



Bacterial Vaginosis is an often Diagnosis in a Gynecological Clinic

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Abstract

Bacterial vaginosis is an often diagnosis encountered in a gynecological clinic. Vaginosis is the most often cause of increased vaginal discharge and with fungal infection, the most often consequence of disorders of the vaginal microflora. This condition can reduce the quality of life for some women because it is sometimes difficult to treat and causes unpleasant symptoms. Bacterial vaginosis is a condition characterized by an imbalance of the normal vaginal flora leading to excessive growth of anaerobic bacteria in the vagina.

Keywords: Myoma, Adenomyosis, Minimal-Access Surgery, High Frequency Ultrasound

Introduction

Bacterial vaginosis (BV) is a condition in which the normal balance of bacteria in the vagina is disrupted, and overgrowth of certain bacteria occurs [1]. BV can be transmitted sexually and is considered a sexually transmitted infection; however, it can also occur in the absence of sexual contact. BV primarily affects women who are sexually active; however, it is unclear what role sexual activity plays in the development of BV. BV is the most frequently diagnosed symptomatic vaginitis in U.S. women. BV affects 29% of all women aged 14 to 49. Of women who are affected with BV, 19% are not sexually active, and 25% are pregnant.

Vaginal Pain

In the busy surgery, the temptation to treat without examining can be great, as the doctor may well feel safe in the assumption that common things being common it will be a case of candida [2]. When symptoms then recur after antifungal treatment, they are commonly attributed to treatment failure rather than exploring other possibilities. The woman may have other concerns but feel unable to ask for an examination, or possibly even feel a sense of relief that the internal examination was unnecessary. The temptation to assume that the cause is not an STI will be very marked in the case of a married woman: there may well be a natural reticence on the part of the doctor to enquire if there has been extramarital contact. If the family doctor is unprepared to examine and swab, then he should have no hesitation in referring the woman for a specialist opinion. As with penile irritation, vaginal soreness may

be a psychogenic symptom in women who are concerned following a sexual encounter with a person whom they subsequently perceive as being an infection risk. Even in the absence of infection the fear of it may lead to frequent washing and consequent candidial vaginitis or bacterial vaginosis. The GUM clinic is ideally set up to exclude the several STIs and also the non-sexually transmitted infections which can lead to vaginitis and thereby offer instant reassurance.

Risk Factors

Risk factors for BV include having multiple sex partners or a new sexual relationship, repeated douching, oral-genital sexual activity, previous history of sexually transmitted infections, use of intrauterine devices (IUDs), and pregnancy [1]. Bacterial vaginosis is common among women and according to the CDC, even more common among WSW [3]. It is unknown whether bacterial vaginosis can be transmitted between women. A study from Australia found a 27% prevalence of bacterial vaginosis in women and their female partners; risk factors for bacterial vaginosis were four or more lifetime female sexual partners, a female partner with bacterial vaginosis symptoms, and smoking at least 30 cigarettes weekly. Routine screening for bacterial vaginosis, though, is not currently recommended and testing should be based on symptoms. One approach for a WSW (women who have sex with women) who has symptomatic bacterial vaginosis is to treat her and not her female sexual partner. If symptoms recur, her female sexual partner(s) should be evaluated and treated with consideration of

re-treating the index woman. This strategy may also be used for treatment of recurrent or hard to treat vulvovaginal candidiasis, which technically is not considered to be sexually transmitted, but anecdotally, improvement has occurred with treatment of the index patient and female partner.

