

Possible treatment options for recurrent yeast vaginal yeast infections

Background

According to a survey, 8% of American women older than 18 years reported = 4 episodes of VVC (Vulvovaginal Candidiasis) annually.¹ Recurrent vaginal yeast infection is defined by as having at least 4 episodes or at least 3 episodes not related to antibiotic treatment annually. The annual cost (in 1995) for dealing with VVC was estimated at \$1.8 billion in the United States alone.²

Currently, there is no set drug regimen or established effective agents for prevention of VVC but with 8% of American Women suffering from recurrent VVC and \$1.8 spent on treatment; there is definitely a necessity. Current treatment is individualized based on effectiveness, convenience, side effects and cost.²

In addition there is also some controversy over when to start treatment. In a prospective randomized, open, crossover study, it was found women preferred and found it more cost effective to empirically self treat at onset of symptoms rather than using monthly prophylaxis despite the fact that the prophylactic regimen had less recurrent cases of vaginitis. This article will examine the some current available options and compare their risks and benefits.

Symptoms and diagnosis of vaginal yeast infections

If a woman is experiencing vaginal discomfort, odorless discharge in the vaginal area, pruritus, dyspareunia or dysuria; they should go see a doctor. Upon physical examination, a doctor will notice redness of the vaginal area and a thick, white or yellow discharge. A wet mount should be initiated for trichomoniasis or bacterial vaginosis when a patient has recurrent vaginal yeast infections.¹

Possible reasons behind recurrences

The causes of repeat vaginal yeast infections in some women are unknown but some known etiologies of are a type of a *Candida* strain other than *albicans* that is resistant to treatment, antibiotics, birth control use, a compromised immune system, sexual activity and hyperglycemia.³ Once established, it is hard to rid the body of a *Candida albicans* infection. Other pathogens that cause vaginal yeast infections are *Candida tropicalis* and *Candida glabrata*.

These 2 pathogens are not commonly treated by conventional antifungals and might be one possible reason behind treatment failures. Vaginal yeast infections can also be caused by lowered number of lactobacilli or with the woman's current lactobacilli not producing H₂O₂. A study of 7918 pregnant women, found that VVC was connected to either a normal (dominated by lactobacilli) or intermediate vaginal microbiota (dominated by lactobacilli).² Another possible cause of recurrent VVC is dysbiosis; which is the disturbance of our internal organ's ecological balance by outside factors. When ecological balance is changed, it allows harmful pathogens such as *E. coli*, *Klebsiella*, *Bacteroides*, *Streptococci* and *Staphylococci* species and *Candida* to grow and flourish.⁴

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Mabel Wong

PharmD, Temple University, USA

Correspondence: Mabel Wong, PharmD, Temple University, USA, Email: mabelw7@gmail.com

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Possible treatment options

Currently, many treatment options available with variable dosage forms (vaginal, oral, cream, etc) and varying dosage frequency ranging from daily treatment to monthly treatments. The efficacy of treatment options also vary widely ranging from 95% to 50% effective.

Compliance is also a treatment factor, with patients being more compliant with oral dosage forms than vaginal.¹ Treatment is also dependent upon the type of pathogen. Imidazole antifungal agents, such as miconazole and clotrimazole are most commonly used against *Candida albicans* infections, but they are not as effective against other *Candida* strains. Miconazole is 10 times less effective against *C. tropicalis* and *C. glabrata* than is *C. albicans*.¹ If a yeast infection recurs three months after last episode, it is likely caused by a different *C. albicans* strain.¹ Terconazole vaginal cream (Terazol) is the agent of choice for suspected non-*Candida albicans* strains.¹

Probiotics is another possible treatment source for recurrent vaginal yeast infections. Lactic acidophilus (a common probiotic strain) makes lactic acid which lowers gut pH and helps establish normal flora which prevents disease. Test tube studies have shown that Lactic acidophilus can inhibit growth (not treat) of *candida albicans* by producing a natural antibiotic-like substance called bactericine which gets rid of coliforms.⁵

Maintenance regimens have also been studied as a way to prevent recurrences. ketoconazole 400mg daily for 14 days was discovered to have a six-month recurrence rates of 5 percent.⁶

Terconazole 0.8% weekly vaginal cream was discovered to be nearly as effective as daily treatment with ketoconazole. Since Terconazole is dosed weekly instead of daily and is effective against non-*candida albicans* species (which is one of the possible causes of recurrent yeast infections) and is a localized treatment; it has several advantages over ketoconazole treatment. Twice-weekly intravaginal clotrimazole 200 mg was found equally as efficacious as daily ketoconazole and weekly terconazole.^{7,8} Monthly fluconazole 150mg reduced incidences by 50 percent. Itraconazole 200mg or 400mg monthly also reduce recurrence rates by 50 percent. Boric acid 600mg vaginal suppository twice daily for two weeks and then daily during menstruation, has also been found effective in treatment of resistant infection. Most studies

recommend prophylactic duration for 6months and then reevaluation. However, there is evidence that a longer prophylactic period is needed and treatment is not a permanent solution because many women experience recurrences once prophylaxis is discontinued.⁹⁻¹²

Side effects

Side effects are also a factor in treatment selection of recurrent VVC treatment since duration of treatment can sometimes last up to 6months. Oral antifungal agents cause gastrointestinal side effects in 15percent of patients treated. Oral ketoconazole can cause liver toxicity in one of 15,000 patients. Vaginal clotrimazole therapy has a more favorable side effect profile, causing mostly local discomfort, with little systemic toxicity (headache 9% and abdominal pain 3% of patients treated). Oral fluconazole is also less toxic than oral ketoconazole. Side effects of fluconazole are headache (12percent), abdominal pain (7 percent) and nausea (4percent). Other considerations of antifungal therapy selection are significant drug interactions such as between fluconazole and warfarin (Coumadin), oral hypoglycemic agents, phenytoin (Dilantin), theophylline and rifampin (Rifadin).¹

Alternative prophylactic treatment for VVC: probiotics

Unlike antifungal agents, probiotics has almost no side effects and can possibly “cure” recurrent yeast infections by turning a person’s gut and vaginal s microbiota to normal healthy flora.¹²⁻¹⁴

Two therapeutically beneficial probiotics strains are lactobacilli and bifidobacteria. *L. acidophilus* makes lactic acid which keeps the vaginal pH at a desirable 4.4.5 and it also makes H2O2 which suppresses hostile invaders. *B. bifidum* makes acetic and lactic acid which increases intestinal acidity and makes the environment less desirable for harmful bacteria. *B. bifidum* also lowers pathogenic population by competing with intestinal bacteria and yeasts.¹⁵

Probiotics has to be taken with food to dilute stomach acids for them to survive long enough to reach the intestines. Probiotics should be taken two hours after antibiotics. When antibiotic treatment has been completed, double or triple the probiotic supplements for about tendays or two weeks.¹⁵ The only side effects observed of probiotics affect immuno compromised patients, who experiences some rare infections such as lactobacillaemia, infectious endocarditis, liver abscess, and fungaemia. With few side effects and empirical evidence showing effectiveness in treating recurrent VVC, probiotics seem like a good long term prospect for propylactic therapy, but more studies are needed to show its effectiveness. But for now, it can be safe to use for patients who are contraindicated and cannot tolerate antifungal’s adverse effects.²

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Conflict of interest

Author declares that there is no conflict of interest.

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