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Original Research Article

Clinical presentation, diagnosis and management of bacterial vaginosis: a hospital based cross-sectional study

Manju Agarwal¹, Rakhee Soni^{1*}, Adhunik Singh²

¹Department of Obstetrics and Gynecology, Jhalawar Medical College, Jhalawar, Rajasthan, India

²Department of Microbiology, Jhalawar Medical College, Jhalawar, Rajasthan, India

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*Correspondence:

Dr. Rakhee Soni,

E-mail: sonirakhee777@gmail.com

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ABSTRACT

Background: Bacterial vaginosis is most common cause of vaginal discharge. Clinical presentation varies from person to person. The management of bacterial vaginosis is largely syndromic and empirical, it is usually based on naked eye examination of vaginal discharge and that is unsatisfactory because the diagnostic accuracy is lost without microscopic examination. The modern management of bacterial vaginosis demands a specific diagnosis which is a combination of naked eye examination plus laboratory workup.

Methods: The study was carried out on 183 females with complaint of vaginal discharge in the outpatient department of obstetrics and gynecology. Specimens were collected in outpatient department of Jhalawar Medical College in associated Zanana Hospital. The laboratory work was conducted in the department of microbiology in Jhalawar Medical College, Jhalawar, Rajasthan, India.

Results: The prevalence of microbial positivity in our study was 79.9%. Bacterial vaginosis was the most common diagnosis seen in 86 (47.0%) cases. Maximum patients presented with complaint of copious amount of foul-smelling yellow discharge.

Conclusions: The study concludes that it is important to know the various presentations, confirm the diagnosis by proper microbiological tests, and provide appropriate treatment to patients to prevent resistance and recurrence of bacterial vaginosis.

Keywords: Amsel's criteria, Bacterial vaginosis, Clue cells, *Gardnerella vaginalis*, *Lactobacilli*, Vaginal discharge

INTRODUCTION

Genitourinary tract infections are among the most frequent disorders for which patients seek care from gynecologists.¹ Of all the infections known, bacterial vaginosis accounts for 40-50% cases, monilial infection for 20-25% cases and *trichomonal* infection for 15-20% cases.² Bacterial vaginosis (BV) is considered the most common cause of vaginal discharge among women in reproductive age. It is characterized by an increased vaginal pH and the replacement of vaginal *Lactobacilli*

(particularly those that produce hydrogen peroxide) with *Gardnerella vaginalis* and *Anaerobic gram-negative rods*.^{3,4}

Common agents of BV include *Gardnerella vaginalis*, *Mobiluncus*, *Bacteroides saprophytes*, and *Mycobacterium hominus*.¹

Bacterial vaginosis is common in pregnant women and is associated with preterm birth.⁵ Several studies have shown that BV is statistically associated with premature

rupture of the membranes, chorioamnionitis with intact membranes, late abortions, and post-caesarean endometritis.⁶

The management of bacterial vaginosis is largely syndromic and empirical, it is usually based on naked eye examination of vaginal discharge and that is unsatisfactory because the diagnostic accuracy is lost without microscopic examination.⁷ The modern management of bacterial vaginosis demands a specific diagnosis which is a combination of naked eye examination plus laboratory workup. Most of the time laboratory assistance in patients of bacterial vaginosis is sought only after therapeutic failure of repeated courses of empirical therapy. It not only has a financial and social impact leading to noncompliance on the part of patients but also contributes to the overall emergence of resistance.⁸

Therefore, we decided to conduct a hospital-based study to find out signs and symptoms of bacterial vaginosis, followed by correct diagnosis and appropriate management.

METHODS

The study was carried out on 183 females with complaint of vaginal discharge in the outpatient department of obstetrics and gynecology from November 2018 to October 2019. Specimens were collected in outpatient's department of Jhalawar Medical College in associated Zanana Hospital. The laboratory work was conducted in the department of microbiology in Jhalawar Medical College, Jhalawar, Rajasthan, India.

Inclusion criteria

- All married females of reproductive age group with vaginal discharge attending outpatient's department on Monday and Thursday.

Exclusion criteria

- Cases of recent delivery (within 42 days) and abortion (within 21 days)
- Pregnant women with leaking per vagina
- Patient with bleeding per vagina.

Patients of reproductive age group attending gynecology clinic on Monday and Thursday with a complaint of vaginal discharge (after excluding exclusion criteria) were selected for this study. Basic information and specific history such as the history of pruritis, recent use of antibiotics (within 3 months) and history of use of OCPs were recorded.

In each general and local examination was done. For local examination, women were kept in dorsal position with the knees flexed, per speculum examination was done with a good source of light, any abnormality in the

vagina and cervix was noted. The amount, color, consistency, and odor of vaginal discharge were noted, with all aseptic precautions vaginal discharge collected from posterior fornix with two cotton swab stick and one cotton swab stick was kept in a sterile test tube and another cotton swab stick was kept in a sterile test tube immersed in normal saline.

