

## CLINICAL STUDY

**Trichophyton mentagrophytes var. quinckeanum as a cause of zoophilic dermatomycosis in a human family**

Bilek J, Baranova Z, Kozak M, Fialkovicova M, Weissova T, Sesztakova E

*1st Department of Internal Medicine, University of Veterinary Medicine, Kosice, Slovakia. [bilek@uvm.sk](mailto:bilek@uvm.sk)***Abstract**

*Trichophyton mentagrophytes* var. *quinckeanum* is a zoophilic form of *T. mentagrophytes*. It induces murine favus in the form of coarse yellow scutules bigger than 1 cm in diameter. In March, 2002, a 52-year-old male patient was examined at the Dermatology Clinic of the Medical Faculty in Košice with a 1-week anamnesis of a solitary, oval, annular focus, 3 cm in diameter, on the right side of his face, located subauricularly. When providing the history, he has mentioned that his 12-year-old son has a „similar skin disease“. Clinical examination of the son showed similar annular oval lesion, size about 2x3 cm, located in the right chest region. Since January 2002 the family has kept a guinea pig. They have obtained it through a mediator from the Košice ZOO. The material for mycological examination was taken from peripheral parts of the foci or desquamating lesions from the father, son, and the guinea pig. Scales were examined microscopically in 20 % KOH solution with Parker's blue-black ink. The findings proved the presence of septal hyphae and formation of arthrospores. Thus, dermatomycosis was confirmed in the father and son, caused by *T. mentagrophytes* var. *quinckeanum*, the source of which was a pet guinea pig (Fig. 3, Ref. 17).

**Key words:** zoophilic dermatomycosis, guinea pig, etiological agents, mycological examination.

Despite preventive and well-done hygiene measures, no decrease in animal infections caused by filamentous fungi has been observed. The opposite seems to be true. Reports on their incidence can be continuously found in literature (Ollhoff et al, 1997; Hullinger et al, 1999; Baranová, 2000). Romano et al (1997) examined 173 stray cats for dermatophytes and none of them showed signs of mycotic disease. *M. canis* was recovered from 82 cats, *T. mentagrophytes* from three, *T. terrestre* from two and *M. gypseum* from one cat. According to the authors, stray cats are the principal reservoir of *M. canis* and a source of infection of humans.

Mycotic diseases in animals are either manifested by typical clinical symptoms or persist asymptotically without evident clinical signs. Animal mycoses that are too discrete or recognized too late and untreated can lead to the development of infections in humans (Brasch et al, 1998; Huovinen et al, 1998; Jury et al, 1999; Patel and Mills, 2000; Baranová and Martinásková, 2001; Chiller et al, 2002). Moreover, handling both farm and companion animals may expose humans to the risk of infection.

The most frequent carriers of zoophilic species are domestic animals, particularly the long-haired species (dogs, cats, guinea pigs, hamsters, and others), but also stray animals. Mycosis can

be transmitted also by contaminated materials (straw, feed, and others) or via soil. The most endangered group is children due to their close emotional relationship and close contact with animals.

**Materials and methods**

The material for mycological examination was taken from peripheral parts of the foci or desquamating lesions from the father and son (Fig. 1).

In March, 2002, a 52-year-old male patient was examined at the Dermatology Clinic of the Medical Faculty of UPJŠ in Košice

---

1st Department of Internal Medicine, University of Veterinary Medicine, Kosice, Slovakia, and Skin Clinic, Faculty of Medicine, Safarikians University, Kosice, Slovakia

**Address for correspondence:** J. Bilek, MVD, PhD, The 1st Dept of Internal Medicine, University of Veterinary Medicine, Komenského 73, SK-041 81 Kosice, Slovakia.

Phone: +421.55.6337507, Fax: +421.55.6323666

This study was supported by the Research Grant VEGA of the Ministry of Education of Slovak Republic No 1/2400/05.



Fig. 1. A solitary, oval, annular focus, 3 cm in diameter, on right side of mans face, located subauricularly, and at his son focus located on the right side of a thorax. The peropheral zone is more erythematous and is infiltrated with minute papules even vesicles.

with a 1-week anamnesis of a solitary, oval, annular focus, 3 cm in diameter, on the right side of his face, located subauricularly. The peripheral zone of the focus was erythematous, infiltrated with minute papules even vesicles. The centre of the lesion was light red and desquamating. Subjective sensations were limited to slight pruritus. The man had treated himself by applying Framycain ointment (bacitracin and neomycin) and zinc paste without any positive effect. When providing the history, he has mentioned that his 12-year-old son has a “similar skin disease”. Clinical examination of the son showed similar annular oval lesion, of size about 2x3 cm, located in the right chest region. The man’s wife was clinically healthy. Since January 2002 the family has kept a guinea pig. They have obtained it through a mediator from the Košice ZOO.

