Vaginal and Vulval Candidiasis

Synonyms: thrush, vulvovaginal candidiasis

This is a yeast infection of the lower female reproductive tract.

Pathogenesis

The infective organism is a fungus that reproduces by budding:

- 80-92% of cases are due to *Candida albicans*[^1, ^2].
- Other organisms include *Candida glabrata, Candida tropicalis, Candida krusei* and *Candida parapsilosis*[^1].

Other fungal infections of the vagina are caused by *Saccharomyces cerevisiae* (brewer's yeast) and (rarely) *Trichosporon* spp.

*Candida* is a normal commensal organism in the vagina. Recent research suggests that symptomatic vaginal and vulval candidiasis is not due to opportunistic infection or immunodeficiency but is a hypersensitivity response to the commensal organism. This response may be genetically determined and oestrogen also seems to play a role[^3].

Epidemiology

Incidence and prevalence

- Peak incidence age is 20-40 years.
- An internet panel survey of 6,000 women from five European countries and the USA found that between 29% and 49% of responding women reported a healthcare provider-diagnosed vaginal yeast infection during their lifetime[^4].
- In the same survey, more than one fifth of women reporting one vaginal yeast infection also reported a 12-month period with four or more infections (recurrent vaginal and vulval candidiasis) - making 9% overall reporting recurrent infection[^4].
- 10-20% of women have asymptomatic vaginal colonisation with *Candida* spp. and do not need treatment[^1, ^5].

Risk factors

- Pregnancy[^1].
- Diabetes mellitus (impaired glucose tolerance in pregnancy does not seem to be a statistically significant risk factor)[^6, ^7].
- Treatment with broad-spectrum antibiotics (occurs in 28-33%).
- Chemotherapy.
- Vaginal foreign body.
- Contraceptives may predispose to recurrent vaginal and vulval candidiasis - but evidence is conflicting and of poor quality[^8].

Presentation[^1]

Symptoms

- Pruritus vulvae.
- Vulval soreness.
- White, 'cheesy' discharge. The discharge is non-offensive. Foul-smelling or purulent discharge suggests bacterial infection.
- Dyspareunia (superficial).
- Dysuria (external).

Symptoms tend to be exacerbated premenstrually and remit during menstruation[^3].

Signs

- Vulval erythema, possibly with fissuring.
- Vulval oedema.
- Satellite lesions.
- Excoriation.

Differential diagnosis

- *Bacterial vaginosis (BV).*
- *Trichomonas vaginalis.*
- *Sexually transmitted infections (STIs).*
- *Atrophic vaginitis* or hypo-oestrogenism.
- *Helminthic infection* (particularly threadworm/pinworm in young girls).
Lichen sclerosus et atrophicus. 
Contact dermatitis (enquire about new hygiene products). 
Eczema. 
Psoriasis. 
Mechanical irritation - eg, long-distance cyclists, sexual abuse in girls. 
Rectovesical fistula. 
Urinary tract infection.

Investigations

- Routine vaginal swabs are not required. 
- In suspected bacterial/resistant or complicated infection, take swabs from the anterior fornix or lateral vaginal wall and send for microscopy, culture and sensitivity. 
- Take midstream specimen of urine (MSU) if symptoms could be due to urinary tract infection.

Clinical Editor's Note

Dr Hayley Willacy draws your attention to the recent paper in the BJGP looking at the validity of self-taken vaginal swabs [9]. A total of 104 women were enrolled in the study. Of those, 45 were diagnosed with vulvovaginal candidiasis (VVC) and 26 with bacterial vaginosis (BV). The sensitivities of self-taken low vaginal swabs for VVC and BV were 95.5% and 88.5% respectively. Self-taken LVS appears to be a valid alternative to clinician-taken HVS for detecting VVC and BV infections. Symptoms alone were found to be a poor indicator of underlying infection.

Management

General advice

- Use a soap substitute to clean the vulval area (advise the patient not to use internally and not to use more than once daily) [1, 10]. 
- Use an emollient to moisturise the vulval skin. 
- Wear loose-fitting underwear (although there is little evidence to support this). 
- Avoid applying topical irritants such as perfumed products. 
- Good hygiene.

