Diagnosis of Bacterial Vaginosis by Conventional Methods in the Patients at a Tertiary Care Hospital

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ABSTRACT

Background: Bacterial vaginosis (BV) is highly prevalent among women especially in reproductive age group but it is found also in other age groups. Bacterial vaginosis is a great health concern in India because of its complications. Most of the healthcare centers in India are not well-versed in advance diagnostics for BV.

Aim: To assess the utility of conventional methods for diagnostic evaluation of BV in the patients of different age groups.

Materials and methods: In this 1 year cross-sectional study, the vaginal swabs were collected from women with signs and symptoms of BV like complaints of vaginal discharge, odor, itching, back ache, etc. attending the department of obstetrics and gynecology of a tertiary care hospital in Western UP. These specimens are subjected to vaginal pH determination and are sent to department of microbiology for Gram stain, wet-mount and whiff test. Amsel’s criteria were used for confirming BV.

Results: A total of 206 women included in the study, n = 63 (29.61%) were found to be having BV based on Amsel’s criteria. The mean age of the females were found to be 30.77 years. The most affected age group was found to be 26 to 35 years, n = 33 (54%). The vaginal pH was significantly higher in n = 61 (29.61%) women with BV. Vaginal discharge was prevalent in n = 108 (52.43%) women. Presence of clue cells and positive whiff test were found to be in n = 63 (30.58%) and n = 61(29.61%).

Conclusion: The characteristics of vaginal discharge, vaginal pH determination, clue cells and whiff test is relatively easier conventional methods for diagnosis of women with BV where better facilities are lacking. These tests are suitable for screening women with BV and in formulating the treatment to check the complications.

Keywords: Amsel’s criteria, Bacterial vaginosis, Clue cells, Vaginal discharge.


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INTRODUCTION

The vaginal microbiota is an intricate milieu consisting of diverse microbiological species in varying proportions. The presence of the different commensal flora predominantly Doderlein’s bacilli and other defends the vagina by producing several compounds with antimicrobial activity and thereby creating an inhospitable environment against pathogens. But due to some reason the general microflora gets disturbed and is replaced by other bacteria like Gardnerella vaginalis, Prevotella, Mobiluncus, Bacteroides and Mycoplasma hominis causing symptoms like abnormal or increased vaginal discharge, redness and itching.

Bacterial vaginosis (BV) is the most common vaginal infections among women in reproductive age.1 Studies have linked BV to complications like low birth weight, preterm delivery, chorioamnionitis, posthysterectomy cuff cellulitis, postsurgical endometritis following vaginal delivery, and pelvic inflammatory disease.2 As vaginal infections impact greatly women’s quality of life and hence it is essential to diagnose and treat the condition correctly. In the current scenario, most of the healthcare setups follow the conventional methods of diagnosis. The conventional method of diagnosing BV is described well by Amsel et al and Nugent et al.3,4 So, this study was conducted to assess the utility of conventional method in diagnosing women with BV.

MATERIALS AND METHODS

Study Design and Period

The cross-sectional study was conducted in the Department of Microbiology, Obstetrics and Gynecology in Rohilkhand Medical College and Hospital, Bareilly, Uttar Pradesh, over a period of 1 year extending from January 2015 to December 2016, after clearance from the Institutional Ethical Committee.

Sample Population

Inclusion Criteria

• All the patients with signs and symptoms of BV will be included in the study
• Those who have been given informed written consent.
Exclusion Criteria

- The patients having history of antibiotic therapy/or other medications in past 3 weeks
- Those having no signs and symptoms of BV
- Patient having bleeding per vaginum at the time of examination.

Sample size: A total of 204 samples by random stratified sampling from January to December 2015.

Data collection: Information regarding patient’s age, patient identification number, clinical history, etc. were collected.

Clinical history: Date of the last menstrual period or approximate year of menopause, prior gynecologic surgery, any recent abnormal bleeding, discharge, pelvic pain/dyspareunia, and associated urinary tract symptoms. In the symptomatic woman, further history was obtained regarding the nature of any discharge, duration, color, and odor.

Clinical examination: Per speculum inspection of the vaginal mucosa and cervix included examination for erythema, edema, discharge, atrophy and lesions.

Specimen collection: The discharge was collected from the lateral fornices of the vagina with two sterile swabs.