## Results

Veterinary examination of the guinea pig showed a desquamating focus free of inflammatory reaction, consisting of a deposit of dry, white scales on the central to lateral side of abdomen (Fig. 2). The hair in the affected region was shortened (to about 1 cm).

Scales were examined microscopically in 20 % KOH solution with Parker’s blue-black ink. The findings proved the presence of septal hyphae and formation of arthrospores. Culture examination at the State Veterinary and Food Institute in Bratislava, 1 st Internal Clinic of the UVM in Košice and Faculty of the Veterinary Medicine AU of Lublin (Poland) recovered *Trichophyton mentagrophytes* from all examined samples (Fig. 3).

The father was administered an antimycotic treatment – terbinafin at a daily dose of 250 mg for 2 weeks in combination with locally applied bifonazol ointment 2 times daily. The son was treated with bifonazol ointment 2 times daily for two weeks. One week after the end of treatment were lesions in both patients completely healed and only reparative desquamation without inflammatory changes could be observed. On the request of parents, the guinea pig was treated locally with cyclopiroxolamine

and ketokonazole shampoo. After one-month treatment, the squamous lesions receded and the hair began to adjust to the original length. The guinea pig was preventively washed with ketonazole shampoo once a week for one more month.

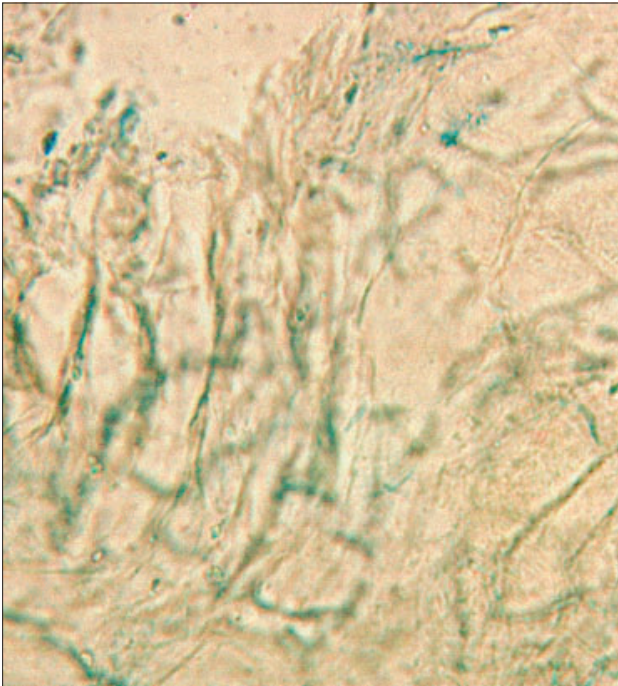
*Trichophyton mentagrophytes* var. *quinckeanum* parasites on the hair in endothrix or ectothrix form very rarely. Infected human hairs do not fluorescence under a Wood lamp. Experimental lesions in guinea pigs can occasionally exhibit slight yellow fluorescence. *T. mentagrophytes* var. *quinckeanum* induces murine favus in the form of coarse yellow scutules bigger than 1 cm in diameter.

## Discussion

It is difficult to determine the geographic distribution of this dermatophyte, it can occur worldwide. In children, mycosis appears most frequently on the hair-covered part of the head. One of the zoophilic species that frequently affects children’s popu-



Fig. 2. A desquamating focus in a guinea pig free of inflammatory reaction, consisting only of a deposit of small, dry, white scales.



**Fig. 3. Cultural examination proved the presence of septal hyphae and formation of arthrospores.**

lation is *Microsporum canis*. In Italy this species caused 82.7 % of capillitium cases while *Trichophyton mentagrophytes* was responsible for 13.7 % of cases (Aste et al, 1997). In Poland, *T. mentagrophytes* was the causative agent of mycosis in 33 % out of 3550 examined human patients, most of them children, *T. rubrum* in 30 %, and *Microsporum canis* in 11 % of cases (Kaszuba et al, 1998). Fortuno et al (1997) obtained 4004 samples from 3934 patients and isolated 543 dermatophyte species in the following percentage proportions: *Microsporus canis* (44 %), *T. mentagrophytes* (31.4 %), *T. rubrum* (18.6 %), *Epidermophyton floccosum* (2.6 %) *Microsporum gypseum* (1.4 %), *T. tonsurans* (0.7 %), *T. verrucosum* (0.7 %), *T. violaceum* (0.2 %), and *Microsporum audouinii* (0.2 %). Greek authors Maraki and Tselentis (1998) diagnosed dermatomycosis in 327 skin patients out of 1361 examined (24 %). The most frequently found isolates were anthropophilic *T. rubrum* (44.4 %), *M. canis* (25 %), *T. mentagrophytes* var. *interdigitale* (14.4 %), and *E. floccosum* (7.6 %). Less frequent were *T. mentagrophytes* (3.4 %), *T. violaceum* (3.1 %), *T. verrucosum* (1.8 %), and *M. gypseum* (0.3 %). In comparison, reports from Northern America show that Trichophyton tonsurans is the most frequent dermatophyte in humans (44.9 %). It is followed by *T. rubrum* (41.3 %), *T. mentagrophytes* (8.5 %), *M. canis* (3.3 %), and *E. floccosum* (1.1 %).