Symptoms

- a) Burning and itching of the external genitalia [1]
- b) Vaginal discharge with the following characteristics
- c) Profuse
- d) Grayish or white
- e) Foul-smelling; may have a fishy odor that is worse after intercourse

Bacterial vaginosis, sometimes referred to as gardnerella vaginalis vaginitis (from the bacterial pathogen for which it was named), can produce a malodorous vaginal discharge [4]. This discharge appears on speculum exam to be grayish and frothy, typically pooling in the posterior fornix. On microscopy, an abundance of "clue" cells can be seen, which can be considered as pathognomonic. These clue cells are epithelial cells covered with bacteria and seen in an unstained specimen. Though such microscopic examination can be used for its identification, there are some diagnostic kits that may be used for this, perhaps lending some greater efficiency for its clinical detection. Treatment of the sexual partner may not be necessary for a patient with bacterial vaginosis.

Bacterial vaginosis presents as a "fishy" vaginal discharge, which is more noticeable after unprotected intercourse, due to the increased pH caused by the ejaculate [5]. The patient complains of a milky, homogenous, malodorous, usually nonirritating discharge. The term vaginosis, rather than vaginitis, is used due to the absence of vaginal mucosal inflammation, such as presents in candidal infections. Two diagnostic scales are often used to diagnose bacterial vaginosis: Amsel's criteria and Nugent's score. According to Amsel's criteria, which establishes accurate diagnosis of bacterial vaginosis in 90% of affected women, 3 of the following 4 criteria must be met:

- a) Homogeneous vaginal discharge (color and amount may vary).
- b) Amine (fishy) odor when potassium hydroxide solution is added to vaginal secretions (whiff test).
- c) Presence of clue cells (>20% of epithelial cells) on microscopy. Clue cells are identified as numerous stippled or granulated epithelial cells. This appearance is caused by the adherence of *G. vaginalis* organisms to the edges of the vaginal epithelial cells.
- d) Vaginal pH >4.5.

Nugent's score is a Gram stain scoring system that provides a more sensitive (93%) and specific (70%) diagnosis than does the wet mount. The score is calculated by assessing for the presence of

the following:

- a) Large gram-positive rods (*Lactobacillus* morphotypes; decrease in *Lactobacillus*, scored 0–4)
- b) Small gram-variable rods (*G. vaginalis* morphotypes, scored 0–4)
- c) Curved gram-variable rods (*Mobiluncus* spp. morphotypes, scored 0–2)
- d) The total score ranges from 0 to 10. A score of 7–10 is consistent with bacterial vaginosis.

Pathogenesis

Bacterial vaginosis is the result of massive overgrowth of mixed predominantly anaerobic flora, including Pepto streptococci, Bacteroides, *G. vaginalis*, *Mobiluncus*, and genital mycoplasmas [6]. There is little inflammation, and the disorder represents a disturbance of the vaginal microbial ecosystem rather than a true infection of tissues. The overgrowth of mixed flora is associated with a loss of the normal *Lactobacillus*-dominated vaginal flora. No single bacterial species is responsible for bacterial vaginosis. Experimental studies of human volunteers and animals indicate that inoculation of the vagina with individual species of bacteria associated with bacterial vaginosis (e.g., *G. vaginalis*) rarely results in the disease. Two factors support the role of sexual transmission of bacterial vaginosis: 1) the higher prevalence of bacterial vaginosis among sexually active young women than among sexually inexperienced women, and 2) the observation that bacterial vaginosis associated microorganisms are isolated more often from the urethras of male partners of women with bacterial vaginosis.

The cause of the overgrowth of anaerobes, *Gardnerella*, *Mycoplasma*, and *Mobiluncus* species that results in bacterial vaginosis is unknown. Theories include increased substrate availability, increased pH, and loss of the restraining effects of the predominant *Lactobacillus* flora of the vagina. Accompanying the bacterial overgrowth in bacterial vaginosis is the increased production of amines by anaerobes, which is facilitated by microbial decarboxylases. Amines in the presence of an increased vaginal pH volatilize to produce the typical fishy odor of bacterial vaginosis, which is also produced when 10% potassium hydroxide (KOH) is added to vaginal secretions in the disease. Trimethylamine is the dominant abnormal amine in bacterial vaginosis. It is likely that bacterial polyamines together with the organic acids found in the vagina in bacterial vaginosis (acetic and succinic acid) are cytotoxic, resulting in exfoliation of vaginal epithelial cells and creating the vaginal discharge that occurs in the disease. *G. vaginalis* attaches avidly to exfoliated epithelial cells, especially at the alkaline pH found in bacterial vaginosis. The adherence of *Gardnerella* organisms results in formation of the clue cells that are pathognomonic for bacterial vaginosis. The abnormal disrupted vaginal flora results in increased levels of proinflammatory vaginal cytokines (interleukin [IL]-1-beta, IL-6, IL-8) although influx of reactive polymorphonuclear leukocytes is inhibited.

