

Vaginal discharge

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Abstract

Vaginal discharge is a common presenting symptom at gynaecology and sexual health clinics and in general practice. It is usually physiological and is subject to hormonal variations in consistency and quantity. With this in mind, appropriate diagnosis and treatment of abnormal vaginal discharge can be challenging. Concurrent pregnancy can also complicate the situation. Some pathological conditions may contribute to vaginal discharge, including cervicitis, aerobic vaginitis, atrophic vaginitis and mucoid ectopy. We mainly focus on the three most prevalent pathological causes namely; bacterial vaginosis, vulvovaginal candidiasis and *Trichomonas vaginalis* and will also provide a brief overview of atypical inflammatory vaginitis as well. Obtaining a methodical and detailed history from the patient should give the majority of the information required. Examination and analysis of discharge with swabs are a useful adjunct to aid diagnosis. Once a diagnosis is made, appropriate treatment must then be instigated and in some cases partner notification and treatment may also be required.

Keywords bacterial vaginosis; candidiasis; desquamated inflammatory vaginitis (DIV); HIV; pregnancy; trichomonas; vaginal discharge

Introduction

Vaginal discharge is a common condition. Discharge is mainly physiological. It is affected by hormonal variation throughout the lifetime of females. Diagnosis of abnormal discharge is quiet challenging. Conditions such as pregnancy and co-morbidities like diabetes mellitus make the management really challenging. Pathologies such as vaginitis, cervicitis or cervical atopy may also contribute to vaginal discharge. The most common causes of vaginal discharge are bacterial vaginosis, candidiasis and *Trichomonas vaginalis*.

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Causes of vaginal discharge include: physiological discharge, bacterial vaginosis (BV), vulvovaginal candidiasis (VVC), *T. vaginalis* (TV), chlamydia, gonorrhoea, herpes simplex virus, foreign body (e.g. retained tampon and condom), irritants (e.g. perfumes or deodorants), atrophic vaginitis, fistulae and tumours affecting the vulva, vagina and cervix.

History and examination

Vaginal discharge is a clinical feature not a diagnosis. History and examination of the patient should be the first line in deciding whether investigations and treatment are required. A routine gynaecological history should be obtained including parity, smear history, sexual history and current contraception. Sexual history should dictate the need for discussion regarding full STI screening. With regards to the vaginal discharge, its onset, duration, timing related to menstrual cycle, odour, colour, consistency and any exacerbating factors should be noted. Associated symptoms including itch, discomfort, pain, dysuria, dyspareunia and irregular bleeding should be enquired.

A gynaecological examination consists of inspection, bimanual examination and obtaining appropriate vaginal swabs. The inspection part, includes both, a general external inspection of the vulva and the perineal region, and an internal inspection of the vagina and cervix with the aid of a speculum. Bimanual examination will give the gynaecologist an idea about the position, size and mobility of the uterus as well as the presence of any adnexal masses. Vaginal swab will help in the diagnosis of pathogens that may be responsible for the abnormal discharge.

Who to swab?

Some patients can be given treatment without the need for full investigations. A patient who complains with a first episode of vaginal discharge with a clear clinical evidence of either vulvovaginal candidiasis (VVC) or bacterial vaginosis (BV), and no other risk factors, can be given empirical treatment without further investigations. However, the following risk factors require further investigations:

- High STI risk (past history of STI, multiple sexual partners, sharing needles and intravenous drug use)
- Symptoms suggestive of an alternative cause (e.g. vaginal bleeding and urinary or bowel symptoms)
- Recent gynaecological procedure
- BV associated with pregnancy

Indications to obtain a swab:

- STI risk/requesting STI screening
- Symptoms suggestive of upper genital tract infection
- Postpartum, post-miscarriage, TOP or recent instrumentation of the uterus
- Recurrent symptoms despite treatment
- Abnormal symptoms of unknown cause
- Cervicitis found on examination.

Taking appropriate swabs

There should be appropriate documentation sent with the swab to aid proper testing in the lab. The site that was sampled should be well documented. Symptoms, any recent treatments (e.g. systemic antibiotics), pregnancy status and any recent

gynaecological procedures should be mentioned. Different labs will have different capabilities with regards to the specific testing they offer, therefore you should check your local laboratory prior to sending samples.

A. High vaginal swab (HVS)

A swab taken from the lateral wall or posterior fornix of the vagina under direct vision. The swab should then be placed in Amies transport medium with charcoal. The high number of commensal bacteria that reside in the vagina can often make interpretation of results difficult and these should be interpreted in the context of the clinical picture. It should only be obtained if there is a clinical need for testing and not as a routine with speculum examination. It should be obtained when symptoms do not lead to a diagnosis. Abnormal discharge in pregnancy, post-partum, post-termination and post instrumentation should always be swabbed. Similarly, if there is recurrence of symptoms or possible treatment failure then a swab should be obtained.

