Bacterial vaginosis and Candida vulvovaginitis

S Davis
Amayeza Information Services
Corresponding author, email: sumari@amayeza-info.co.za

Prof Nurs Today 2020;24(3):17-20

Introduction

Bacterial vaginosis (BV) is the most common cause of vaginal discharge in women of reproductive age,[1] implicated in 40–50% of cases, and is not associated with inflammation, hence the term vaginosis and not vaginitis.[2,3] Candida vulvovaginitis (CVV), accounts for 20–25% of cases of problematic vaginal discharge. Vulvovaginitis, or inflammation of the vulva and vagina,[2] is defined as any condition with symptoms of vaginal discharge, odour, irritation, or burning, and most commonly occurs secondary to infectious agents.[2,3] These two conditions have different characteristics and risk factors and need to be treated differently. This article will discuss the signs, symptoms, risk factors and treatment of BV and CVV.

Causes, signs and symptoms

Up to 50–75% of women with BV do not show any signs or symptoms and BV will often clear without any treatment.[4] BV is characterised by three changes in the vaginal environment. The first is an imbalance in vaginal flora with less *Lactobacillus* species and more diverse bacterial species. This results in an increase in vaginal pH and production of amines that are responsible for a 'fishy' vaginal odour.[5] BV can increase the risk for other vaginal infections, including Candida infection.

Candida forms part of the normal vaginal flora and diagnosis therefore requires both the presence of Candida as well as symptoms of vaginitis. *Candida albicans* is responsible for 90% of CVV cases whilst the remainder is due to other Candida species such as *C. glabrata* and *C. parapsilosis*.[6] Table I provides a summary of the signs and symptoms of BV and CVV.

Up to 30% of patients with BV who respond to initial treatment have a recurrence of symptoms within three months and more than 50% of patients experience recurrence within 12 months. This is more likely due to failure to eradicate the offending organisms or failure to re-establish the normal protective lactobacillus vaginal flora.[1]

Patients who experience more than three episodes of CVV within one year are considered to suffer from recurrent Candida vulvovaginitis (RCVV), usually also due to relapse from a persistent vaginal reservoir of organisms.[6]

Risk factors and prevention

BV is not associated with chronic medical conditions such as diabetes or immunosuppressive states, as is the case with CVV, but may be associated with low socioeconomic status.

Neither BV nor CVV are considered to be sexually transmitted diseases (STDs). This is because Candida forms part of the normal vaginal flora and occurs in celibate women, whilst BV displays a lack of single causative agent and absence of clear disease counterpart in males. However, this does not mean that sexual transmission does not occur or that these diseases are not associated with sexual activity.[1,5] Sexual activity or behaviour can increase the risk of contracting BV or CVV. Table II provides a summary of this and other risk factors that increase the risk for BV and CVV.

To prevent infection, patients should avoid the risk factors mentioned in Table II. Although more studies are needed, it seems as though the use of combined oral contraceptives

Table I: Summary of signs and symptoms for bacterial vaginosis and Candida vulvovaginitis[3,4,5,7,8]

Bacterial vaginosis	Candida vulvovaginitis
Thin, off-white discharge that may worsen after intercourse and during menses	Thick, white, cottage cheese-like or curdy discharge
Discharge has a fishy odour	No odour present
No inflammation	Vulvar inflammation with erythema and oedema
BV on its own typically does not cause pain, itching or burning	Vulvar itching or burning especially with urination
	Pain or discomfort during sexual intercourse or urination

Table II: Risk factors for BV and CVV[1,4,5,7,8,9]

Bacterial vaginosis	Candida vulvovaginitis
Sexual activity including multiple or new sexual partners and receptive oral sex, especially in WSW*	Increased risk reported at the time when women begin regular sexual activity
	Increased oestrogen levels (i.e. oral contraception, pregnancy or hormone replacement therapy)
Douching or using vaginal deodorants	Diabetes mellitus
Using scented soaps, shampoo, shower gel, bubble bath or antiseptic liquids in the bath	Immunosuppression due to medicine use or disease (e.g. HIV infection)
Cigarette smoking	Use of broad-spectrum antibiotics
	Wearing constrictive nonporous undergarments

*women who have sex with women

also reduce the risk of BV by increasing *lactobacillus* species to restore the normal vaginal microbiome. To reduce the risk of contracting BV, it is preferable to clean the vaginal area with normal soap (avoid irritating cleansers) and water by taking a shower rather than taking a bath.[4]

Patients can reduce the risk of CVV by ensuring that chronic medical conditions are well controlled. For example, ensure tight control over blood sugar levels in diabetic patients. Use antibiotics only when necessary and not for periods longer than prescribed. Keep external genital areas dry and clean by wearing loose cotton underwear that does not trap moisture and change to dry clothes quickly after swimming instead of staying in damp clothes for extended periods.

