



Bacterial Vaginosis during Reproductive Age

Gouda ADK^{1*} and Al Ghadeer H^{2,3}

¹College of Nursing, King Saud Bin Abdul Aziz University for Health Sciences, Saudi Arabia

²King Abdulla International Medical Research Center (KAIMRC), Ministry of National Guard Health Affairs, Saudi Arabia

³College of Medicine, King Saud bin Abdulaziz University for Health Sciences, Saudi Arabia

***Corresponding author:** Amel Dawod Kamel Gouda, Associated professor of Maternal and Newborn Health Nursing, Faculty of Nursing, Cairo University, Egypt, Email: dawod@cu.edu.eg

Received Date: March 08, 2024; **Published Date:** May 24, 2024

Abstract

Bacterial Vaginosis (BV) formerly known as *Gardnerella Vaginalis*, and nonspecific vaginitis is the commonest type of vaginitis. *Gardnerella Vaginalis* is a facultatively anaerobic gram-variable rod. It has been demonstrated to cause a wide variety of infections; however, it is most commonly recognized for its role as one of the organisms responsible for BV. In 1954 Gardner and Dues first described a condition characterized by abnormal vaginal findings associated with the presence of a small gram-negative rod they named *Haemophilus Vaginalis* and most common during reproductive age due to sexuality active, and contraceptive methods especially IUD.

Keywords: Bacterial Vaginosis; Effect; Reproductive Age

Abbreviation: BV: Bacterial Vaginosis

Introduction

Epidemiology

According to Claudia H, et al. [1] BV is the most common vaginal infection during reproductive age, occurs in one third of adult women in the United States, which represents approximately 21 million women. Each year, women make 10 million office visits for vaginal discharge; 7.5 million cases are diagnosed annually with BV. The incidence of BV in patients attending obstetric clinics is 10-25%, 10-30% of virgin adolescence girls and may be as high as 30-65% in patients attending sexually transmitted disease clinics [2]. Some studies have shown that BV appears to occur more commonly among African American women than non-Hispanic white women, the reasons for this are not entirely clear. *Gardnerella (G) Vaginalis* colonization and /or infection predominantly occur in women and men

rarely develop infections with G Vaginalis. Al-akeel, et al. 2013 who reported that the prevalence among Bv among pregnant and non-pregnant Saudi Arabia women was (42%) also the study done by Altayyar, et al. 2016 at South Libya showed prevalence [2.8%] of BV among pregnant women. In developing countries incidence and prevalence of vaginitis are very high, they rank second as the cause of morbidities among women of reproductive age, after to maternal.

Pathophysiology

Bacterial Vaginosis, formerly known as nonspecific vaginitis was named because bacteria are the etiologic agent in this infection and an associated inflammatory response is lacking. The BV is the most common cause of vaginitis and the most common infection encountered in the outpatient gynecologic setting. An increase in vaginal discharge and vaginal malodor caused by a change in the vaginal flora characteristics of BV [3]. The vaginal discharge of BV is characteristically described as a thin, gray, homogeneous fluid that is adherent

to the vaginal mucosa. Many studies have demonstrated the relationship of G Vaginalis with other bacteria in causing BV. The BV is known to be a synergistic polymicrobial infection. Some of the associated bacteria include Lactobacillus species, Prevotella, and anaerobes, including Mobiluncus, Bacteroides, Peptostreptococcus, Fusobacterium, Veillonella, and Eubacterium species. Mycoplasma hominis, Urea plasma urealyticum, and Streptococcus viridans may also play a role in BV [4,5].

In BV, the vaginal flora becomes altered through known and unknown mechanisms, causing an increase in the local pH. This may result from a reduction in the hydrogen peroxide-producing Lactobacilli. Lactobacilli are large rod-shaped organisms that help maintain the acidic pH of healthy vagina and inhibit other anaerobic microorganisms through elaboration of hydrogen peroxide. Normally, Lactobacilli are found in high concentrations in the healthy vagina. In BV, the Lactobacilli are reduced greatly, while populations of various anaerobes and G Vaginalis are increased. Accompanying the bacterial overgrowth in BV is the increased production of amines by anaerobes. Amines in the presence of increased vaginal pH volatilize to produce the typical abnormal fishy odor, which is also produced when 10% KOH is added to vaginal secretions. Although there is clearly an alteration in the vaginal micro flora with a reduction in Lactobacilli which produces Hydrogen peroxide and bacteriocins which inhibit the overgrowth of bacteria in the vagina, it is not clear what precipitates this [4].

