

Vaginal discharge

Phillip Hay

Abstract

Vaginal discharge is a common presentation in sexual health clinics, gynaecology clinics and general practice. The three common causes with vaginal pathology – candidiasis, bacterial vaginosis and trichomoniasis – are diagnosed with the aid of relatively simple diagnostic tests. Cervicitis caused by organisms such as *Chlamydia* can cause a purulent discharge. Other causes include *atrophic* vaginitis, desquamative inflammatory vaginitis, cytolytic vaginosis and rarely neoplasia. Candidiasis is treated initially with oral or topical azoles. Bacterial vaginosis and trichomoniasis are treated with metronidazole, and partner notification is required for the latter. Frequently recurrent candidiasis and bacterial vaginosis are problematic, and specialist advice should be sought.

Keywords Bacterial vaginosis; MRCP; trichomoniasis; vaginal candidiasis; vaginal discharge; vaginal microscopy

Introduction

Vaginal discharge is a common presentation, and most women develop an abnormal discharge at some point in their life. Symptoms can be concealed because of embarrassment, so sensitivity is needed when taking a history. A few have frequent recurrences, and the condition can come to dominate their lives. Important questions for the history are shown in [Table 1](#).

The diagnosis can readily be confirmed by microscopy and culture of appropriate swabs. It is important for practitioners to have an understanding of normal physiology, changes with age and pathological conditions. The two most common causes of abnormal discharge – candidiasis and bacterial vaginosis (BV) – are not regarded as sexually transmitted, whereas trichomoniasis and cervicitis are.

Physiology

In pre-menarcheal girls, the vagina is lined with a simple cuboidal epithelium. The pH is neutral, and the epithelium is colonized with skin commensals. Under the influence of oestrogen at puberty, stratified squamous epithelium develops and lactobacilli become the predominant organism. The pH falls to 3.5–4.5. After the menopause, atrophic changes occur, with a return to flora more similar to those of the skin. The pH again rises to 7.0.

Physiological discharge

Normal vaginal discharge is white or yellowish. It consists of epithelial cells, mucus, bacteria and fluid transudate. Lactic acid

Phillip Hay MBBS FRCP is Reader and Honorary Consultant HIV Medicine Decommissioned Consultant in Sexual Health at St George's University Hospitals NHS Foundation Trust, UK. Competing interests: within the last five years, Dr. Hay has received payment for advice, speaking at meetings and attendance at conferences from Bayer Consumer Healthcare, Hologic, Becton-Dickinson.

Key Points

- Vaginal discharge can be diagnosed clinically, supported by microscopy, culture and nucleic acid amplification tests
- Uncomplicated candidiasis and bacterial vaginosis are readily treated with oral or topical azoles and metronidazole, respectively
- Cervicitis associated with gonorrhoea, chlamydia or *Mycoplasma genitalium* can present as discharge
- Less common causes include desquamative inflammatory vaginitis, cytolytic vaginosis and cervical ectropion
- Recurrent vaginal discharge is best managed through specialist referral

comes from glycogen being metabolized by vaginal epithelium and lactic-acid-producing bacteria – lactobacilli or bifidobacteria. Physiological discharge increases mid-cycle. It also increases in pregnancy and sometimes when women start a combined oral contraceptive pill. Cervical ectropion can be associated with excess mucus production causing persistent discharge, which can be treated by cervical cauterization.

Abnormal discharge

Vaginal discharge can originate from anywhere in the upper or lower genital tract. Discharge arising from the vagina itself can be physiological or pathological ([Table 1](#)). Uncommon causes are summarized in [Table 2](#).

The key points in history-taking are:

- a standard sexual history, as described in other chapters
- the characteristics of the discharge: colour, consistency, amount (use of pads or tampons), smell and whether it is bloodstained
- associated symptoms such as dyspareunia, either superficial or deep, itching or soreness
- whether there have been similar occurrences, whether there were trigger factors, and the relationship to the menstrual cycle
- self-treatment, previous treatments and response to them, and recent antibiotic use
- washing practices, douching and antiseptics.