B. Endocervical swab (ECS)

The cervical os should be cleaned with a disposable swab and discarded. The ECS should then be inserted into the cervical os and rotated firmly. The swab should then be placed in Amies transport medium with charcoal. It is mainly used in the investigation of Chlamydia and gonorrhoea. The swab is sent for NAAT (nucleic acid amplification testing). Some labs are now analysing these samples for BV and TV.

C. pH testing

A swab from the lateral vaginal wall is placed on a narrow spectrum litmus paper. BV and TV (*T. vaginalis*) will have pH >4.5. There is good evidence that clinical features and measurement of vaginal pH is a sensitive (but not specific) predictor. If HVS and ECS are also obtained, there is an increased accuracy of diagnosis. Therefore, a swab should be obtained if features are not suggestive of BV/VVC.

D. Microscopy

Wet microscopy requires a certain level of expertise and technical skills for proper implementation. A small sample of the discharge should be placed on two ends of a slide. Normal saline is put on one end and potassium hydroxide on the other. A cover slip is placed on the slide and these are visualized under a microscope. This test is of varying sensitivities depending on the offending organism:

- 70% sensitivity for TV (TV swabs need to be processed with wet microscopy within 6 hours).
- Saline microscopy will show spores/pseudohyphae in 40–60% of Candida
- 30–50% sensitivity for Gonorrhoea

E. Gram stain

- Commonly used for the diagnosis and grading of BV
- 65–68% detection in symptomatic Candida

F. Culture

- Candida grows best on **Sabouraud agar** (95% growth on culture). Its growth can be classified as light, medium or heavy. Culture was considered the gold standard for detecting *T. Vaginalis* before NAAT (nucleic acid

amplification testing) took its place. Culture should be undertaken in patients with negative microscopy despite symptoms and those with apparent recurrent disease.

G. NAAT (nucleic acid amplification tests)

Is effective in detecting Chlamydia and gonorrhoea. Reported detection rates of 100% with BV although its use in the diagnosis of BV is not widespread.

H. Intrauterine contraceptive devices (IUCDs)

The entire device should be sent to microbiology. The presence of an IUCD may be associated with PID. Infections may be polymicrobial with the isolation of both Gram positive and Gram negative aerobic and anaerobic organisms. Actinomyces species, particularly *Actinomyces israelii*, may be significant isolates. We recommend that IUCDs are only cultured where there are clinical indications of PID or other inflammatory conditions.

Physiological discharge

Physiological vaginal discharge is a normal finding in all women and most commonly described as an inoffensive discharge. The fluctuating levels of oestrogen and progesterone during the menstrual cycle greatly affects the consistency and composition of the physiological discharge. Oestrogen makes the discharge thin and clear for easy passage of sperm through the cervix at the time of ovulation. Progesterone makes the discharge thick and sticky after ovulation.

The vaginal environment maintains its stability by the action of commensal organisms. Lactobacilli colonize the vagina since puberty under the influence of oestrogen. These are responsible for converting glycogen to lactic acid, maintaining a vaginal pH of around 4.5. Other commensal organisms are streptococci, enterococci and coagulase negative staphylococci. A few other organisms which are part of the normal flora, but are associated with vaginal infections, include, anaerobic Bacteroides, anaerobic cocci, *Gardnerella vaginalis*, Candida, *Ureaplasma urealyticum* and Mycoplasma species.

Bacterial vaginosis

Aetiology and transmission

Bacterial vaginosis is the commonest cause of vaginal discharge in women; during their childbearing period. It has been found in postmenopausal women and rarely prepubertal. It is more common in black African and American women (45–55%). Caucasian women have a prevalence of approximately 5–15%. Previously, it was considered as a harmless finding, but we now know it to be associated with many pathological conditions such as puerperal endometritis, preterm labour, premature rupture of membranes, PID and UTI.

The condition is associated with a prevalence of the anaerobic species in preference to the normal Lactobacillus species. Organisms associated with bacterial vaginosis include the *Prevotella* species, *G. vaginalis*, *Mobiluncus* species, *Peptostreptococcus* species and *Mycoplasma hominis*. Some women experience the change in the microorganism environment really abruptly, while others take longer time interval to feel the change.

Bacterial vaginosis is experienced more in patients with multiple sexual partners, no use of condoms or douching. Most

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