

Chapter 6

VAGINITIS

Vaginal infections are among the most common problems in clinical medicine. Currently, three major types of vaginal infection are recognized: trichomonal vaginitis, vulvovaginal candidiasis (VVC), and bacterial vaginosis (BV), formerly called nonspecific vaginitis (NSV) or *Gardnerella vaginalis*-associated vaginitis.

ETIOLOGY

Trichomonal vaginitis is caused by *Trichomonas vaginalis*, and VVC is caused by *Candida* spp., usually *C. albicans*. The general term “bacterial vaginosis” is used due to depletion of hydrogen peroxide-producing lactobacilli and overgrowth of *Gardnerella vaginalis*, *Mycoplasma hominis*, and vaginal anaerobes, and since inflammation (denoted by leukocytes in the vaginal discharge) may be lacking.

CLINICAL MANIFESTATIONS AND DIAGNOSIS

History

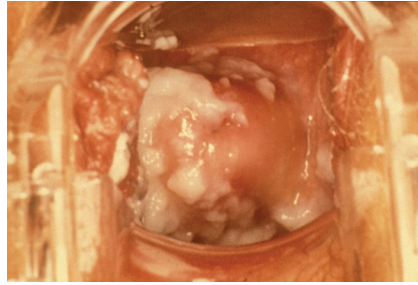
Effective treatment of vaginitis depends on an accurate diagnosis: a detailed history, characteristics of any vaginal discharge (odor, amount, pruritis), and examination of the external genitalia, vagina, and cervix, are imperative. Patients with vaginitis generally complain of increased or abnormal vaginal discharge, abnormal odor, vulvar itching, external dysuria and, often, dyspareunia. Pregnancy, oral contraceptive use, menstruation, antibiotic use, corticosteroid use, diabetes mellitus, and immunosuppression, including HIV infection, are all factors predisposing to VVC. However, numerous studies have demonstrated that history alone is not enough to make a specific diagnosis of vaginitis; an examination is required.

Examination and laboratory

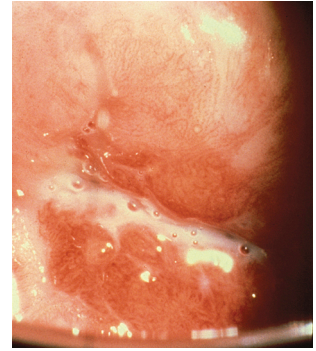
Evaluation of patients with suspected vaginitis rests mainly upon both physical examination of the vulva, vagina and the discharge, and upon microscopic examination of the discharge and determination of its pH. The amount, consistency, and location of the discharge within the vagina should be noted.

1. Examine the external and internal labia for any signs, including fissures, edema, or erythema (all consistent with VVC).
2. Remove a sample of the discharge from the lateral vaginal wall with a swab, avoiding contamination with cervical mucus.
 - Note its color in comparison with the white background of the swab.
 - Determine pH directly by rolling the swab onto pH indicator paper. (The pH of normal vaginal fluid is in the range of 4.0-4.5.)
3. Take an additional specimen with another swab and mix separately into a drop of saline and a drop of 10% KOH on a microscope slide. Place a separate coverslip on the saline and KOH wet preps for microscopic examination.

Table 6-1 outlines the typical findings from the physical and microscopic examinations that characterize the three main types of vaginitis. See Appendix A for further information on laboratory procedures and specimen collection. These images demonstrate the appearance of the vaginal discharge of VVC, trichomonal vaginitis and bacterial vaginosis, as well as the microscopic findings.



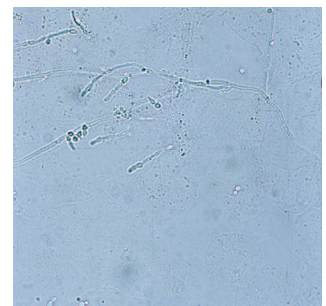
Thick, white, curd-like discharge of candida [38]



Thin, watery, cervical discharge of trichomonas infection [39]



Adherent, grayish discharge of bacterial vaginosis [40]

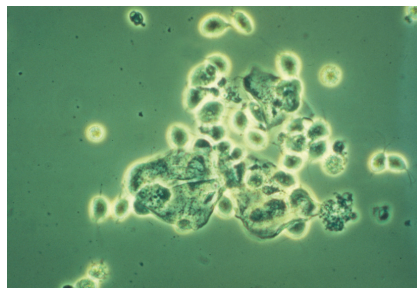


Yeast seen in 10% KOH wet prep [41]