Diagnostic tests

In specialized sexual health clinics candidiasis, BV and trichomoniasis can be diagnosed by microscopy of a saline wet mount and a Gram-stained vaginal smear. This allows immediate diagnosis, subsequently supported by laboratory culture and nucleic acid detection tests as needed. In the absence of microscopy, vaginal pH can be measured simply with narrow-range pH paper. BV and trichomoniasis are excluded by a pH <4.5, but a pH >4.5 is not very specific for a positive diagnosis.

Differential diagnosis of the principal causes of abnormal vaginal discharge

Symptoms and signs	Candidiasis	Bacterial vaginosis	Trichomoniasis	Cervicitis
Itching or soreness	++	—	+++	—
Smell	May be 'yeasty'	Offensive, fishy	May be offensive	—
Colour	White	White or yellow	Yellow or green	White or green
Consistency	Curdy	Thin, homogenous	Thin, homogenous	Mucoid
pH	<4.5	4.5–7.0	4.5–7.0	Any
Confirmed by	Microscopy and culture	Microscopy	Microscopy and NAAT test culture if NAAT not available	Microscopy, tests for chlamydia, gonorrhoea and <i>Mycoplasma genitalium</i>

NAAT, nucleic acid amplification test.

Table 1

Other causes of abnormal vaginal discharge

Infective conditions

- Upper genital tract infection, e.g. pelvic inflammatory disease, postpartum endometritis
- Primary syphilitic chancre
- Primary herpes

Non-infective

- Desquamative inflammatory vaginitis
- Atrophic vaginitis
- Cytolytic vaginosis
- Retained tampon or condom
- Cervical ectropion or endocervical polyp
- Intrauterine contraceptive device
- Allergic vaginitis, chemical irritation
- Physical trauma
- Fistula: rectovaginal or vesicovaginal
- Vault granulation tissue
- Neoplasia

Table 2

Nucleic acid amplification tests (NAATs) are also performed for gonorrhoea and chlamydia, as discussed in other chapters. NAAT tests for *Mycoplasma genitalium* and *Trichomonas* are increasingly being performed: the sensitivity of microscopy for *Trichomonas* is <50% compared with NAAT testing.

Vaginal candidiasis

Over three-quarters of women have at least one episode of vaginal candidiasis in their lifetime. At any point, 25% women have candidal colonization of the vagina, but only a minority get symptoms. *Candida albicans* is found in >80% cases. Sexual acquisition is rarely important, although intercourse is an established risk factor: the physical trauma of intercourse can trigger an episode. It is oestrogen-dependent so rarely seen in prepubertal girls or postmenopausal women. The invasiveness of *C. albicans* is increased by oestrogen.

Predisposing factors for candidiasis

- Immunosuppressive therapy, for example corticosteroids.

- Diabetes mellitus and gliflozin-class drugs, which increase glycosuria.
- Vaginal douching, bubble baths, shower gel, tight clothing and tights.
- Increased oestrogen:
 - pregnancy
 - high-dose combined oral contraceptive pill.
- Underlying dermatosis, for example eczema.
- Broad-spectrum antibiotic therapy.

Principal clinical features

- Itching, soreness and redness of the vagina and vulva.
- Curdy white discharge that can smell yeasty but not unpleasant.
- Sometimes fissuring and excoriations.

Not all candidiasis presents in the same way; in some cases, particularly with non-*albicans* strains, there can be itching and redness with a thin watery discharge. The diagnosis can be confirmed by microscopy and culture of the vaginal fluid. Asymptomatic women from whom *Candida* is grown on culture do not require treatment.

Treatment

Licensed treatments produce cure rates of 80–95% in non-pregnant women. Some women have a preference for oral therapy, particularly if required at the time of menstruation. Vaginal creams and pessaries can be prescribed in a variety of doses and duration of treatment. Commonly prescribed treatments are:

- a single dose of a topical azole, for example a clotrimazole pessary 500 mg in a single dose
- oral fluconazole 150 mg tablet as a single dose.

Longer courses of treatment, for example clotrimazole 100 mg daily for 6–7 days, are indicated:

- in pregnancy
- when there are predisposing factors that cannot be eliminated, such as corticosteroid therapy
- for women with frequent recurrences.

Complications and pregnancy

Oral azoles are not recommended in pregnancy because of teratogenicity.

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