After per speculum examination, bimanual per vaginal examination was done for assessment of uterine size, position, mobility and condition of the adnexa. Any mass or tenderness in the fornices and pouch of douglas was noted. Study of the vaginal swab was carried out as:

For diagnosis of bacterial vaginosis Amsel's criteria was used⁹:

- The pH of the discharge was noted with a narrow range pH paper.
- Amine test/Whiff test - a drop of 10% KOH was put on vaginal secretions on a glass slide and the presence of ammoniacal odor was noticed.
- Wet mount- wet mount film was examined for the presence of clue cells, which are vaginal epithelial cells with granular surface and blurred margins because of the attached bacteria. Figure 1 showing Wet mount appearance of clue cells.

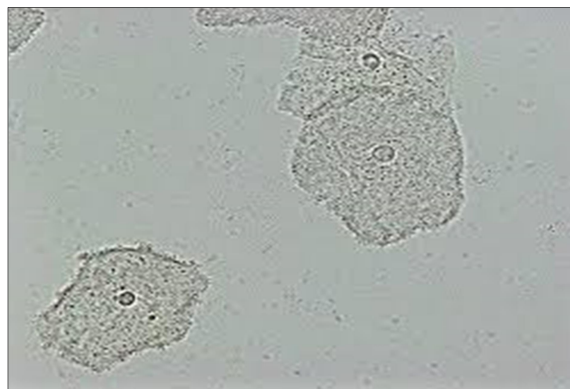


Figure 1: Wet mount appearance of clue cells.

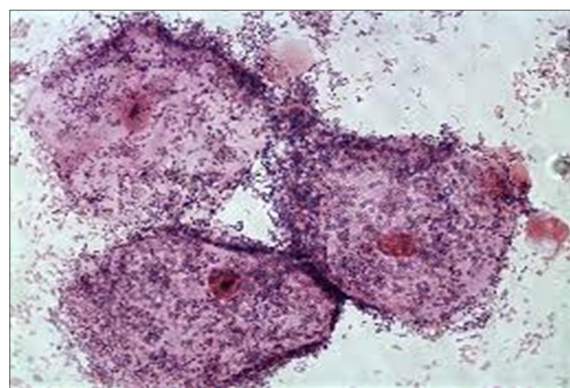


Figure 2: Gram-stained appearance of clue cells.

- Gram-stained smear- it was examined for the presence of altered vaginal flora in the form of gram-negative *Cocco-bacilli* studding vaginal epithelial cells instead of normally predominant gram-positive *Lactobacilli*. Figure 2 showing gram-stained appearance of clue cells.

Amsel's criteria: three or more of these clinical conditions correspond to a diagnosis of BV.

- A homogenous white non-inflammatory milky discharge that adheres to the vaginal wall.
- The presence of clue cells on microscopic examination of wet mount preparation of vaginal fluid.
- Vaginal pH greater than 4.5.
- Positive "whiff" test on the addition of 10% KOH to a specimen (i.e., olfactory detection of the sharp smell of amines).

Treatment of bacterial vaginosis

Centers for disease control and prevention (CDC), sexually transmitted diseases treatment guidelines 2015 for bacterial vaginosis¹⁰:

Metronidazole 500 mg orally twice a day for 7 days.

Or

Metronidazole gel 0.75%, one full applicator (5 gm) intravaginally, once a day for 5 days.

Or

Clindamycin cream 2%, one full applicator (5 gm) intravaginally at bedtime for 7 days.

Statistical analysis

Statistical analysis of data was done by help of SPSS 20.0 Software (trial version).

RESULTS

The prevalence of microbial positivity in our study was 79.9%. Bacterial vaginosis was the most common diagnosis seen in 86 (47.0%) cases. 62 (72.1%) cases had copious discharge, 19 (22.1%) cases had moderate discharge, 5 (5.8%) cases had scanty discharge. 28 (32.6%) cases had white discharge, 58 (67.4%) cases had yellow discharge. 1 (1.2%) cases had mucoid discharge, 17 (19.8%) cases had thick discharge, 68 (79.1%) cases had thin discharge. 57 (66.3%) cases had foul smelling discharge, 29 (33.7%) cases had odourless discharge. 32 (37.2%) cases didn't have any complaint of pain abdomen, 54 (62.8%) cases had complaint of pain abdomen. 28 (32.6%) cases didn't have any complaint of backache, 58 (67.4%) cases had complaint of backache.

56 (65.1%) cases didn't have history of pruritis, 30 (34.9%) cases had history of pruritis. 64 (74.4%) cases didn't have any urinary complaints, 22 (25.6%) cases had urinary complaints. 84 (97.7%) cases were non diabetic, 2 (2.3%) cases were diabetic. 72 (83.7%) cases didn't have recent history of use of antibiotics, 14 (16.3%) cases had recent history of use of antibiotics. 70 (81.4%) cases were not using OCPs, 16 (18.6%) cases were using OCPs. 73 (84.9%) cases were not using IUCDs, 13 (15.1%) cases were using IUCDs. 64 (74.4%) cases were non-pregnant, 22 (25.6%) cases were pregnant.