Vaginal secretions and exudates can be directly examined with a microscope to aid in the diagnosis of vaginal and sexually transmitted infections [7]. Immediately after obtaining the vaginal secretions, mix one sample with normal saline solution, and a second sample with a 10% solution of potassium hydroxide (KOH). *Candida albicans*, *Trichomonas vaginalis*, clue cells (epithelial cells with indistinct borders due to adherent bacteria) associated with bacterial vaginosis, and white blood cells can be seen in normal saline solution. Microscopy has poor sensitivity for *T. vaginalis* detection; NAAT testing is recommended if trichomoniasis is suspected. Potassium hydroxide lyses trichomonads, white blood cells, and most bacteria, making visualization of *Candida* species easier. The presence of an amine or fishy odor with the addition of KOH to the vaginal secretions should be noted (whiff test), and is associated with, but not diagnostic for, bacterial vaginosis and trichomoniasis.

Screening

Screening for genital tract infection is helpful for identifying pathogens that increase the risk of post-abortion infection and pelvic inflammatory disease, as well as the long-term sequelae of tubal factor infertility and ectopic pregnancy [6]. The most important infecting organisms are *Chlamydia trachomatis* and *Neisseria gonorrhoeae*. Bacterial vaginosis is also associated with increased infection risk. Control group data from trials of prophylactic antibiotics for abortion suggest that infection complications occur in up to 1 in 10 termination cases, but infection rate data vary widely. A full infection screen, including for sexually transmitted infections (STIs), allows the opportunity for patient follow-up and partner notification and treatment to avoid reinfection. Prophylaxis and a 'screen and treat' policy have been compared in a randomized trial which concluded that universal prophylaxis is at least as effective as a policy of screen and treat in reducing the short-term infective complications of abortion and could be provided at lower direct cost, but the study did predate the introduction of the more sensitive nucleic acid amplification chlamydia and gonorrhoea tests.

The RCOG (Royal College of Obstetricians and Gynecologists) Guideline Development Group in the UK recommended that all abortion services should adopt a strategy to reduce post-abortion infective problems and the very minimum recommendation is for antibiotic prophylaxis against *Chlamydia* and bacterial vaginosis. Metronidazole 1 g rectally at the time of abortion, or 800 mg oral metronidazole plus 1 g oral azithromycin post procedure, would be a suitable regimen. Azithromycin seems to be increasingly favored over a 7-day course of doxycycline, where patient compliance can be more problematic. However, the evidence for specific prophylactic antibiotic regimens and timing remains limited.

Treatment

For most women, BV is an annoyance, something that can easily be treated and will quickly go away (though it may come back) [8]. It is not as benign as a yeast infection, however, since bacterial vaginosis

