

BACTERIAL VAGINOSIS IN INDIAN WOMEN IN THE REPRODUCTIVE AGE GROUP

Sarada Tiyyagura*, Madhuri Taranikanti, Swathi Ala, Dinesh Raj Mathur

Shadan Institute of Medical Sciences, Hyderabad, India

*Corresponding Author: drtsarada@gmail.com

This article is available online at www.ss-journals.com

ABSTRACT

Background: Bacterial vaginosis is a vaginal infection in women in the reproductive age group with complex change in vaginal flora. Many women are asymptomatic but some women present with abnormal vaginal discharge. It can lead to complications like preterm birth, infertility, post partum endometritis and first trimester loss. Nugent's criteria are used to diagnose bacterial vaginosis.

Objectives: This study was done with the objective of analyzing the type of bacteria causing vaginosis in different age groups during the reproductive period of a woman's life. 100 women with vaginal discharge (test group) and 50 women (control group) attending the gynaecology outpatient for other problems were included in the study. Three high vaginal swabs were taken and examined for clue cells and *mobiluncus* spp. pH of the vaginal secretions was noted. Gram stain was done to quantify bacterial morphotypes. Diagnosis was done using the Nugent's scoring system.

Results: A significantly high incidence ($p < 0.05$) was found in the test group. 53% of women with vaginal discharge were in the age group of 21-30 years indicating that vaginosis is very common in the early reproductive years. *Mobiluncus* spp. was found only in the test group. 46% had an abnormal Nugent's score and 53% of test group women had all the 4 criteria to diagnose as bacterial vaginosis.

Conclusion: Screening asymptomatic women and quantifying the bacteria in symptomatic patients to provide appropriate treatment would reduce the incidence and prevalence of bacterial vaginosis in the population.

Keywords: Bacterial vaginosis, Nugent's score, *Mobiluncus species*

1. Introduction:

Bacterial vaginosis is a common vaginal infection in women of reproductive age group with abnormal vaginal discharge. It is characterized by a complex change in the vaginal flora with a reduction in the numbers of lactobacilli and an increase in *Gardnerella vaginalis* and resident anaerobic bacilli¹. Many women are asymptomatic but some women with bacterial vaginosis present with thin, foul smelling, homogenous, frothy vaginal discharge.^{1,2} Apart from the discomfort of infection, the disease can lead to complications like preterm birth, pelvic inflammatory disease, post partum endometritis, infertility and first trimester loss.^{1,2} Several studies have demonstrated the possibility of an association between bacterial vaginosis and transmission of HIV³. One of the methods of diagnosis of bacterial vaginosis is by Nugent's criteria based on evaluation of normal flora in gram stained smears of vaginal discharge^{4,5}. Bacterial vaginosis is of public health concern in India due to the high burden of reproductive and pregnancy related morbidity. Very few studies on bacterial vaginosis are available from few states of India^{6,7}. The present study was

undertaken with the objective of analyzing the type of bacteria causing bacterial vaginosis in different age groups during the reproductive period of a woman's life.

2. Material and Methods:

150 women attending the Gynaecology outpatient Department in Government Maternity Hospital, Nayapul, Hyderabad over a period of one year from 2006 to 2007 were included in the study to determine the incidence of vaginitis. Hundred women with vaginal discharge were included in the test group and 50 women attending the Gynaecology Outpatient for other problems were included in the control group. Menstruating women and women on antibiotics in the preceding four weeks were excluded from the study. A detailed history and information regarding age, symptoms, character and quantity of discharge, odour and pruritis were taken from the patients. A thorough clinical examination to examine the condition of vagina and cervix was done. An informed consent was taken from all the patients both test and control. The institutes Ethics committee clearance was also obtained.

3. Methods:

A thorough speculum examination without antiseptic cream was done and the nature of discharge and condition of vagina and cervix were noted.

Three high vaginal swabs were taken from the posterior fornix, two of them were inoculated immediately in culture media and the third swab was used for making smears.

A multi range pH paper was dipped in pooled vaginal secretion and the pH noted.

3.1 Microscopy:

Saline wet mount: A drop of vaginal discharge was mixed with a drop of normal saline on a clean glass slide and a cover slip was placed over it. The slide was examined under high power (400X) for various bacteria. Clue cells were identified as those vaginal epithelial cells with edges darkened by the presence of numerous small bacteria adhering to the surface. Bacilli with one edge attached to the vaginal epithelial cell and the other end floating or moving were presumed to be *Mobiluncus spp.*

Gram stain: Done to quantify bacterial morphotype and to identify clue cells, bacteria, yeast and pus cells and scored for the diagnosis of bacterial vaginosis following the Nugent's scoring system.

