Clinical Algorithms

Vaginal discharge

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In general practice the management of vaginal discharge is a common and important problem which may be encountered in women of all ages. It is important that the family practitioner can recognise the more common causes of this complaint and the indications for referral to the appropriate specialist.

Under the influence of hormones there is considerable temporal variation in the quantity of secretions from the genital tract. The so called normal vaginal discharge is comprised of secretions from the upper genital tract, the cervical glands, the vagina, the greater vestibular glands, and the periurethral, sebaceous, and apocrine glands of the vulva. These secretions increase during ovulation, just before menstruation, during sexual arousal, and during pregnancy.

Causes of increased vaginal discharge

INCREASED VOLUMES OF NORMAL DISCHARGE

At birth and for about the first 10 days of life there may be a noticeable vaginal discharge resulting from the transplacental transfer of maternal oestrogens. For a year or two before the onset of the menarche girls may note a vaginal discharge of white material. In women of reproductive age causes of such a discharge include anxiety, frequent erotic stimulation, the use of oral contraception, cervical ectropion, and frequent vaginal douching.

INFECTIONS

The table indicates the organisms commonly associated with increased vaginal discharge in women in temperate climates. Although *Neisseria gonorrhoeae* and *Chlamydia trachomatis* produce vulvovaginitis in prepubertal children, the vagina of adult women is not infected with the organism. The vaginal discharge associated with these infections in adults results from cervicitis or concomitant vaginal infection—for example, with *Trichomonas vaginalis*. In postmenopausal women atrophy of the vaginal epithelium resulting from a reduction in oestrogen production predisposes to non-specific infection.

OTHER INFLAMMATORY CONDITIONS

Vaginal discharge may be associated with retained foreign bodies, including tampons, secondary infection of vaginal or cervical tears, and vaginitis resulting from the instillation of chemicals, including antiseptics, into the vagina.

Organisms commonly associated with increased vaginal discharge, and appropriate microbiological investigations

Organisms	Appropriate microbiological investigations
<i>Neisseria gonorrhoeae</i>	In adult women, culture of material obtained from cervix using a cotton wool tipped applicator stick and sent to the laboratory* In prepubertal children only, culture of vaginal material*
<i>Chlamydia trachomatis</i>	In adult women: (a) culture of endocervical material obtained by a cotton wool tipped applicator stick and sent within hours to the laboratory in a special transport medium (eg 2SP); (b) immunofluorescence or enzyme linked immunosorbent assays of cervical material obtained according to instructions of kit manufacturer In children, vaginal material obtained as above
<i>Trichomonas vaginalis</i>	Immediate microscopy of saline mount preparation of vaginal exudate or, if microscope not available, culture*
<i>Candida</i> spp	Microscopy of Gram stained smear of vaginal exudate or culture of material*
<i>Gardnerella vaginalis</i> and anaerobes including <i>Mobiluncus</i> spp	Microscopy of saline mount or Gram stained smears of discharge for the presence of clue cells.† If facilities for microscopy do not exist, and for the diagnosis of anaerobic infections, culture
Human papilloma virus	Clinical diagnosis
Herpes simplex virus	Culture of virus in material sent to laboratory in Hank's medium
<i>Enterobius vermicularis</i>	If adult female worms not seen, microscopy of Sellotape strip preparation of perianal skin

*Material for culture should be sent to the bacteriology laboratory in suitable transport medium—for example, Amies's or Stuart's.

†Clue cells, which are associated with *Gardnerella vaginalis* and anaerobic bacterial infection, appear as granular sheets of cells in saline mount preparations. Gram smear microscopy of vaginal material shows that clue cells are epithelial cells to which Gram negative and Gram variable coccobacilli adhere.

NEOPLASMS OF THE LOWER GENITAL TRACT

These may be benign—for example, cervical polyps—or malignant.

Investigation

The algorithm summarises the investigation of an adult woman with vaginal discharge.

Correct diagnosis of the cause of vaginal discharge depends on the following: a careful general and sexual history, proper examination of the lower genital tract, and appropriate microbiological investigations.

CLINICAL INVESTIGATION

Note should be taken of the mode of onset of the discharge, its severity in relation to the menstrual cycle, its character, and its association with pruritus vulvae. The use of vaginal douches, deodorants, and antiseptics should be specifically inquired about. During the interview the patient may allude to anxieties about an

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unwanted pregnancy, malignancy, or the possible acquisition of sexually transmitted disease.

The pubic hair should be inspected for the presence of *Pthirus pubis*, which may indicate that the patient has been at risk of other infections. Similarly, the presence of vulval warts should alert the practitioner to this possibility. Vulvitis and a thick white discharge at the introitus are characteristic of candidiasis. Trichomoniasis, gonorrhoea, and chlamydial infections in children and the vaginitis caused by retained foreign bodies or chemicals often produce a vulvitis with no distinguishing features. A greyish discharge of the introitus may be a feature of anaerobic vaginosis. Herpetic lesions of the vulva appear as multiple tender vesicles or ulcers.

Further examination in children is indicated if a specific cause for vulvovaginitis or appreciable vaginal discharge—for example, isolation of *N gonorrhoeae* or *C trachomatis* on culture—has not been found. Since examination may need to be performed under anaesthesia gynaecological referral is indicated.

In adults, after inspection of the periurethral and greater vestibular glands for signs of inflammation, which may indicate gonococcal or chlamydial infection, a bivalve speculum should be passed to permit visualisation of the vaginal walls and cervix. The presence or absence of vaginitis and the character of the discharge should be noted. *T vaginalis* and *Candida* spp are usually associated with vaginitis. In infections caused by *T vaginalis* the discharge is generally green and sometimes frothy, although this is not a pathognomonic feature. In infections due to *Candida* spp the discharge is thick and white with plaques adherent to the vaginal walls. Anaerobic vaginosis is not associated with vaginitis, but there is a uniform, whitish grey discharge which adheres to the vaginal epithelium. In senile vaginitis the vaginal epithelium has a granular appearance and there may also be a purulent vaginal discharge.