has been associated with increased risk of pelvic inflammatory disease. By altering the protective acidity of the vagina, BV may allow the harmful organisms that cause gonorrhoea and chlamydia to ascend through the cervix and multiply in the uterus or fallopian tubes. For pregnant women, BV carries the additional risk of premature rupture of the membranes and thus premature labor and delivery. For this reason, many doctors in the past five or ten-year test women for BV both before and during pregnancy. Observational studies have consistently shown an association between bacterial vaginosis and adverse pregnancy outcomes, including preterm delivery, preterm premature rupture of membranes, spontaneous abortion, and preterm labor [9]. However, 2 large randomized, placebo-controlled trials demonstrated that treatment of bacterial vaginosis in asymptomatic pregnant women with metronidazole does not prevent preterm deliveries. Nevertheless, the CDC (Centers for Disease Control and Prevention) recommends that pregnant women with a history of preterm delivery and asymptomatic bacterial vaginosis be evaluated for treatment. Therapy should be initiated for symptomatic relief. Pregnant women who are at high risk for preterm labor may benefit from treatment. Treatment is recommended for low-risk groups during pregnancy if patients are infected and symptomatic. Lastly, patients who may also benefit from therapy are asymptomatic carriers before scheduled pelvic/abdominal surgery.

Bacterial vaginosis is a common cause of vaginal discharge [10]. Based on laboratory criteria and not symptoms, more than a quarter of abortion patients may have this condition. Whether screening and treatment of asymptomatic bacterial vaginosis reduce post-abortion infection remains unclear. Randomized controlled trials have compared treatment with metronidazole versus placebo or metronidazole and doxycycline versus doxycycline alone. Losses to follow up after randomization in these trials were so large that the validity of the results is suspect. Hence, the evidence is insufficient to make a recommendation. Women presenting for abortion with symptomatic bacterial vaginosis can receive usual therapy without delay. The CDC suggests metronidazole 500 mg by mouth twice daily for 7 days, which may be preferable to the vaginal medication's metronidazole gel or clindamycin cream. Options for treatment of recurrent or persistent symptoms include using the same medication for a longer time period, changing to a different regimen, or offering suppressive therapy [11]. Before assuming recurrence, consider the possibility that initial treatment was effective and assess the patient for the presence of a different coexisting infection. For women with BV, recurrences occur in about 10% of women within 3 months; the presence of a different infecting organism such as *Mobiluncus* (curved rods on wet mount) is sometimes found. Alternative treatment for recurrent BV includes a different medication (clindamycin, amoxicillin/clavulanate, tinidazole) or 14 days of metronidazole. Suppressive therapy with twice weekly intravaginal metronidazole for 28 weeks after initial daily treatment for 10 days has shown success (number needed to treat = 6) but may cause pain or candidiasis (number needed to harm = 5).

Vaginitis

Vaginitis is a common and annoying disorder that in the absence of other symptoms or signs rarely indicates serious disease [12]. Common pathogens include *Candida albicans*, *Trichomonas vaginalis*, *Gardnerella vaginalis* with anaerobic bacteria (bacterial vaginosis), and gonococci (in prepubertal girls). Other common causes are estrogen deficiency (atrophic vaginitis) and vaginal foreign body. Systemic antibiotics (especially tetracyclines), oral contraceptives, diabetes mellitus, primary genital HSV infection, and pregnancy predispose to the development of candidiasis. Less common causes include allergy, cervicitis, polyps, tumors, vaginal ulcer, shigellosis, irradiation for cancer, and certain bubble bath preparations. Look for *Candida* and *Gardnerella vaginalis* (small gram-negative rods usually adherent to epithelial cells; "clue cells"). Methylene blue stain also demonstrates clue cells. Vaginitis due to *Candida* or *Trichomonas* is usually associated with a PMN (polymorphonuclear) exudate, whereas inflammatory cells are absent in bacterial vaginosis caused by *G. vaginalis*. In prepubertal girls with gonococcal vulvovaginitis, Gram stain of smears usually shows typical gram-negative intracellular diplococci, but cultures should be performed to confirm the diagnosis.

Conclusion

Bacterial vaginosis is often an uncomfortable condition for a woman that can reduce her quality of life. Contributing to this is the fact that bacterial vaginosis is often a recurrent infection, especially if it is caused by chronic stress, improper hygiene habits and irresponsible sexual behavior. Although bacterial vaginosis is not a sexually transmitted disease, one of the risk factors is certainly irresponsible sexual behavior.

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