Pharmacological treatment

Topical and oral azole therapies all give a clinical and mycological cure rate of over 80% in uncomplicated acute vaginal and vulval candidiasis. Personal preference, availability and affordability will affect choice [1, 11, 12].

For a single episode [10]

- Prescribe either an intravaginal antifungal, such as clotrimazole or miconazole pessaries, or an oral antifungal, such as fluconazole or itraconazole. 
- If there are vulval symptoms, consider a topical imidazole as well (eg, clotrimazole or miconazole). Combination packs of pessary/vaginal cream and topical cream are available. 
- Note that topical treatment may worsen burning symptoms in the first few days and the patient may prefer oral treatment if they have an inflamed/oedematous vulva [13]. 
- Intravaginal clotrimazole, clotrimazole cream and oral fluconazole can be bought over-the-counter. 
- Advise the woman to return if her symptoms have not resolved in 7-14 days. 
- If symptoms resolve, there is no need for test-of-cure or follow-up.

Some vaginal/vulval antifungal treatments including preparations containing clotrimazole, econazole, fenticonazole, and miconazole may damage latex condoms. Advise abstinence or the use of non-latex barrier methods during treatment, and for several days after stopping the treatment [10].

Severe infections [1, 10]

- Take vaginal swabs and send for culture, microscopy and sensitivity to confirm diagnosis. 
- Treat with two doses of oral fluconazole (150 mg) three days apart. 
- If oral fluconazole is contra-indicated, treat with a 500 mg pessary of clotrimazole, two doses three days apart. 
- Consider adding a topical imidazole cream, such as clotrimazole if vulval symptoms are present. 
- Advise the woman to return if her symptoms have not resolved in 7-14 days. 
- Seek specialist advice in girls under 16 years of age.

Treatment failure [10]
Exclude poor compliance. Consider a short course of an oral antifungal if there has been poor compliance with intravaginal treatment.

If symptoms are improving and compliance has been good, consider prescribing an extended course of either intravaginal or oral treatment.

Topical treatments can cause vulvovaginal irritation so this should be considered.

Look for an alternative diagnosis:
- Consider measuring vaginal pH (Candida spp. pH ≤4.5; bacterial vaginosis and T. vaginalis pH >4.5).
- Take a vaginal swab for microscopy, culture and sensitivity.

Seek specialist advice for girls under 16 years old, if:
- Treatment fails again.
- The diagnosis is not certain.
- A non-albicans species is identified.
- Treatment failure is not explained.

Topical treatments can cause vulvovaginal irritation so this should be considered.

Look for an alternative diagnosis:
- Consider measuring vaginal pH (Candida spp. pH ≤4.5; bacterial vaginosis and T. vaginalis pH >4.5).
- Take a vaginal swab for microscopy, culture and sensitivity.

Rarely, male partners can suffer candidal balanitis. There is no evidence to support the treatment of asymptomatic male sexual partners in either episodic or recurrent vaginal and vulval candidiasis[1, 10]. There is also a lack of evidence for sexual transmission of genital Candida spp. between women who have sex with women[14].

Treatment in pregnancy
- Intravaginal clotrimazole or miconazole should be used. There is no evidence that one is more effective than another[1, 10].
- Treatment should be continued for seven days[1, 10].
- Topical clotrimazole or miconazole may also be used for vulval symptoms.
- Some women prefer to insert pessaries by hand to avoid any damage to the cervix.
- Advise the woman to return if symptoms have not resolved in 7-14 days.
- Refer to a genitourinary medicine clinic if there is any suspicion of a sexually transmitted infection.

Oral fluconazole and itraconazole are contra-indicated during pregnancy.

Immunocompromised patients
If immunocompromised, especially with HIV infection or diabetes, extend the treatment period to 7-14 days[1].

