What is the best way to treat tinea cruris?

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EVIDENCE-BASED ANSWER

After clinical diagnosis and microscopic confirmation, tinea cruris is best treated with a topical allylamine or an azole antifungal (strength of recommendation: **A**, based on multiple randomized controlled trials [RCTs]). Differences in current comparison data are insufficient to stratify the 2 groups of topical antifungals. Determining which group to use depends on patient compliance, medication accessibility, and cost. The fungicidal allylamines (naftifine and terbinafine) and butenafine (allylamine derivative) are a more costly group of topical tinea treatments, yet they are more convenient as they allow for a shorter duration of treatment compared with fungistatic azoles (clotrimazole, econazole, ketoconazole, oxiconazole, miconazole, and sulconazole).

CLINICAL COMMENTARY

Choice of treatment should reflect cost and convenience to the patient

This review illustrates that the "best way" to treat a problem can have more to do with the needs of a given patient than intrinsic differences between treatments. All reviewed treatments were roughly therapeutically equivalent and equally safe. This leaves the choice of treatment to reflect the importance of cost and convenience to the patient. If cost is an issue for the patient, the frugal way to treat tinea cruris is to have the patient go to the vaginitis treatment section of the pharmacy and pick up a 15-g tube of miconazole or clotrimazole cream for $7 to $10. Terbinafine cream or spray costs $10 to $13 over the counter, but it reduces the onus of compliance to once-a-day for 1 week. If terbinafine 1% solution is preferred, a 30-mL bottle costs $77. Most of the time, I let the patient make their own choice.

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Evidence summary

Tinea cruris ("jock itch") is a superficial dermatophyte infection of the groin and surrounding skin. Obese adult men are affected more than women, and it is rarely seen in children. Because excessive perspiration is the most common predisposing factor, patient education on proper hygiene makes intuitive sense for successful treatment, yet it has not been studied.[1] *Trichophyton rubrum* is the most common source of tinea cruris, as well as tinea corporis ("ringworm"), in the United States.[2] Most studies involving patients with tinea cruris combine data with tinea corporis.

Although more than 25 RCTs document the safety and efficacy of antifungal treatments, few head-to-head trials are available. Several topical preparations are approved for the treatment of tinea cruris. Selection should be based on patient compliance (duration of treatment), overall cost, and tolerability. The 2 main classes of antifungals are allylamines and azoles.

Allylamines. Allylamines offer a shorter duration of therapy, lower relapse rates, and work independent of the cytochrome P450 system. Multiple RCTs have documented the efficacy and safety of the 2 available allylamine antifungals, terbinafine and naftifine, when compared with placebo and various azoles.

Terbinafine is available in several 1% formulations (emulsion-gel, cream, and solution/spray), all studied and dosed once daily for 1 week. One placebo controlled

trial showed the 1% emulsion-gel version (Lamisil) was effective in 89% of the study population vs 23% of the placebo group (NNT=1.5); it was particularly suitable on hairy skin. Seven weeks post-treatment, 84% of the intent-to-treat population of the Lamisil group remained mycologically negative.[3] Data combined from 2 other RCTs yielded 83% efficacy 3 weeks post-treatment when 66 patients were treated with terbinafine 1% cream, compared with 12% efficacy for 73 patients using the vehicle cream (NNT=1.4).[4] Another placebo-controlled study of 66 patients demonstrated 100% microscopic cure of terbinafine 1% solution by week 2 and maintaining 90% cure at 4 weeks.[5]

In a multicenter, double-blind RCT funded by the manufacturers of terbinafine, bifonazole 1% cream for 3 weeks was compared with terbinafine 1% cream used daily for 1 week (followed by 2 weeks of its vehicle cream). Mycological and clinical cure rates were greater than 95% in both groups at 3 weeks. At the 8-week follow-up, no statistically significant differences were seen in KOH positivity rates (20.24% of patients in the bifonazole-treated group were KOH-positive vs 11.76% in the terbinafine group). Symptom relapse rates at 8 weeks were not available.[6]