DISCUSSION

Maximum cases 86 (47%) were found positive for bacterial vaginosis. Similarly, Puri KJ et al, found 45% incidence of BV in their study of various causes of vaginal discharge.¹¹ Ahmed OI et al, also found the most common organism causing vaginal discharge was bacilli bacteria i.e., 49%.¹² Smita SD et al found 45.5% cases of BV in their study.¹³ Nsagha DS et al, found the prevalence of *Gardnerella vaginalis* 41% among participants who had vulvovaginitis.¹⁴ In contrast, Narayankhedkar A et al, found BV only in 17.3% among cases of infectious vaginitis.⁴ Mulu W et al, found BV only in 2.8% of females with vaginal discharge.¹⁵

In this study age of cases ranged from 18 to 45 years. The maximum number of cases presented in the age group 25 to 29 years. Nsagha DS et al found that vulvovaginitis was more common among women of 26-40 years, while Samia KS found a high prevalence of sexually transmitted infection in the age group of 29-33 years.^{14,16} Yusuf MA et al, found in their study that the most common age group affected by BV was 26-35 years.¹⁷ Dai Q et al, found vaginitis significantly associated with age older than 49 years.¹⁸

In this study, found maximum cases with BV had copious amount of discharge i.e., 72.1%. Kiran CK et al, found 67.74% of cases with bacterial vaginosis had copious amount of discharge.¹⁹ Landers DV et al, found out that among women with abnormal discharge, 62% of the women were diagnosed clinically as having bacterial vaginosis.²⁰

In this study in 67.4% cases with BV had yellow discharge. While Kiran CK et al, found, among females with BV 6.45% had greenish discharge.¹⁹ Meena V et al, found, 60% of cases with BV had grayish white discharge and none had yellow discharge.²¹

Study found that in this study cases who had bacterial vaginosis, 1.2% cases had mucoid discharge, 19.8% cases had thick discharge, 79.1% cases had thin discharge. While Kiran CK et al, found that among cases with BV 100% of cases had thin discharge.¹⁹

In this study, foul smelling discharge was associated with 66.3% cases of BV. Kiran CK et al, found malodor was

present in 38.71% cases of bacterial vaginosis.¹⁹ Meena V et al, found fishy odor in 79.2% of cases with BV.²¹ Narayankhedkar A et al, found 40% of cases with BV had malodor.⁴ Landers DV et al, found that among women with odor as a complaint, the clinical diagnosis of bacterial vaginosis was made in 73% women.²⁰

Comparing these results, we can say that bacterial vaginosis seems to be more diagnosed in females who have copious, yellow, thin, foul smelling discharge.

In this study 62.8% cases of bacterial vaginosis had a complaint of pain abdomen. Kiran CK et al, found pain abdomen was present in 45.16% cases of bacterial vaginosis.¹⁹ Narayankhedkar A et al, found pain abdomen was the complaint of 66.7% cases of bacterial vaginosis.⁴

In this study, pruritis was present in 34.9% cases with bacterial vaginosis. Kiran CK et al, found pruritis was present in 70.97% cases with bacterial vaginosis.¹⁹ Meena V et al, found itching in 78.6% cases with BV.²¹ Narayankhedkar A et al, found 21.1% cases with bacterial vaginosis.⁴ Landers DV et al found that women who had vaginal pruritis, 54% had bacterial vaginosis.²⁰

In this study, urinary complaints were present in 25.6% cases of bacterial vaginosis. Kiran CK et al, found dysuria was present in 12.9% cases of bacterial vaginosis.¹⁹ Meena V et al, found dysuria in 78.6% cases with BV.²¹ Narayankhedkar A et al, found 100% of cases with bacterial vaginosis had dysuria.⁴ Landers DV et al found that women who had dysuria, 56% had bacterial vaginosis.²⁰

In this study, found that a recent history of antibiotics use was given by 16.3% cases with bacterial vaginosis. Mulu W et al, found in their study that a recent history of use of antibiotics was given by 4.7% cases of bacterial vaginosis.¹⁵

In this study, found that OCP use was associated with 18.6% cases of bacterial vaginosis. Mulu W et al, found in their study that among participants who had bacterial vaginosis 1.1% were using OCPs.¹⁵

In this study, found that IUCD use was associated with 15.1% cases of bacterial vaginosis. Madden et al (2012) found the incidence of BV was 37.0% among IUD users and 19.3% in combined oral contraceptives, ring and patch users.²² Joesoef MR et al, found the prevalence of bacterial vaginosis in 47.2% of cases of IUD users and 26.6% in cases of other hormonal contraceptive users.²³

In this study 25.6% cases with bacterial vaginosis were pregnant. Mulu W et al found in their study that among patients with BV 8.33% cases were pregnant.¹⁵

CONCLUSION

It is important to know the various presentations of bacterial vaginosis, confirm the diagnosis by proper

microbiological tests, and provide appropriate treatment to patients to prevent resistance and recurrence.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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