In Palestine the most frequent causal agents of human dermatomycosis are the anthropophilic species *T. violaceum* (82.7 %) and *M. canis* (16 %) (Alishtayeh et al, 1998). In Nigeria (Okafor and Agbugbaeruleke 1998), children's mycosis is most frequently caused by *T. mentagrophytes* (19.4 %), *T. tonsurans* (12.3 %), *M. audouinii* (7.7 %), and *M. gypseum* (2 %). Re-

ported were cases where several members of one family were affected by a zoophilic dermatophyte species (Czaika et al, 1999). We present a similar case of mycotic disease in father and his son, caused by *T. mentagrophytes* var. *quinckeanum*, the source of which was a pet guinea pig.

## References

- Ali-Shtayeh MS, Arda HM, Abu-Ghdeib SI.** Epidemiological study of tinea capitis in schoolchildren in the Nablus area (West Bank). *Mycoses* 1998; 41: 243—248.
- Aste N, Pau M, Biggio P.** Tinea capitis in children in the district of Cagliari, Italy. *Mycoses* 1997; 40: 231—233.
- Baranová Z.** Two cases of the Tinea capitis (kerion Celsi) in the children and therapy with itraconazol. *Čes-Slov Pediat* 2000; 55: 568—573.
- Baranová Z, Martinásková K.** Tinea capitis induced by *Trichophyton mentagrophytes* var. *granulosum* (In Slovak). *Derma of the third Millennium* 2001; 1: 9—10.
- Brasch J, Olster-Holst R, Cristophers E.** Tinea durch *Trichophyton equinum*. *Hautarzt* 1998; 49 (5): 397—402.
- Chiller K, Resneck J, Chiller T, Aly R.** An outbreak of *Microsporum canis* in the community demonstrating rapid transmission. *Exogenous Dermatology* 2002; 1: 18—22.
- Czaika V, Tietz HJ, Schulze P, Sterry W.** Dermatomykose durch *Trichophyton verrucosum* bei Mutter und Kind. *Hautarzt* 1999; 49: 576—580.
- Fortuno B, Torres L, Simal E, Seoane A, Uriel JA, Santacruz C.** Dermatophytes isolated in our clinics. 5-year-study in Zaragoza. *Enferm Infect Microbiol Clin* 1997; 15: 536—539.
- Hullinger GA, Cole Jr, Elvinger F, Stewart RL.** Dermatophytosis in show lambs in the United States *Vet Derm* 1999; 10: 73—76.
- Huovinen S, Tunnela E, Huovinen P, Kuijpers A, Suhonen R.** Human onychomycosis caused by *Trichophyton equinum* transmitted from a racehorse. *Brit J Dermatol* 1998; 138: 1082—1084.
- Jury CS, Lucke TW, Bilsland D.** *Trichophyton erinacei*: an unusual cause of kerion. *Brit J Derm* 1999; 141: 606—607.
- Kaszuba A, Seneczko F, Lipowczan G, Bienias L, Kostusiak M, Lupa S.** Fungal flora in human skin and skin appendages infections in the region of Lodz, Poland. *Mycoses* 1998; 41: 249—253.
- Maraki S, Tselentis Y.** Dermatophytoses in Crete, Greece, between 1992 and 1996. *Mycoses* 1998; 41: 175—178.
- Okafor JI, Agbugbaeruleke.** Dermatophytoses among school children in Aba, Abia State-Nigeria and some physiological studies on the isolated etiologic agents. *J Commun Dis* 1998; 30: 44—49.
- Ollhoff RD, Siesenop U, Bohm KH.** The pig as dead-end host of *Trichophyton verrucosum*? A case report. *Tierarztl Prax* 1997; 25: 353—355.
- Patel Nad, Mils GK, Mills CM.** Tinea faciei due to *Microsporum canis* abscess formation. *Clin Exp Dermatol* 2000; 25: 608—610.
- Romano C, Valenti L, Barbara R.** Dermatophytes isolated from asymptomatic stray cats. *Mycoses* 1997; 40: 471—472.

Received September 26, 2006.

Accepted November 15, 2005