Treatment

Bacterial vaginosis

Although BV resolves spontaneously in up to a third of non-pregnant women and up to a half of pregnant women, treatment is recommended for the relief of symptoms and to reduce the risk of other STDs such as HIV. Treatment of asymptomatic infection is only recommended for those due for abortion or hysterectomy in order to prevent postoperative infection. Treatment of other asymptomatic infections is not recommended, mainly to avoid the possibility of CVV that often follows antibacterial therapy.[1]

Metronidazole or clindamycin may be used orally or as a vaginal cream or gel for treatment of non-pregnant symptomatic patients.[4] Since both oral and topical treatment are equally effective, choice of treatment is generally based on cost, availability and patient preference for an oral or vaginal regimen. Some studies reported that patients prefer oral treatment due to convenience. However, the risk of side-effects and interaction with other medication is also greater than with topical treatment. Some of the side-effects of topical treatment may include local itching and burning that should also be considered when choosing a treatment option.[1]

Guidelines from the South African standard treatment guidelines recommend the use of metronidazole as a single oral dose of 2 g.[10] Alternative treatment options include:[1,11]

- Metronidazole vaginal gel, 5 g once daily at night for five days.
- Clindamycin vaginal cream, 5 g at bedtime for seven days.

If there is no response to the initial treatment after seven days, patients with no pain on cervix movement and no signs of inflammation, may continue treatment using 400 mg of oral metronidazole twice daily for 7 days.[10] It is not necessary to treat male sexual partners of affected women. Female sexual partners of women should monitor for symptoms and need treatment only if they become symptomatic.[1]

Patients should not use alcohol whilst taking metronidazole to avoid a disulfiram-like drug interaction. Oil-based preparations can damage condoms and patients should not use latex condoms with clindamycin cream.[3]

Recurrent infection

Patients with recurrent infections should preferably be treated with a different antibiotic and for a longer period. Follow-up treatment with metronidazole vaginal gel administered twice a week for four to six months is recommended for these patients as suppressive therapy.[6]

Some promising results were also seen when combining antibiotics and supplementary treatment with *L. gasseri* and *L. rhamnosus*. Although there was no change in initial cure rate, the time to relapse was significantly lengthened.[12]

Pregnancy and lactation

Treatment of BV during pregnancy does not reduce the risk of pre-term delivery. Therefore, treatment is recommended purely for symptomatic relief.[3] No adverse effects have been reported with oral treatment and patients may be treated with either:

- oral metronidazole, 500 mg twice daily for seven days, or
- oral metronidazole, 250 mg three times daily for seven days, or
- oral clindamycin, 300 mg twice daily for seven days.[1]

Although both oral and topical treatment are well tolerated, some data suggests that oral treatment may be more effective against subclinical upper genital tract infection.[1]

The use of metronidazole either orally or topically during breastfeeding is unlikely to be of concern. However, if the once off 2 g dose regimen is administered, it is recommended to express and discard milk for 12 to 24 hours after administration as a precaution. Clindamycin has the

potential to cause adverse events in the breastfed infant and babies should be monitored for diarrhoea, candidiasis and blood in the stools (rare) that can indicate possible antibiotic-associated colitis.[1]

Candida vulvovaginitis

South African treatment guidelines recommend the use of a single dose of clotrimazole 500 mg vaginal pessary or application of clotrimazole vaginal cream every 12 hours for seven days as first line treatment of CVV.[10] The simplest and most convenient treatment of CVV, however, is a single oral dose of fluconazole 150 mg.[9] Oral treatment may cause gastrointestinal intolerance, headache, rash and transient liver function abnormalities and may also take a day or two longer than topical treatment to resolve symptoms. Treatment of sexual partners is not necessary and sexual intercourse is not contraindicated during treatment, although it may be uncomfortable until inflammation improves.[6]

Immunocompromised patients and severe cases

Patients with severe inflammation or those who are immunocompromised, may need to continue treatment for longer. Oral fluconazole doses may be repeated every 72 hours for two or three sequential doses, depending on the severity of the infection, whilst topical treatment may need to be continued for 7–14 days rather than a one- to three-day course. Topical corticosteroids such as betamethasone or triamcinolone may also be applied for 48 hours to relieve initial symptoms of inflammation until the antifungal treatment takes effect.[6]

