



CASE SERIES OF 10 CASES OF BACTERIAL VAGINOSIS AND ROLE OF CYTOPATHOLOGIST IN DIAGNOSIS BY AMSEL CRITERIA

Pathology

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ABSTRACT

This article explores the clinical features, diagnostic challenges, and management considerations associated with Bacterial vaginosis. Bacterial Vaginosis(BV) is most common cause of abnormal vaginal discharge in women of reproductive age. In BV, normal vaginal flora, consisting of hydrogen peroxide-producing lactobacilli, are replaced by Gardnerella vaginalis, Mycoplasma hominis, Mobiluncus species, and anaerobic gram-negative rods, nodular or polypoidal or verrucous pigmented lesion. Due to epithelium breakdown brought on by this disturbance, STIs like Chlamydia trachomatis elemental bodies may internalize, and human papillomavirus (HPV) colonization may increase the likelihood of cervical intraepithelial neoplasia. As a result, bacterial vaginosis diagnosis and treatment become increasingly crucial. The most often applied clinical standards for diagnosis are Amsel's criteria. In this article case series of 9 cases of bacterial vaginosis is presented, highlighting the role of cytopathologist and management approach. Additionally, this article addresses the potential risk factors and emphasizes the need for early comprehensive evaluation and treatment.

KEYWORDS

Bacterial vaginosis, Amsel criteria, Nugent criteria, role of Cytopathologist

INTRODUCTION

Vaginal discharge, which can be caused by a range of physiological as well as pathological conditions, is a common and upsetting condition for women. The most frequent reason for abnormal vaginal discharge in women of reproductive age is considered to be bacterial vaginosis (BV). [1-3] Bacterial vaginosis (BV) is the most common cause of vaginitis, in women of childbearing age. In BV, normal vaginal flora, consisting of hydrogen peroxide-producing lactobacilli, are replaced by Gardnerella vaginalis, Mycoplasma hominis, Mobiluncus species, and anaerobic gram-negative rods (4).

The frequency of BV infections among females of reproductive age is 20–30% worldwide, although a number of risk factors make the disease more likely to spread. [5]. The earliest recognized symptoms were defined by a range of mucosal inflammatory symptoms, such as vaginal fluid production, pruritis, and burning sensations, as well as by an absence of leukocytic exudate, redness in the perineal area, and edema. Preterm birth, chorioamnionitis, postabortion infection, and pelvic inflammatory disease have all been linked to bacterial vaginosis.

In 1983, Amsel et al. established clinical criteria for diagnosing BV. The presence of three of the following four criteria is considered to be consistent with the presence of BV: vaginal pH of 4.5, clue cells on saline wet mount, release of a fish amine odor on addition of 10% KOH to a drop of vaginal discharge, and a characteristic thin, homogenous vaginal discharge (4). In 1991, Nugent et al. described a Gram stain scoring system of vaginal smears to diagnose BV (6). Nugent score is calculated by assessing for the presence of large gram-positive rods (Lactobacillus morphotypes; decrease in Lactobacillus scored as 0 to 4), small gram-variable rods (G. vaginalis morphotypes; scored as 0 to 4), and curved gram-variable rods (Mobiluncus spp. morphotypes; scored as 0 to 2) and can range from 0 to 10. A score of 7 to 10 is consistent with BV. In contrast to the Amsel criteria, the Nugent score enables continuous rather than binary evaluation of changes in vaginal flora.

Patients And Case Study

In this case series, we describe 9 cases of women of child bearing age, who presented at the tertiary center of South Tamil Nadu. These patient present in the department of gynaecology with the complain of watery discharge, itching and foul smelling discharge in 6 cases. 3 cases came for routine checkup. A detailed interview, physical and gynecologic examination, and laboratory monitoring are performed for each of the patients (3). Hemoglobin level >11.2 g/dl in 6 cases. Rest 3 cases showed iron deficiency anaemia. 6 patients were known

case of diabetes with Hb1Ac above 6.6 %. 3 cases also showed hypercholesterolemia with cholesterol level above 160 mg/dl. One case parented with liver disease with ALT level of 108 U/L. Kidney function test were within normal limit for all patient.

Gynecologic examination included assessment for genital tract infections and genital tract dysplasia (6). Women were scheduled for visits when they were not menstruating and were instructed to avoid inserting any substance into the genital tract for 48 h before their examination. Samples were collected in the following order: vaginal pH; vaginal swabs for Gram stain, wet mount, and KOH with amine odor test and Pap smear. Sample collection was done using a sterile swab. Patient were put in the lithotomy position. PAP smear were done by scrapping out the cells from the cervix after viewing through speculum. The smear are then spread on the slides, fixed in alcohol and sent to the department of pathology for evaluation.

Smears were stained by PAP stain including OG-6 and EA-50. The cytospreads were satisfactory for evaluation. Cellularity was adequate and showed superficial squamous and intermediate squamous epithelium with transformation zone cells. On microscopy, there was presence of coccobacillus leading to formation of clue cells with absence of lactobacillus in the background [figure 1,2,3]. In most of smears there was absence of neutrophils in the background. There was no squamous, endometrial or endocervical cells abnormalities in any of the smear. Sample for Bacterial vaginosis was assessed by Amsel criteria. There was presence of at least three of the four Amsel criteria for the diagnosis of BV by Amsel criteria. Thus cases were diagnosed as bacterial vaginosis.

