

Dermatophytosis caused by *Trichophyton mentagrophytes* var. *erinacei* in a dog: a case report

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ABSTRACT: *Trichophyton mentagrophytes* var. *erinacei* is rarely isolated from dogs with dermatophytosis. It is a zoophilic dermatophyte transmitted by hedgehogs and, in contrast to other dermatophyte species, is characterised by a severe suppurative and inflammatory response known as kerion. A 5-year-old male mongrel dog was referred to the Veterinary Teaching Hospital with a 2-week history of a localised pruritic and suppurative alopecic lesion on the scrotum. Routine blood tests, peripheral blood smears, multiple skin scrapings and bacteriological culture did not reveal any abnormalities. However, *Trichophyton mentagrophytes* var. *erinacei* was isolated from a fungal culture. The presence of hedgehogs around the daily walking areas of the dog suggested the possibility of direct or indirect contact of the dog with hedgehogs. Fungicidal treatment was implemented with oral itraconazole (5 mg/kg once daily) and topical application of clotrimazole (twice daily) for a month. The scrotal lesion healed completely and hair grew back within a month. No recurrence occurred during a 4 month follow-up. *T. mentagrophytes* var. *erinacei* should be included in the differential diagnosis of suppurative scrotal skin lesions of dogs, which have come into possible contact with hedgehogs.

Keywords: dog; *Trichophyton mentagrophytes* var. *erinacei*; hedgehog; kerion

A wide variety of dermatophyte species has been identified in dogs with dermatophytosis (Bernardo et al. 2005). The species *Trichophyton mentagrophytes* var. *erinacei* is, however, rarely responsible for dermatophytosis in dogs (Cerundolo and Maiolino 2002; Catherine 2006). *T. mentagrophytes* var. *erinacei* typically causes suppurative inflammation with very itchy blisters followed by scaly, focal, or multifocal circular and painful lesions with hair loss on the skin (Cerundolo and Maiolino 2002; Catherine 2006). This dermatophyte is part of the natural skin flora of hedgehogs where it asymptotically resides on the skin and quills (Connole 1968; Hata et al. 2000; Chermette et al. 2008). Several reports have identified hedgehogs as a potential risk for the transmission of this species to human and dogs through direct or indirect contact (Hata et al. 2000; Catherine 2006; Menelaos 2006; Hsieh et al. 2010). This case report demonstrates that *T. mentagrophytes* var. *erinacei* is one of the causes of suppurative lesions on the scrotal skin in dogs and is likely to be transferred by hedgehogs.

Case description

A 5-year-old male mongrel dog was referred to the Small Animal Veterinary Teaching Hospital with a 2-week history of a pruritic and painful scrotal lesion. Dermatological examination revealed a 4.5–3.6 cm in size, well-circumscribed circular, itchy and suppurative alopecic lesion on the caudoventral surface of the scrotum (Figure 1). No other health problems were reported in the patient's history. Differential diagnosis included parasitic infestations (*Sarcoptes* spp. and *Demodex* spp.), dermatophytosis, bacterial pyoderma and least likely, pemphigus complex and rickettsial infections. Routine blood work and peripheral blood smears were unremarkable. Parasitological examination of the deeply scraped skin samples was negative. Although cytological examinations of impression smears stained with diff-quick (Hemadiff, Istanbul, Turkey) revealed numerous neutrophils and coccoid bacteria, bacteriological culture was negative for bacterial growth. However, *T. mentagrophytes*



Figure 1. A well-circumscribed, painful, circular and suppurative skin lesion on the scrotum with hair loss

var. *erinacei* was isolated from plucked hair samples. Colonies of *T. mentagrophytes* var. *erinacei* on Sabouraud dextrose agar (Oxoid, Hampshire, England) had a white and downy-to-cottony surface with a lemon-yellow reverse pigment. Microscopic morphology of *T. mentagrophytes* var. *erinacei* showed round and elongated microconidia attached to the sides of hyphae and septate macroconidia. On further questioning, we learned of the presence of hedgehogs around the walking areas of the dog. The dog was treated with oral itraconazole (Funit; Nobel, Istanbul, Turkey) at 5 mg/kg once daily and a topical application of clotrimazole (Canestan; Bayer, Istanbul, Turkey) twice daily for a month. The scrotal lesion healed completely, and the hair grew back within a month (Figure 2). No recurrence occurred during a four month follow-up.