Sweet, and Gibbs RS, et al. [6] and Orshan SA [3], clarified that, BV is not considered a sexually transmitted disease; however, sexual activity has been linked to development of this infection. Observations in support of this include the following:

- Incidence of BV increases with an increase in the number of recent and lifetime sexual partners,
- A new sexual partner can be related to BV
- Male partners of women with BV may have urethral colonization by the same organism, but the male is asymptomatic. Evidence that does not support an exclusive sexually transmitted role of BV is its occurrence in virginal females and its colonization of the rectum in virginal boys and girls.

Predisposing Factors

CDC [7]; and Harris N [8] reported that several risk factors are associated with increased incidence of BV: douching, multiple sexual partner, intrauterine device usage, and smoking. Bacterial Vaginosis cannot be passed on in swimming pools or from toilet seats, towels or beaches and very rarely affects those who have not had any sexual history.

Diagnosis

Symptom

As many as 50 percent of women with BV may be asymptomatic. The cardinal symptoms are that of vaginal malodor, often described as fishy odor during menstruation and after sexual relation, odor may be recognized only after sexual intercourse, this may be related to alkalinity of semen that may cause a release of volatile amines from the vaginal discharge [9].

Signs

Vaginal inflammation is less marked than with Trichomoniasis.

Vaginal Discharge

- Most often gray, thin, frothy, and homogeneous.
- Adherent to the vaginal mucosa
- May not visualize pooling of discharge in the posterior fornix because of adherence to the vaginal mucosa
- May observe small bubbles in the discharge fluid
- An increased light reflex of the vaginal walls may be observed, indicating a very wet appearance; however, typically, no or little evidence of inflammation is apparent [10].

Investigations

Harris N [8] reported that to make a diagnosis of BV, speculum examination and subsequent swabs from the fringes of vagina should be obtained. These swabs should be tested for:

Whiff test: is performed by adding a small amount of potassium hydroxide (10%) to a microscopic slide containing the vaginal discharge. A characteristic fishy odor is considered a positive whiff test and is suggestive of bacterial Vaginosis (Amine test).

Fresh drop: a drop of the vaginal discharge is added to a drop of saline on a slide. This is done to detect clue cells which are vaginal epithelial cells coated with the organisms so that the borders are obscured.

The vaginal pH: of the discharge is greater than 4.5

Culture: Is not really helpful

Gram Stained film: Interpreted according to Nugent criteria (Table 1) these Morphotypes have been used to establish a ten point BV score. In this scale, a score of 0-10 is generated from combining the three scores. This method requires trained staff, according the following:

- 0-3 is considered negative for BV.
- 4-6 is considered intermediate.
- 7-10 is considered indicative of BV [11,12].

Morphotypes	*Score for indicated no. of morph types seen per oil power field				
	None	≤1	01-May	Jun-30	>30
Lactobacillus	4	3	2	1	0
Gardnerella/Bacteroid spp	0	1	2	3	4
Curved gram-variable rods (Mobiluncus spp)	0	1	2	3	4

Table 1: Diagnosis of BV Using A Gram Stained Smear of Vaginal Secretions (Thomson et al. 2007).

*Total score= Lactobacillus morphotypes + Gardnerella/Bacteroides morphotypes + Mobiluncus morphotypes. A score of 0 to 3 is considered normal, 4-6 is intermediate and 7 to 10 indicates BV.

In clinical practice BV is diagnosed by using the Amsel criteria:

- Positive whiff test. At least three of the four criteria should be present for a confirmed diagnosis but not accurate as Nugent Criteria.
- Thin, white, yellow, homogeneous discharge.
- Clue cells under microscopic examination.
- PH of vaginal fluid >4.5 [11].