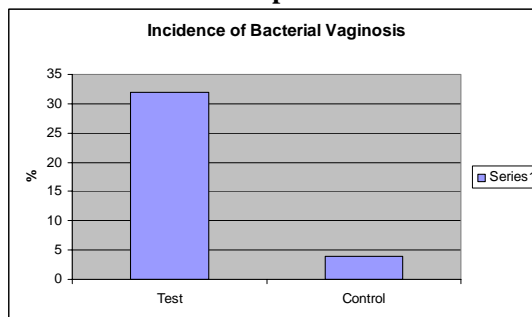
Nugent's diagnostic criteria for Bacterial vaginosis:

	Organism Morphotype	Number/oil immersion field	Score
A	Lactobacillus – like (parallel sided Gram positive rods)	> 30	0
		5 – 30	1
		1 – 4	2
		< 1	3
		0	4
B	Mobiluncus like (curved gram negative rods)	> 5	2
		< 1 – 4	1
		0	0
C	Gardnerella / Bacteroides like (Tiny Gram Variable coccobacilli, and rounded pleomorphic, Gram negative rods with vacuoles)	> 30	4
		5 – 30	3
		1 – 4	2
		< 1	1
		0	0
A+B+C			Nugent's Score

4. Observation and Results:

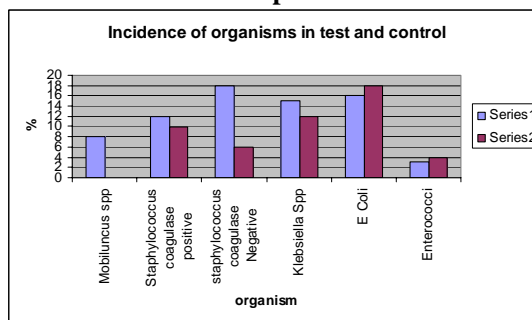
Statistical analysis was done using percentages and proportions.

Graph 1



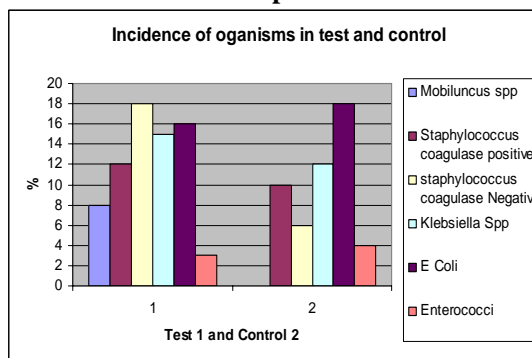
A significantly high incidence of bacterial vaginosis was found in the test group showing that bacterial vaginosis presents with symptoms of abnormal vaginal discharge and incidence of bacterial vaginosis in asymptomatic women is less.

Graph 2



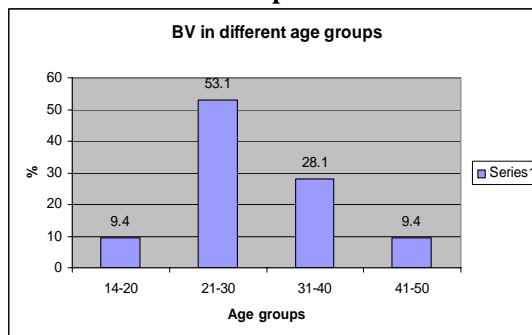
High incidence of organisms in test group and presence of mobiluncus spp only in the test group.

Graph 3



Mobiluncus spp is not observed in control group.

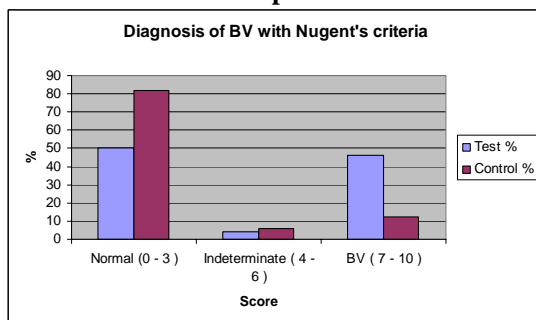
Graph 4



Incidence of Bacterial vaginosis (BV) is highest (53.1%) between 21 to 30 years followed by 28.1%

in 31 to 40 years age group indicating that there is a high incidence of vaginal infections in young individuals in the reproductive age group.