Self-treatment
Once a diagnosis of uncomplicated candidiasis has been made, women can be advised to treat further episodes with over-the-counter products. However, advise seeking further medical opinion if[10]:
- <16 or >60 years old.
- Pregnant or breast-feeding.
- Symptoms differing from normal - eg, malodorous discharge, ulcers, blisters.
- Systemic upset.
- Symptoms not settling after using over-the-counter treatment.
- Two episodes in six months and the patient has not seen a healthcare professional about this for over one year.
- The patient/partner has had a previous sexually transmitted infection.
- Abnormal menstrual bleeding or lower abdominal pain.
- Previous adverse reaction to antifungal treatments, or they have been ineffective.

Alternative treatments[1]
- There is no evidence supporting oral or vaginal lactobacillus for the prevention and treatment of vaginal and vulval candidiasis. However, there is no evidence that they cause harm[10].
- Tea tree oil and other essential oils have been shown to be antifungal in vitro. However, they may cause hypersensitivity reactions and there is insufficient evidence to recommend their use[10].

Complications and prognosis
- Cure rate is 80% for uncomplicated cases[1].
- Depression and psychosexual problems can occur in women who suffer recurrent episodes.
- Treatment during pregnancy is more likely to fail; hence, the longer treatment period advised.

Recurrent vaginal and vulval candidiasis
Recurrent vaginal and vulval candidiasis is defined as four or more episodes in one year with partial or complete resolution of symptoms in between episodes[1].

Around 5% of women who develop one episode of vaginal and vulval candidiasis will develop recurrent disease[1].
It is usually due to infection with *C. albicans* and various host factors including:

- Diabetes mellitus.
- Immunosuppression.
- Broad-spectrum antibiotic use.
- A possible link with allergy, particularly allergic rhinitis.

**Investigation**

- Send a high vaginal swab for microscopy, culture and sensitivity to exclude alternative diagnoses.
- Consider measuring vaginal pH (see under 'Treatment failure', above).
- Check FBC and fasting glucose, depending on the level of clinical suspicion.

**Treatment**

**Commence induction treatment**

- EITHER three doses of fluconazole 150 mg (1 x 150 mg dose to be taken every 72 hours); OR a topical imidazole treatment for 10-14 days according to response.
- A topical cream may be used in addition to the above for vulval symptoms.

**Maintenance and further treatment**

- Give a prescription for ‘treatment as required’ OR prescribe a six-month maintenance regimen.
- In either case, review the patient after six months.
- Possibilities for the maintenance regimen include:
  - 500 mg intravaginal clotrimazole once weekly.
  - 150 mg oral fluconazole once weekly.
  - 50-100 mg oral itraconazole once daily.
  - Zafirlukast 20 mg twice daily for six months may also induce remission. This may be an alternative for maintenance prophylaxis, particularly in atopic women.
  - Cetirizine 10 mg daily for six months has also been shown to induce remission for women in whom fluconazole alone does not provide complete resolution of symptoms.

Approximately 90% of women will remain disease-free at six months and 40% at one year.

**Other considerations in recurrent infection**

- Give general advice as with non-recurrent infection.
- Some studies have suggested that wearing sericin-free fibroin silk underwear made with a specific antimicrobial (AEM 5772/5) bonded to it may help (in addition to maintenance treatment as described above) to reduce symptoms in recurrent vaginal and vulval candidiasis.
- Consider a contraceptive review:
  - Vaginal and vulval candidiasis does appear to be more common if the vagina is exposed to oestrogen but whether combined hormonal contraceptives actually increase the risk of vaginal and vulval candidiasis is uncertain because the evidence is conflicting.
  - There is some limited evidence that switching to a progestogen-only injectable contraceptive may help relieve symptoms in women with recurrent vaginal and vulval candidiasis.
  - The effect of switching to other progestogen-only forms of contraception is not certain.
- Optimise glycaemic control in those with diabetes.
- Seek specialist advice in girls under 16 years old.

**Further reading & references**

1. Management of vulvovaginal candidiasis; British Association for Sexual Health and HIV (2007)
10. Candida - female genital; NICE CKS, August 2012 (UK access only)
15. Management of Vaginal Discharge in Non-Genitourinary Medicine Settings; Faculty of Sexual and Reproductive Healthcare (Feb 2012)

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