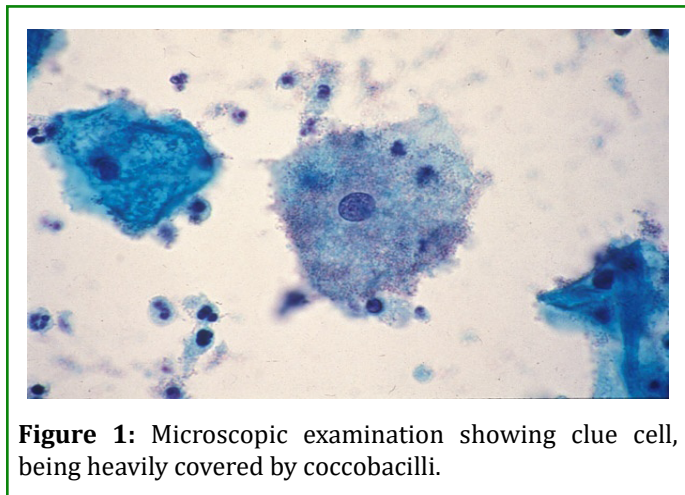


Figure 1: Microscopic examination showing clue cell, being heavily covered by coccobacilli.

Complications

The BV has been associated with many gynecological and obstetric complications such as Cervicitis, salpingitis, endometritis, postoperative infection, PID, and complications during pregnancy as preterm delivery, premature rupture of membrane, chorioamnionitis, and postpartum endometritis. Untreated BV may cause serious complications, such as increased susceptibility to sexually transmitted infections including HIV [7].

Treatment

The CDC [7] recommended that metronidazole is the first line therapy for BV (500 mg orally twice a day) for 7 days, or 2g orally as a single dose. Alternative regimens: Clindamycin cream, 2%, one full applicator, intravaginally at bed time for 7 days.

- Metronidazole gel, 0.75%, one full applicator, intravaginally 2 times a day for 5 days.
- Clindamycin 300 mg orally 2 times a day for 7 days. Metronidazole should be avoided in the first trimester of pregnancy. For treatment of BV in the first trimester, Clindamycin vaginal cream is preferred.

After therapy, approximately 30 percent of patients with initial responses have a recurrence of symptoms within three months. The reasons are unclear; they include reinfection, but recurrence more likely reflects vaginal relapse caused by failure to eradicate the offending organisms or to re-establish the normal protective vaginal flora dominated by lactobacillus. Management of symptomatic relapse includes prolonged therapy for 10 to 14 days, but maintenance regimens of antibiotics have largely been disappointing. Despite evidence of sexual transmission, no study has demonstrated reduced rates of recurrence in women whose partners were treated with metronidazole.

References

1. Claudia H, Judith M, Nicole M, Wang J (2011) Factors Linked to Bacterial Vaginosis in Non-pregnant Women. *Am J Public Health* 91(10): 1664-1670.
2. World Health Organization (WHO) (2011) Global Prevalence and Incidence of Selected Curable Sexually Transmitted Infections.
3. Orshan SA (2018) Maternity, Newborn, and Women's Health Nursing Comprehensive Care Across the Life Span. Lippincott Williams & Wilkins, USA, pp: 132-135.
4. Pearlman MD, Tintinalli JA (2020) Emergency Care of the Women. In: Mc Grew H, et al. (Eds.), pp: 535-545.
5. Pilliteri A (2017) Maternal and Child Health Nursing: Care Child Bearing and Childbearing Family. In: Klunder V, et al. (Eds.), *American Journal of Nursing* 96(3): 56.
6. Sweet RL, Gibbs RS (1995) Infectious Disease of the Female Genital Tract. 3rd (Edn.), Waverly Company, USA, pp: 341-349.

7. Centers for Disease Control & Prevention (CDC) (2016) STD Fact-Bacterial Vaginosis. Theory and Practice. Faculty of Medicine Assiut University, pp: 301-355.
8. Harris N (2018) Sexually Transmitted Infections - The Essential Guide.
9. Ricci SS, Kyle T, Carman S (2019) Maternity and Pediatric Nursing. Lippincott Williams & Wilkins, USA, pp: 143-151.
10. Shaaban MM (2012) Gynecology for Post Graduates, Theory and Practice. Faculty of Medicine Assiut University, pp: 301-355.
11. Ison CA, Hay PE (2002) Validation of a Simplified Grading of Gram Stained Vaginal Smears for Use in Genitourinary Medicine Clinics. Sex Transm Infect 78(6): 413-415.
12. Nugent RP, Krohn MR, Hillier SL (1991) Reliability of Diagnosis is improved by a Standardized Method Stain Interpretation. J Clin Microbiol 29(2): 297-301.