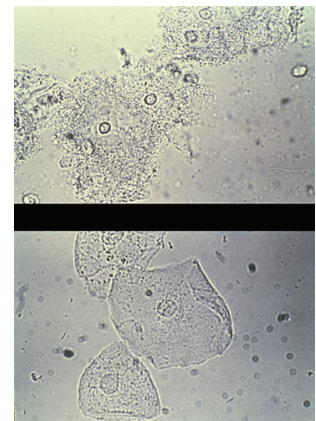
DIFFERENTIAL DIAGNOSIS

Symptoms and signs of "abnormal" vaginal discharge are generally attributable to vaginal infection or cervicitis, but may also represent a normal physiologic discharge. The most important initial step in evaluation of vaginal discharge is to exclude cervicitis, the more serious condition (See Chapter 7). In some patients, it may not be possible to determine a specific etiology for the patient's suspected vaginitis. If cervicitis or vaginitis does not appear to be present, the patient should be re-examined in several days rather than being treated nonspecifically for an uncertain diagnosis. The differential diagnosis should also include:

- irritant vaginitis secondary to exogenous products, such as vaginal spermicide, douches, lubricants or other cosmetic products,
- infections associated with other intravaginal foreign bodies,
- generalized mucosal inflammation, for example, Stevens-Johnson Syndrome,
- postmenopausal vaginal atrophy, and
- vestibulitis due to inflammation.



T. vaginalis motile organisms seen in wet prep [42]



Normal (below) and "clue" cells (upper panel) seen in vaginal saline prep [17]

TREATMENT

For a more detailed discussion of these regimens and other treatment considerations, please refer to the CDC STD Treatment Guidelines at <http://www.cdc.gov/std/treatment/>.

Only after identification of a specific etiology can appropriate therapy for vaginitis be selected. Also see Table 6-1 for further details.

Trichomonas vaginalis

Any of the following:

- Metronidazole 2.0 g orally (single dose)
- Metronidazole 500 mg orally twice a day for 7 days
- Tinidazole 2.0 g orally (single dose)

Note: Avoid alcohol for 12 hours before and until 24 hours after completion of therapy if Metronidazole is used, and until 48 hours after completion of therapy if Tinidazole is used.

Relative to Metronidazole, Tinidazole has enhanced activity against trichomonas, a longer half life and fewer side effects.

Treatment failure

(persistence or recurrence despite sexual abstinence, or after intercourse only with a treated partner)

- Metronidazole 500 mg twice a day for 7 days or Tinidazole 2.0 g orally (single dose). For further follow up if either of these fail, refer to the *CDC STD Treatment Guidelines* at <http://www.cdc.gov/std/treatment/>.

Candida albicans

Intravaginal agents

Any of the following:

- Butoconazole 2% cream 5 g intravaginally for 3 days,*†
- Butoconazole 2% cream 5 g B1-BSR, single intravaginal application*
- Clotrimazole 1% cream 5 g intravaginally for 7-14 days,*†
- Clotrimazole 100 mg vaginal tablet for 7 days,*
- Clotrimazole 100 mg vaginal tablet, two tablets for 3 days,*
- Miconazole 2% cream 5 g intravaginally for 7 days,*†
- Miconazole 100 mg vaginal suppository, one suppository for 7 days,*†
- Miconazole 200 mg vaginal suppository, one suppository for 3 days,*†
- Miconazole 1,200 mg vaginal suppository, one suppository for 1 day
- Nystatin 100,000-u vaginal tablet, one tablet for 14 days,
- Tioconazole 6.5% ointment 5 g intravaginally in a single application,*†
- Terconazole 0.4% cream 5 g intravaginally for 7 days,*
- Terconazole 0.8% cream 5 g intravaginally for 3 days,*
- Terconazole 80 mg vaginal suppository, one suppository for 3 days.*

* These creams and suppositories are oil-based and may weaken latex condoms and diaphragms.

Refer to condom product labeling for further information.

† Over-the-counter (OTC) preparations.

Oral agent:

TABLE 6-1 DIAGNOSTIC FEATURES AND MANAGEMENT OF VAGINAL INFECTION IN PREMENOPAUSAL WOMEN

	CLINICAL CONDITION			
	NORMAL VAGINA	CANDIDAL VAGINITIS	TRICHOMONAL VAGINITIS	BACTERIAL VAGINOSIS (BV)
ETIOLOGY	<i>Lactobacillus</i> predominant	<i>Candida</i> spp. and other yeasts	<i>Trichomonas vaginalis</i>	Depletion of H ₂ O ₂ + lactobacillus and overgrowth of <i>Gardnerella vaginalis</i> , various anaerobic bacteria, and <i>Mycoplasma hominis</i>
TYPICAL SYMPTOMS	None	Vulvar pruritis and/or irritation; external dysuria, increased discharge	Profuse discharge, often malodorous; external dysuria and genital irritation often present	Malodorous, increased discharge (commonly present at the introitus)
DISCHARGE:				
Amount	Variable: usually scant	Scant to moderate	Profuse	Moderate to profuse
Color ¹	Clear or white	White	White, yellow or green	White or gray
Consistency	Nonhomogeneous, flocculant	Clumped, “cheesy;” adherent exudative plaques	Homogeneous, watery, often frothy or foamy	Homogeneous, uniformly coating vaginal walls; occasionally frothy
ASSOCIATED INFLAMMATORY SIGNS	None	Erythema, edema and/or erosions of vagina or external genitalia; vulvar dermatitis common	Erythema of vaginal mucosa, introitus; occasional cervical petechiae; occasional vulvar dermatitis	None
pH of SECRETIONS ²	Usually <4.5	<4.5	Usually ≥ 5.0	Usually ≥ 4.5
AMINE (“fishy”) ODOR WITH 10% KOH ³	None	None	Usually present	Present
MICROSCOPY	Normal epithelial cells; lactobacilli predominate	Leukocytes, epithelial cells; yeast, mycelia or pseudomycelia seen in up to 80% of symptomatic patients	Leukocytes; motile trichomonads seen in 80-90% of symptomatic patients	Clue cells; rare leukocytes; lactobacilli outnumbered by profuse mixed flora, including Gram positive cocci and coccobacilli
USUAL TREATMENT	None	1. Imidazole vaginal cream, one tablet or applicatorful daily for 3-7 days 2. Fluconazole 150 mg PO (single dose)	1. Metronidazole 2.0 g orally (single dose) or tinidazole 2.0 g orally (single dose) 2. Treatment failure (persistence or recurrence despite sexual abstinence, or after intercourse only with a treated partner); Metronidazole 500 mg bid for 7 days 3. Advise the patient to avoid alcohol for 12 h since last exposure to alcohol and for 24 h following completion of metronidazole therapy.	1. Metronidazole 0.75% gel qhs for 5 days 2. Metronidazole 500 mg BID for 7 days; avoid alcohol for 12 h before and 24 h after completion of therapy 3. Clindamycin 2% cream qhs for 7 days
USUAL MANAGEMENT OF SEX PARTNERS	None	Examination and treatment usually are not necessary, but may be indicated in some cases of recurrent infection	Routine GU exam; treat with metronidazole or tinidazole 2.0 g in a single dose	Regular partners or source contacts; Routine STD examination; treatment usually not indicated

¹ Color of discharge is determined against a white background.

² pH determination is not useful if blood is present. pH should be obtained from introitus or vaginal wall, not vaginal pooled secretions.

³ To detect fungal elements, vaginal fluid is digested with 10% KOH prior to microscopic examination; to examine for other features, fluid is mixed (1:1) with physiologic saline. Gram stain also is excellent for detecting yeasts and pseudomycelia and for distinguishing normal flora from the mixed flora seen in bacterial vaginosis but is less sensitive than the saline preparation for detection of *T. vaginalis*.

- Fluconazole 150 mg oral tablet, one tablet in a single dose.

Bacterial vaginosis (BV)

Asymptomatic patients usually are not treated unless the patient is pregnant or the discharge is especially profuse.

Recommended regimens for nonpregnant women

Any of the following:

- Metronidazole 500 mg orally twice a day for 7 days,
- Metronidazole gel, 0.75%, one full applicator (5 g) intravaginally, once a day for 5 days
- Clindamycin cream, 2%, one full applicator (5 g) intravaginally at bedtime for 7 days.

Note: Patients should be advised to avoid consuming alcohol during treatment with metronidazole and for 24 hours thereafter. Clindamycin cream and ovules are oil-based and might weaken latex condoms and diaphragms. Refer to condom product labeling for additional information.

Alternative regimens

Any of the following:

- Clindamycin 300 mg orally twice a day for 7 days
- Clindamycin ovules 100 g intravaginally once at bedtime for 3 days

Recommended regimens for pregnant women

Either of the following:

- Metronidazole 500 mg orally twice a day for 7 days
- Metronidazole 250 mg orally three times a day for 7 days
- Clindamycin 300 mg orally twice a day for 7 days

Recurrent BV

Optimal treatment for recurrent BV is unknown. Options after an initial course of routine therapy as above include suppressive therapy with Metronidazole gel (0.75%) twice per week for 6 months.

MANAGEMENT OF SEX PARTNERS

Sex partners of women with trichomonal vaginitis should be routinely evaluated and empirically treated. Male partners of women with uncomplicated candidal vaginitis or BV need not be routinely evaluated or treated. Female partners should be examined and treated if BV is present. The treatment of choice is indicated in Table 6-1.

SEQUELAE

Occasionally, vaginitis may become persistent or recurrent. BV may also predispose to upper genital tract infection in some women. BV and trichomonal vaginitis in the third trimester are associated with an increased risk of adverse pregnancy outcomes, such as premature rupture of membranes and low birth weight.

FOLLOW-UP

Women with recurrent or severe episodes of candidal vaginitis should be tested for HIV infection, especially if underlying risk factors are present. Women with recurrent trichomonal vaginitis should be referred to an infectious disease specialist to be evaluated for a metronidazole-resistant strain.