation and treatment will reduce the burden of reproductive morbidity.

Conclusion

Within the confines of the present study, it can be concluded that Bacterial vaginosis is a commonly prevalent condition in PID. In most of the cases, the signs and symptoms of PID and BV may vary, and patients may be asymptomatic, and some may report with problems of infertility. Therefore, all the patients with signs and symptoms of PID and infertility must be subjected to the detection of bacterial vaginosis.

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