In a 4-week study involving 104 patients, naftifine 1% cream (Naftin) was compared with econazole 1% cream (Spectazole) (both applied twice daily). At the end of the study, naftifine 1% cream had a higher (but not statistically significant) mycological and clinical cure rate of 78% compared with 68% with econazole 1% cream.[7] Similar results (79% mycological cure) were seen in a placebo-controlled trial with 70 patients using once daily naftifine 1% cream after 2 weeks of treatment (NNT=2).[8]

Butenafine (Mentax), a benzylamine antifungal, was 88% to 93% mycologically effective in a noncomparative study, when used twice daily for 2 weeks.[9] Similar results were found in a study of 76 patients with tinea cruris; after 2 weeks of daily application, 78% (modified intent-to-treat group) were mycologically cured. Mycological cure plus "cleared" or "excellent" clinical evaluation remained for 73% at day 42 vs 5% of the placebo group (NNT=1.47).[10]

Azoles. Azoles are less expensive than allylamines, but require longer treatment periods, theoretically compromising patient adherence to therapy. One of the more popular azoles is clotrimazole (Lotrimin, Mycelex), one of the oldest antifungal treatments. One RCT compared cure rates for 139 patients for clotrimazole 1% cream compared with ciclopirox olamine 1% cream when both were applied twice daily for 28 days. By the end of the 4-week period, 69% of the clotrimazole group was clinically and mycologically cured compared with 64% of the ciclopirox group.[11]

Miconazole 2% cream (Micatin, Monistat) (used twice daily for 2 weeks by inmates in a Florida prison) demonstrated 75.5% clinical clearing (against tinea cruris, pedis, or corporis, or *Candida* cutaneous infections) when compared with placebo (NNT=1.57). Of the 99 patients evaluated, 48 were diagnosed with tinea cruris; however, results were not broken down into diagnostic category. The length of follow-up for these patients was not disclosed.[12]

Alternative therapy. Ajoene 0.6% gel (isolated from garlic), was as effective as terbinafine 1% cream (both applied twice daily for 2 weeks) in a RCT of 60 Venezuelan Army soldiers.[13] Sixty days after treatment, 73% of the Ajoene-treated patients and 71% in the terbinafine group were asymptomatic. An open-pilot study of 14 patients with tinea cruris demonstrated 71% mycological cure with a honey, olive oil, and beeswax (1:1:1) mixture, applied 3 times daily up to 3 weeks, likely due to honey's inhibitory effect on fungus and beeswax's anti-inflammatory properties.[14]

Recommendations from others

The Sanford Guide to Antimicrobial Therapy (2005) recommends topical butenafine and terbinafine as primary agents of choice for tinea cruris due to their fungicidal activity.[15] The American Academy of Family Physicians recommends any of the topical antifungal treatments as first-line

FAST TRACK

Use of an allylamine or azole antifungal depends on patient compliance and cost—allylamines are more costly but allow for shorter treatments

treatment for tinea cruris.[16] A systematic review on tinea pedis topical therapy acknowledges the higher cure rates by allylamines, compared with azoles, but concludes that azoles remain the most cost-effective in the treatment of tinea pedis.[17] No recent guidelines from the American Academy of Dermatology are available.

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Upper endoscopy is recommended for elderly patients with alarm symptoms, new-onset GERD, or longstanding disease

abdomen), of which GERD is a subset.[6] The guidelines recommend gastroenterology consultation or upper endoscopy to rule out neoplastic or pre-neoplastic lesions if alarm symptoms (**TABLE**) suggesting complicated GERD are present.[7]

The Institute for Clinical Systems Improvement guidelines on dyspepsia and GERD recommend that all patients aged ≥50 years with symptoms of uncomplicated dyspepsia undergo upper endoscopy non-urgently because of the increased incidence of peptic ulcer disease, pre-neoplastic lesions, malignancy, and increased morbidity out of proportion to symptoms that are more common in an older patient population. The guidelines also recommend endoscopy for patients aged ≥50 years with uncomplicated GERD and the presence of symptoms for greater than 10 years because of the increased risk of pre-neoplastic and neoplastic lesions, including Barrett's esophagus.[8]

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