Scabies on the Web?

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Sir,

Using the Internet is not without risk. Depression and sexually transmitted diseases have recently been reported in connection with the Web (1, 2).

A 32-year-old woman with no significant medical record presented with a month-old history of generalized itching. She had been treated with several symptomatic drugs without relief. Her itching was severe, worsening at night and after bathing and physical exercise. Her sister had also begun to scratch.

On examination, she exhibited papules around the axillae in the periareolar and periumbilical regions and widespread excoriations secondary to scratching. The pathognomonic scabies burrows were not detectable on the wrists or on the web-spaces of the fingers. Scabies was nonetheless diagnosed by microscopic identification of the mites and eggs. Benzyl benzoate 25% lotion was used and her symptoms rapidly abated.

If the story is trivial, by no means was the fomite so.

For about one year, the patient had chatted repeatedly via the Internet with a soldier in the United States military stationed in Kuwait. Two months before the infestation, the soldier had sent her a sweater by airmail and symptoms started approximately 1 month after she had begun to wear it.

Still via the Internet, the soldier promptly revealed how he had been tormented for many months by a recalcitrant itching dermatitis. Military physicians had diagnosed urticaria and had treated him with symptomatic drugs, but to no avail.

A mite, *Sarcoptes scabiei*, is an obligate human parasite that burrows within the epidermis and causes scabies. The mite is usually transmitted via close physical contact, such as sexual intercourse, prolonged handholding or the sharing of a bed. Indirect transmittal through clothing or bedding is unlikely, but it may occur. Mites collected from bed linen slept on by infected patients have been shown to penetrate a new host already after just 96 hours (3). Live scabies mites have been recovered from clothes of scabies patients and in dust from infested homes (4).

Although we cannot prove that our patient was scabies infested via her distant boyfriend's sweater, our story suggests that the Internet spreads not just informatic viruses all over the world, but parasites too!

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Kerion due to *Trichophyton mentagrophytes*: Responsiveness to Fluconazole versus Terbinafine in a Child

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Sir,

Trichophyton (T.) mentagrophytes is a worldwide, zoophilic infective agent of tinea capitis in children (1, 2). There are few reports on the treatment of *T. mentagrophytes* in children beyond griseofulvin, and virtually none on the treatment of kerion due to this organism (1–3). This may be because in the USA and Germany the newer antimycotics, such as terbinafine, have not yet been approved for use in paediatric dermatophyte infection. Fluconazole, however, can be given to children older than 6 months according to the FDA in the USA, or older than one year in Germany (4).

CASE REPORT

An 8-year-old boy (25 kg body weight) fell ill in the context of an outbreak of mycotic infections in one household with two pets (guinea pigs). Both parents were diagnosed as having tinea corporis due to *T. mentagrophytes* and were treated with oral itraconazole for 4 weeks. Concomitantly, the pets were treated locally by a veterinarian.

Three weeks later, the boy developed a scaling, erythematous lesion of the scalp. Since itraconazole has not been approved for paediatric use in Germany, he was treated instead with oral fluconazole (Diflucan®) 2 mg/kg per day for 2 weeks by the family doctor. Kerion developed during this therapy. The fluconazole dosage was therefore increased to 8 mg/kg per day for another 8 days. Despite this, the hairless area continued to enlarge, and new erythematous and scaling lesions developed on the neck, as did an adenopathy. At this point the boy was admitted to our hospital.

On admission, an intensely erythematous, hairless area measuring 4×10 cm was noted in the mid and left temporal

region. It was covered with yellowish crusts, and pus was seen oozing from the hair follicles. Individual broken hairs could be pulled out easily. Additionally, erythematous, scaling lesions were seen on the neck and cheek, and scaling papules on the shoulders, arms and legs.

No fluorescence was seen under Wood's light. A 10% KOH preparation showed ectothrix fungi with mycelia, filaments of hyphae within the hair shaft and large microconidia. Culture from scalp and body lesions at 25°C on Sabouraud's agar containing gentamycin, chloramphenicol and cycloheximide yielded the retarded growth of whitish, powdery colonies which appeared cotton-like and denticulate. Microscopic examination revealed grape-like microconidia, cigar-shaped macroconidia and spiral hyphae. The isolated strain was identified as *T. mentagrophytes* (formerly *T. mentagrophytes* var. *granulosum* (5)).

Oral treatment was changed to terbinafine 5 mg/kg per day. In addition, local treatment was started, including clotrimazole plus ciclopiroxolamin cream under warm wet dressings for 2 h per day. After 3 days, clinical signs of inflammation in the kerion regressed, and further spread of the lesions was arrested. After one week, the lesions on the arms and legs had disappeared. Terbinafine therapy was continued for a maximum of 2 months. Blood sedimentation rate, white and red blood count, C reactive protein, as well as routine hepatic and renal parameters, were within normal range throughout treatment. Cultures were negative after 3 weeks and on repeated examinations. After 3 months, hair regrowth was complete.

DISCUSSION

Few data are available about the efficacy of fluconazole in the treatment of non-inflammatory tinea capitis in children, even less in the case of kerion (6, 7). *T. mentagrophytes* was found to be the causative agent in none of these studies. Tinea capitis due to *T. mentagrophytes* treated with terbinafine has been reported in a few patients from Central Europe or Third World countries (2, 8). The drug was given for 2 to 12 weeks continuously or intermittently, with 1 out of 3 children not cured with terbinafine in one report (9).

The choice of dose for fluconazole in the present case must be seen against a background of conflicting *in vitro* data. While on the one hand the high minimal inhibitory concentration against *T. mentagrophytes* suggests higher doses, on the other hand the drug accumulates in scalp hair and sweat (10). The initial dose of 2 mg/kg by the family practitioner was low compared to those given by the earlier investigators (6). It was high, however, compared to the total dose during intermittent dosing applied by others (11).

We selected terbinafine as an alternative to fluconazole, since it is a lipophilic substance with favourable minimal inhibitory concentration and because of its high affinity to keratin, allowing for rapid penetration into the hair follicle (12, 13). As with fluconazole, once the administration of terbinafine has been stopped, fungicidal drug levels persist in the hair for several weeks (12). The high concentrations of the drug in the sebum might make it suitable for treatment of endothrix and ectothrix mycoses such as *T. mentagrophytes* (12).

Because of the rapid progression, we decided to add local treatment, as previously recommended (14). With the immediate improvement on this regimen, it remains unclear whether high-dose fluconazole or terbinafine together with local therapy worked in conjunction to induce rapid healing. A synergistic effect of fluconazole and terbinafine is also possible, as reported previously (15). In conclusion, this case adds to the evidence that terbinafine is useful in the treatment of *T. mentagrophytes* and that it should be available for use in children.

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