DISCUSSION AND CONCLUSIONS

The skin lesions and the clinical course of the disease usually vary according to the host and pathogenesis of the causative dermatophyte. Skin lesions in dogs with dermatophytosis are generally comprised of circular or irregular alopecic patches, erythemic plaques, scales and crust with variable degrees of inflammation (Pier et al. 1994; Catherine 2006; Pierard-Franchimont et al. 2008). Compared to other dermatophyte species, *T. mentagrophytes* var. *erinacei* causes well-circumscribed, severe suppurative inflammation with follicular pustules known as kerion (Arenas et al. 2006; Menelaos 2006; Nenoff et al. 2014; Sidwell et al. 2014). Kerion also resembles a suppurative, moist and painful boggy



Figure 2. Healing of the lesion within 19 days

lesion as the result of advanced disease caused by the dermatophyte organism (Miletta et al. 2014). In dogs, a retrospective study of *T. mentagrophytes* infection has been reported. In the study, it was shown that clinical signs of *T. mentagrophytes* infection might not be restricted to classical ringworm lesions, and is quite often characterised by a marked inflammatory response resulting in suppurative lesions (Padhyee and Ajello 1977; Cerundolo and Maiolino 2002). Clinical signs of *T. mentagrophytes* var. *erinacei* reported in the literature were remarkably similar to the ones observed in this case, especially with regard to kerion formation and the severe inflammatory lesion. Parasites such as *Sarcoptes* spp. and *Demodex* spp. may infest the scrotal skin (Pinter and Stritof 2004). *Sarcoptes* spp. cause pruritic papular erythema and crusts affecting other areas of the body as well. Papules, comedones and pustules with hyperpigmentation are characteristic as for canine demodicosis (Pinter and Stritof 2004). Negative findings in multiple skin scrapings and the unique characteristics of the lesion on the scrotum in this case eliminated the suspicion of demodicosis and sarcoptic mange. Although impression smears stained with diff-quick (Hemadiff, Istanbul, Turkey) revealed neutrophils and coccoid bacteria, a negative bacteriological culture also eliminated the possibility of bacterial pyoderma.

A number of studies have discussed the potential of hedgehogs of transmitting *T. mentagrophytes* var. *erinacei* to dogs and humans via direct or indirect infection (Quaife 1996; Menelaos 2006; Hsieh et al. 2010). Direct contact with hedgehogs or indirect infection resulting from exposure to an environment contaminated with recently-shed skin scales of hedgehogs and persisting fungal spores have both been reported

(Hata et al. 2000; Cerundolo and Maiolino 2002; Riley and Chomel 2005). The owner's information regarding the presence of hedgehogs around the walking areas of the dog led us to posit the possibility of either direct or indirect infection with *T. mentagrophytes* var. *erinacei* originating from hedgehogs. The presence of hedgehogs infected with *T. mentagrophytes* var. *erinacei* around the walking areas of dogs is an important risk factor contributing to the transmission of this infection to dogs and potentially to humans who come into contact with infected dogs and hedgehogs or contaminated objects. Systemic antifungals including itraconazole provide resolution of the fungal infection while topical antifungal treatments reduce the environmental contamination of the dermatophytes (Catherine 2006). We observed a remarkable improvement of the clinical signs in response to the treatment with itraconazole and clotrimazole.

In conclusion, *T. mentagrophytes* var. *erinacei* should be included in the differential diagnosis of suppurative scrotal skin lesions of dogs, which may have come into contact with hedgehogs. Further, veterinarians should be aware of the zoonotic potential of *T. mentagrophytes* var. *erinacei* infection.

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