Vaginal pH: Vaginal pH was determined with the help of narrow-range pH paper (vaginal pH > 4.5).

Whiff test: This test was performed by placing a drop of 10% potassium hydroxide (KOH) on the specimen. The KOH, by virtue of its alkaline properties, causes the release of volatile amines from the vaginal fluid which produces a fishy odor.

Gram staining: The clue cells appear as squamous epithelial cells with a large number of coccobacillary organisms densely attached in clusters to their surfaces, giving them a granular appearance. The edges of squamous epithelial cells, which normally have a sharply defined cell border, become indistinct or stippled. The vaginal discharge of patients with BV was notable for its lack of polymorphonuclear leukocytes (PMNs), typically 1 or less than 1 PMN per vaginal epithelial cell.

Amsel’s criteria for diagnosing BV: At least three of the four criteria should be met: (1) copious, thin, homogeneous, milky vaginal discharge; (2) rotten-fish odor, due to the release of volatile amines, on Whiff test (3) vaginal pH > 4.5; and (4) identification of bacteria-covered epithelial cells (clue-cells) under light microscopy. Even without vaginal discharge, asymptomatic BV can be easily diagnosed when criteria 2, 3 and 4 are met.3

RESULTS

Out of the 206 women studied, 61 have been diagnosed with BV based on Amsel’s criteria. The mean age of the patients were found to be 30.77 years. The age group of the females diagnosed with BV was maximum in age group (26–35) n = 33 (54%), followed by age group 15 to 25 years n = 15 (24%) as depicted in Graph 1.

Various clinical characteristics of the samples like copious vaginal discharge, foul smelling odor, vaginal pH > 4.5, clue cells used for evaluation based on Amsel’s criteria have been depicted in Table 1 and Graph 2. Out of the 206 samples, 61 (29.61%) have fulfilled the four of the Amsel’s criteria.

DISCUSSION

The incidence of BV was found to be 29.61% by our study implementing the conventional Amsel’s diagnostic criteria which is in line with other studies reporting different rates ranging from 20 to 53%.5,6 According to a study by Lavett in 1995, BV is less common in pregnant
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than in nonpregnant women (23 vs 33%). The study by Abhilasha et al in 2013 showed that the rate of BV as 31.2% among pregnant women.7 The crest of BV in our study was in the age group 26 to 35 years. This age group is the mostly affected age group as described by various literatures.8,9 About 37.86% of the patients complained of copious thin vaginal discharge. The measurement of vaginal pH among the women in our study showed the positive rate of 29.61%. This result agrees with other studies 2001.10,11 We found 63 (30.58%) of the specimens to have clue cells in the Gram smear. The study in 2009 reported that the vaginal pH of over 4.5, and microscopic examination of vaginal smear showing clue-cells, exfoliated vaginal or ectocervical cells covered with G. vaginalis, Bacteroides spp and Mobiluncus spp are the classical features of diagnosing BV.12

CONCLUSION

Our findings show that vaginal discharge, vaginal pH, presence of clue cells and whiff test can help in the diagnosis of women with BV in absence of the advance technologies in most of the health care centers. This would ultimately reduce delayed treatment and possible secondary complications which arises due to BV.

Table 1: Diagnostic characteristics of the samples according to Amsel’s criteria

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number of patients found to be negative</th>
<th>Number of patients found to be positive</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copious thin vaginal discharge</td>
<td>128/206</td>
<td>108/206</td>
<td>52.43</td>
</tr>
<tr>
<td>Foul smelling odor</td>
<td>141/206</td>
<td>65/206</td>
<td>31.55</td>
</tr>
<tr>
<td>pH &gt; 4.5</td>
<td>145/206</td>
<td>61/206</td>
<td>29.61</td>
</tr>
<tr>
<td>Whiff test</td>
<td>145/206</td>
<td>61/206</td>
<td>29.61</td>
</tr>
<tr>
<td>Clue cells present (Gram’s staining)</td>
<td>143/206</td>
<td>63/206</td>
<td>30.58</td>
</tr>
<tr>
<td>Amsel's criteria ≥3 of 4</td>
<td>145/206</td>
<td>61/206</td>
<td>29.61</td>
</tr>
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</table>

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REFERENCES