Although the cervix may appear normal in women with gonococcal and chlamydial infections, there is often cervicitis with the exudation of mucus from the cervical os.

Bimanual examination to detect pelvic inflammatory disease or uterine fibroids should also be performed.

In postmenopausal women who complain of bloodstained vaginal discharge referral to a gynaecologist is mandatory. Diagnostic curettage is indicated to exclude malignancy of the uterus, a condition which may coexist with atrophic vaginitis.

MICROBIOLOGICAL INVESTIGATION

The most appropriate investigations are noted in the table. Some of these procedures are time consuming and require attention to detail, and the general practitioner may therefore prefer to refer the patient to a department of genitourinary medicine. Only exceptionally should the patient be treated with antimicrobial drugs

before referral. It should be remembered that more than two thirds of women with gonorrhoea will not be identified if vaginal material only is cultured for *N gonorrhoeae*.

Treatment

Reassurance is important in women with normal or increased vaginal discharge. Anxiety is relieved greatly when the physiological mechanism of their discharge is explained and when microbiological tests show no evidence of infection. Advice on avoidance of regular vaginal douching and the use of vaginal deodorants and antiseptics should be given.

In the treatment of trichomoniasis metronidazole in a dosage of 200 mg eight hourly by mouth for seven days is generally effective, although it may be given as two doses of 1.2 g, one day apart. Although symptomatic disease in men is usually not found, it is probably wise to treat the sexual partner to prevent reinfection. A similar regimen is helpful in the treatment of anaerobic vaginosis.

Local treatment with any of a number of antifungal preparations is usually successful in candidiasis. Single dose treatment with a 500 mg clotrimazole pessary is effective.

With changing patterns of drug resistance the treatment of gonorrhoea may be difficult and lies outwith the scope of this article. For this reason and for contact tracing, which is important for the control of the disease, infected individuals should be referred to a department of genitourinary medicine.

Chlamydial infections can be treated with erythromycin stearate 500 mg by mouth twice daily for at least seven days. Erythromycin stearate is preferable to tetracycline, which, although effective, should be avoided in pregnancy, a state which is sometimes not apparent at the patient's consultation. Contact tracing of women with chlamydial infections is essential.

After exclusion of other causes of vaginitis and vaginal bleeding women with senile vaginitis may be treated with dienoestrol cream applied twice daily for about one month and then daily.

Not uncommonly, a microbiological cause of vaginal discharge cannot be found. Despite repeated treatment with various local and systemic treatments the discharge persists. Such patients should be reassured strongly that they have no sexually transmitted infection and that further treatment is not indicated.

Further reading

- Blackwell A, Barlow D. Clinic diagnosis of anaerobic vaginosis (non-specific vaginitis). A practical guide. *British Journal of Venereal Disease* 1982;58:387-93.
- Mardh PA, Taylor-Robinson D, eds. *Bacterial vaginosis*. Stockholm: Almqvist and Wiksell International, 1984.

A patient who had ventricular fibrillation after a heart attack but whose blood pressure, pulse rate, and ECG returned to normal with treatment has been prescribed disopyramide phosphate indefinitely by the hospital doctor who treated him. What is this drug and is it suitable for indefinite administration?

Disopyramide phosphate is an antiarrhythmic agent capable of suppressing ventricular arrhythmias. It has actions similar to those of quinidine but with additional atropine like effects. Two studies have suggested that prophylactic administration of the drug can reduce the incidence of arrhythmias in patients with recent myocardial infarction^{1,2}; although a favourable effect on mortality was reported in one of them, this evidence has not received wide endorsement. The only conclusive studies showing reduced risk after infarction have been conducted with beta blocking agents.³ Many cardiologists believe that when antiarrhythmic drugs are used for prophylaxis, their adverse effects on the myocardium and conducting system balance or outweigh any beneficial effect on mortality. Even if this be true for results overall, successful suppression of life threatening arrhythmias may be attained in some individuals with disopyramide or other agents. The wisdom of using prophylactic antiarrhythmic treatment after a cardiac arrest depends on many factors. In general, ventricular fibrillation occurring

during the first 24 hours after myocardial infarction does not imply an appreciable susceptibility to recurrence after the acute phase of the illness has passed. Any tendency to life threatening rhythm disorders shown later after infarction—or in the absence of infarction—has more ominous prognostic implications irrespective of the simple haemodynamic or electrocardiographic variables mentioned by the questioner. Even in the absence of strictly relevant positive trials, many physicians do then recommend antiarrhythmic drugs, especially if beta blockers are contraindicated. No good guidance is available on how long apparently successful antiarrhythmic treatment should be continued to suppress recurrence of ventricular fibrillation. Many would adopt a policy of "not rocking the boat" by changing a regimen if the indications for treatment were good in the first instance and the drug was not causing obtrusive unwanted effects.—D A CHAMBERLAIN, consultant cardiologist, Brighton.

- 1 Jennings G, Modal DG, Jones MBS, Turner PP, Besterman EMM, Kidner PH. Oral disopyramide in prophylaxis of arrhythmias following myocardial infarction. *Lancet* 1976;ii:51-4.
- 2 Zainal N, Carmichael DJS, Griffiths JW, et al. Oral disopyramide for the prevention of arrhythmias in patients with acute myocardial infarction admitted to open wards. *Lancet* 1977;ii:887-9.
- 3 Chamberlain DA. Beta adrenoceptor antagonists after myocardial infarction—where are we now? *Br Heart J* 1983;49:105-10.