Graph 5



46% of test group presented with abnormal score between 7-10 indicating the presence of bacterial vaginosis in this group. Only 12% in control group had bacterial vaginosis.

Combination of Lab Indices used to diagnose bacterial vaginosis

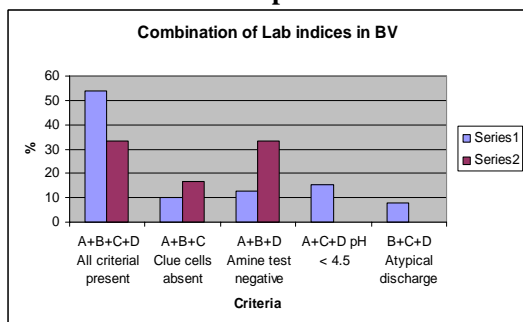
A = Homogenous thin vaginal discharge

B = pH 4.5 or more

C = Positive amine cells

D = Positive clue cell

Graph 6



53.84 % of the cases shows all 4 criteria required to diagnose BV

5. Discussion:

46% patients who presented with complaints of abnormal vaginal discharge when examined were found to have bacterial vaginosis whereas only 12 % of asymptomatic women were diagnosed with bacterial vaginosis indicating that bacterial vaginosis does present with discomforting symptoms which is in agreement with earlier studies. The disease occurs mainly in young women in the reproductive age group which also correlates with other studies done earlier. Changes in structure and composition of vaginal ecosystem maybe influenced by age, infections, methods of birth control by using contraceptives, frequency of sexual activities and number of sexual partners. These features are most likely seen in women of reproductive age group. Habits and practices like douching

and pH of vaginal fluid may also be an important cause for bacterial vaginosis. Clue cells were absent in 10.3% of cases of bacterial vaginosis. As per our results, Nugent's score showed a positive association with bacterial vaginosis which coincides with other studies^{8,9} In more than 50% of the cases vaginal pH was found to be more than 4.5 indicating that Lactobacilli which secrete lactic acid and maintain acidic pH in vaginal flora are replaced by other organisms.

Conclusion:

The present study may be used as a rationale for screening asymptomatic women and treating patients presenting with symptoms.

References:

- Sobel JD. Bacterial vaginosis, *Annu Rev Med* 2000; 51:349-56.
- Rao PS, Devi S, Shriyan A, Rajaram M, Jagdishchandra K. Diagnosis of bacterial vaginosis in a rural set up: comparison of the clinical algorithm, smear scoring and culture by using a semiquantitative technique. *Indian J Med Microbiol* 2004; 22(1):47-50.
- Myer L, Denny L, Telerant R, Souza M, Wright TC Jr., et al. (2005) Bacterial vaginosis and susceptibility to HIV infection in South African women: a nested case-control study. *J Infect Dis* 192: 1372-1380.
- Mohanty S, Sood S, Kapil A, Mittal S. Interobserver variation in the interpretation of the Nugent's scoring method for the diagnosis of bacterial vaginosis. *Indian J Med Res* 010; 131:88-91.
- Demba E, Morison L, Maartem Schim VDL, et al. Bacterial vaginosis, the vaginal flora patterns and the vaginal hygiene practices in patients who presented with the vaginal discharge syndrome in Gambia, West Africa. *BMC Infect Dis* 2005; 5:12-24.
- Uma S, Balakrishnan P, Murugavel KG, Srikrishnan AK, Kumaraswamy N, Anand S, Cecelia JA, Celentano D, Mayer KH, Thyagarajan SP, Solomon S. Bacterial vaginosis in women of low socioeconomic status living in slum areas in Chennai, India. *Sex Health* 2006; 3:297-8.
- Patel V, Weiss HA, Mabey D, West B, D'Souza S, Patil V, Nevrekar P, Gupte S, Kirkwood BR. The burden and determinants of reproductive tract infections in India: a population based study of women in Goa, India. *Sex Transm Infect*; 82:243-49.
- Nugent R, Krohn M, Hillier S. Reliability of diagnosing bacterial vaginosis is improved by a standardized method of gram stain interpretation. *J Clin Microbiol* 1991; 29:297-301.
- Demba E, Morison L, Loeff M, Awasana A, Gooding E, Bailey R, Mayaud P, West B. Bacterial vaginosis, vaginal flora patterns and vaginal hygiene practices in patients presenting with vaginal discharge syndrome in The Gambia, West Africa. *Infect Dis* 2005; 5:12-20.