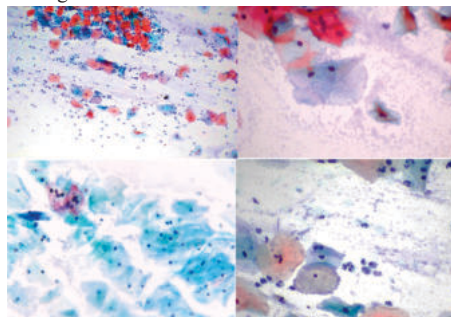


Figure 1: Smear show superficial squamous and intermediate

squamous epithelium with transformation zone cells with presence of coccobacillus[HE 40X]; Figure 2,3 :Smear shows coccobacillus forming clue cells with absence of lactobacillus in the background.[HE400X]; Figure 4:Occasional polymorphs are also seen in the background.[HE400X]

DISCUSSION

Bacterial Vaginosis is the most common identified cause of vaginitis and is a common disorder in women throughout the world, regardless of HIV status.[12] The most common clinical manifestation of this is excessive, foul-smelling vaginal discharge. The actual discharge is frequently thin, gray, or milky in color. Those who have been diagnosed with bacterial vaginosis in females are more likely to develop other STDs, and pregnant women are more likely to have premature babies.[6].

Additionally, bacterial vaginosis raises the chance of unfavorable pregnancy outcomes, such as second-trimester losses, spontaneous preterm births, and post-caesarean endometritis. Even after a thorough workup, at least 30% of women who report with vaginal problems are still undiagnosed (11). To prevent subsequent difficulties, better diagnostic procedures and skilled cytopathologists are also required. By using the Amsel criteria, BV is easily diagnosed. An essential diagnostic technique for excluding bacterial vaginosis is a pap smear. Although the Nugent score is regarded as the gold standard for diagnosing BV, it is nonetheless laborious and not offered in all medical facilities. The most often applied clinical standards are Amsel's criteria. [9]. In developing country, due to paucity of resources Amsel criteria remains the common method used. Three of the following four criteria must be satisfied to make this clinical diagnosis: pH of the vagina is more than 4.5; the presence of clue cells on pap smear; the presence of a whitish milky uniform vulval secretion, and production of an amine fish-like odor upon adding of 10% potassium hydroxide (KOH) to the vulval discharge [9]. To rule out the more dangerous illnesses still on the differential diagnosis, it is crucial to evaluate for fever, pelvic discomfort, and a history of sexually transmitted infections.

In a cohort of non-pregnant women, Schwebke et al. observed that the sensitivity and specificity of Amsel criteria compared to Nugent score were 70% and 94%, respectively (10). The sensitivity of Amsel criteria compared to Gram stain, however, was only 35% and 46% in two cohorts of pregnant women (7, 8, 13). Vaginal cultures for *G. vaginalis* are sensitive but not specific because they will be positive in 50–60% of healthy, asymptomatic women (14). However, smear examination is subjective, necessitating the services of a qualified cytopathologist (7). The cytopathologist must note the presence of clue cells (coccobacilli), changes in flora, and the absence of neutrophils in some cases in order to make the diagnosis of bacterial vaginosis.

Bacterial vaginosis is a relatively common and, in some cases, self-limiting condition. If left untreated and undiscovered, it may resolve on its own or reoccur, increasing the risk of sexually transmitted infections (STDs). According to the pathophysiology of BV, an elevated vaginal pH destroys the optimum habitat for *Lactobacillus*, a local bacterium that can cause the development of vaginal epithelial cells and the generation of d-lactic acid [14]. Due to epithelium breakdown brought on by this disturbance, STIs like *Chlamydia trachomatis* elemental bodies may internalize, and human papillomavirus (HPV) colonization may increase the likelihood of cervical intraepithelial neoplasia [14]. As a result, bacterial vaginosis diagnosis and treatment become increasingly crucial. Consistent with our finding, Thoma et al. have demonstrated a direct link between dietary glycemic load and BV progression and persistence. [15]

Prolonged cases of BV have been associated with a predisposition to conditions like pelvic inflammatory disease, ectopic pregnancies, and induction of early labour if pregnant. In a case-control study by Zhang et al. (2021), a cohort of females with confirmed tubal pregnancies exhibited higher concentrations of *Gardnerella* over two years [16]. This occurrence highlights the significance of prompt treatment for all symptomatic cases of BV. Targeting non-pharmaceutical methods first, such as quitting smoking, getting rid of an IUD, and receiving advice on safe sex practices are advised guidelines for the treatment of refractory BV [17]. As an induction treatment, this is often followed by either clindamycin or metronidazole, administered either orally or intravaginally for seven days. Recurrences of breakthrough should be treated by switching to a different medication and using a different administrative strategy [17].

CONCLUSION

Bacterial vaginosis has been shown to present with severe complications in females aged 16-44, from uncomplicated STDs to ectopic pregnancies. Effective diagnostic tools are require for diagnosis and further treatment to avoid the complications. Thus this case series aims to highlight the role of cytopathologist ,methods and prevention tactics to reduce the number of complications in a common infection.

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