Recurrent infections

Recurrent infections are treated with maintenance therapy rather than treatment of the individual episodes. Treatment should be started with three doses of oral fluconazole each given three days apart, followed by maintenance therapy that may be continued for months or even years if necessary. Clotrimazole 200 mg administered as a vaginal cream twice weekly can be considered as an alternative maintenance treatment option.[6] One study found that the prophylactic use of probiotics, reduced recurrence rates of CVV within six months of initial infection to only 7.2% as compared to a relapse rate of 35.5% of patients who did not take probiotics.[13] Administration of probiotics following fungal treatment of CVV has shown to significantly increase vaginal lactobacilli and improve vaginal discomfort.[13]

Pregnancy and lactation

CVV is not associated with adverse pregnancy outcomes and treatment is for symptom relief. Topical treatment with clotrimazole or miconazole for seven days is preferred over oral treatment due to the potential risk of oral treatment on the foetus, especially during the first trimester of pregnancy. Treatment during the third trimester is recommended to reduce the incidence of oral thrush and diaper dermatitis in the newborn. The use of fluconazole is considered safe in breastfeeding women.[2]

Conclusion

Both BV and CVV are associated with vaginal discharge. These conditions can be distinguished based on odour and appearance of the discharge. BV typically presents with a thin, off-white discharge with a distinct fishy odour, whilst CVV presents as a thick, white, cottage cheese-like discharge with no odour. Patients may also present with both infections at the same time. CVV is associated with inflammation whilst this is not usually present with BV. Treatment is administered mainly to relieve symptoms, but in the case of BV, also to prevent other STDs such as HIV. Treatment of CVV is recommended during the third trimester of pregnancy to reduce the risk of infection in the newborn. Recurrent infections may need treatment for longer periods or may require long-term maintenance treatment. Promising results have been seen with the use of lactobacillus supplements in women with recurrent CVV.

References

1. Sobel JD. Bacterial vaginosis: Treatment (Beyond the Basics). In: UpToDate. [Updated 8 April 2020; Accessed 25 May 2020] Available from: https://www.uptodate.com/contents/bacterial-vaginosis-treatment/print.
2. Jeanmonod R, Jeanmonod D. Vaginal Candidiasis (Vulvovaginal Candidiasis) [Updated 4 Feb 2020, Accessed 18 March 2020] In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publising; January 2020. Available from: https://www.ncbi.nlm.nih.gov/books/NBK459317/.
3. Paladine HL, Desai UA. Vaginitis: Diagnosis and Treatment. Am Fam Physician. 2018;97(5):321-329. Available from: https://www.aafp.org/afp/2018/0301/p321.pdf.
4. Davis S. Bacterial vaginosis and its treatment with a focus on metronidazole gel. SA Pharmacist's Assistant. 2019;19(1):10-2.
5. Sobel JD, Mitchell C. Bacterial vaginosis: Clinical manifestations and diagnosis. In: UpToDate. [Updated 8 April 2020; Accessed 5 June 2020].
6. Sobel JD. Candida vulvovaginitis: Treatment. In UpToDate. [Updated 7 Feb 2020, Accessed 17 March 2020].
7. Goje O. Candidal vaginitis. MSD Manual Professional version. [Updated Sept 2019; Accessed 17 March 2020]. Available from: https://www.msdmanuals.com/professional/gynecology-and-obstetrics/vaginitis,-cervicitis,-and-pelvic-inflammatory-disease-pid/candidal-vaginitis#.
8. Centres for Disease Control and Prevention. Bacterial vaginosis. CDC Fact sheet. [Updated June 2017; Accessed 11 Feb 2019]. Available from: https://www.cdc.gov/std/bv/bv-fact-sheet-dec-2016.pdf.
9. Harvard Medical School. Vaginal yeast infection. Harvard Health Publishing. [Updated March 2019; Accessed 17 March 2020]. Available from: https://www.health.harvard.edu/a_to_z/vaginal-yeast-infection-a-to-z#:~:text=The%20symptoms%20of%20a%20vaginal,if%20urine%20touches%20the%20area.
10. National Department of Health. Standard treatment guidelines and essential medicines list for South Africa, Primary Health Care level. 2018. Available from: https://www.idealhealthfacility.org.za/docs/guidelines/STG%20and%20EML%20PHC%202018.pdf.
11. Rossiter D, editor. South African Medicines Formulary, 12th ed. Cape Town: South African Medical Association; 2016.
12. Larsson PG, Stray-Pedersen B, Ryttig KR, Larsen S. Human lactobacilli as supplementation of clindamycin to patients with bacterial vaginosis reduce the recurrence rate; a 6-month, double-blind, randomized, placebo-controlled study. BMC Women's Health. 2008 Dec;8(1):3.
13. Kim JM, Park YJ. Probiotics in the prevention and treatment of postmenopausal vaginal infections. Journal of Menopausal Medicine. 2017 Dec 1;23(3):139-45.