

Scientific Report

First report of *Dermatophilus congolensis* dermatitis in dairy cows in Shiraz, southern Iran

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Summary

Skin lesions were found in two 3–4-year-old Holstein cows in a dairy farm in Shiraz. Lesions were distributed mostly around the neck, forelimbs, hindlimbs, and bilateral of midline portion and varied from nodule-like structure to patch with extensive accumulation of crust. Skin scraping samples were taken from each animal and direct smears were prepared, stained with Giemsa and observed under a light microscope. Some scabs were cultured and incubated both aerobically and anaerobically. Cultured smears were Gram stained and the morphology of isolates were studied. The diagnosis of dermatophilosis was made on the basis of clinical signs, skin lesions and morphological characteristics of the isolates. In this study, the infection could be related to insect population density during the outbreak and exposure to ticks which were observed in the animal environment. Rain scald in the region, especially in the late August and September could be a predisposing factor for flare-up of the infection. This is the first report of dermatophilosis in cattle in Shiraz, southern Iran.

Key words: Dermatophilosis, *Dermatophilus congolensis*, Skin lesions, Dairy cows

Introduction

Dermatophilosis is a chronic or acute exudative dermatitis caused by *Dermatophilus congolensis* (Kaminski and Suter, 1976; Howard, 1986; Harman *et al.*, 2001; Radostits *et al.*, 2007). The disease was first reported by Van-Saceghem (1915) in cattle in the Belgian Congo. Dermatophilosis affects a wide variety of animals and occasionally humans (Dean *et al.*, 1961; Larrasa *et al.*, 2004). The disease commonly affects cattle, sheep, goat, and domesticated equine and rarely, cats and dogs in many parts of the world, often creating economic problems (Stewart, 1972; Losos, 1986; Yager and Scott, 1993; Msami *et al.*, 2001). Animals of different ages and both sexes are susceptible to infection. Transmission of *D. congolensis* is through

direct contact with infected animals. Ticks, biting flies, and mosquitoes may also spread the infection (Howard, 1986; Zaria, 1993).

Dermatophilosis in cattle occurs as an exudative dermatitis with subsequent formation of scabs and crusts with matted hair at their bases. The crusts may become thickened and horny and project from the skin. The crusts will separate from the underlying skin during the healing process, leaving areas of alopecia (Howard, 1986). Animals with mild lesions may suffer little discomfort, but animals with severe lesions may suffer depression and anorexia with subsequent debility and death (Howard, 1986). The disease is commonly associated with moist climatic condition. The prevalence of the disease occurs during and immediately after the first rain (Hyslop, 1979). Only 1 or 2 animals are often affected

in a group, although a higher incidence may be noted. Survey of large numbers of cattle in Africa reported the prevalence rate of 15% which approach 100% in some herds at the time of peak seasonal prevalence (Radostits *et al.*, 2007). The disease impacts on cattle reproduction, milk and meat production and hide values (Samui and Hugh-Jones, 1990). Hyslop (1979) estimated the loss due to dermatophilosis in the northern state of Nigeria through hide damage, debility and death to be US \$ 30 million annually.

To the best of our knowledge this is the first report of dermatophilosis in cattle in Shiraz, southern Iran.

Case report

In September 2005, skin lesions were found in 2 out of 50 dairy cattle in a farm in Shiraz, southern Iran (29°50'N, 52°46'E and an altitude of 1630 m). The cows were 3–4-year-old and weighed 450 kg. The lesions were distributed mostly around the neck, shoulders, forelimbs, hindlimbs, and bilateral of midline portion. Lesions varied from nodule-like structure to patch with extensive accumulation of crust. Most of the lesions were 2-3 cm in diameter and varied in colour from cream to brown.

Physical examination of the two affected cows showed the heart rate of 112 and 104 beats/min, respiratory rate of 48 and 44 breaths/min, and rectal temperature of 39.5 and 39°C, respectively. For evaluation of the skin lesions which were suspected of being infested by ectoparasite, skin scrapings were dissolved in 5% potassium hydroxide and examined under light microscope but no mange or mite was seen.

The diagnosis was confirmed by skin scraping samples containing crust and purulent exudates. The samples were soaked in sterile distilled water and submitted to the veterinary diagnosis laboratory. Direct smears were prepared and stained with Giemsa and observed under light microscope. In addition, some scabs were cultured on sheep blood agar (7%) and incubated both aerobically and anaerobically at 37°C. After 48 h, cultures were Gram stained and the morphology of isolates were

studied. The long parallel chains and individual coccoid cells characteristic of *D. congolensis* were evident in huge numbers and based on Carter and Cole (1990) the isolates were *D. congolensis*. The infected cows were injected 1100 IU/kg procaine penicillin and 11 mg/kg streptomycin intramuscularly at 12-h intervals for 2 days (Roberts, 1967; Thornton and Willoughby, 1970). The vital signs returned to normal after a week and the skin scabs were separated from the skin.

Discussion

There has been limited research on *D. congolensis* in sheep and horse in Iran (Moradpoor, 1989; Kojouri and Mehri Ghah-Farrokhi, 1998; Hashemi-Tabar *et al.*, 2004). Our findings are in complete agreement with the results of above mentioned investigators in Iran. There are several predisposing factors for occurrence of dermatophilosis. In this regard the skin should be damaged by trauma, fly and/or tick bites (Zaria, 1993). Dairy cows could be predisposed to dermatophilosis due to insect population density during the outbreak in summer. Ticks are known to play a major epizootiological role in the transmission and spread of dermatophilosis (Zaria, 1993). The hard ticks *Amblyomma variegatum* and *Hyalomma* spp. and biting flies, mainly *Stomoxys* spp. and *Lyperosia* spp. have been specifically associated with transmission of the disease (Morrow and Compton, 1991; Lloyd and Walker, 1993). Further investigation revealed the existence of *Hyalomma* spp., *Dermacentor* spp. and stable flies in the dairy farm.

Rainfall in the region, especially in the late August and September could be another factor for flare-up of this infection. It is well documented that the incidence and severity of the disease are directly or indirectly related to high rainfall and humidity (Zaria, 1993). In addition, the cattle were extensively managed and grazed together. In infected or carrier animals, the zoospores are in an appropriate condition for transmission when the wet skin of susceptible animals comes into contact with them.

Dermatophilosis caused by *D.*

congolensis occurs worldwide, but more commonly in the tropical and subtropical areas (Samui and Hugh-Jones, 1990). The disease causes economic losses to the livestock keepers owing to the downgrading of the skins and lower milk and meat production (Msami *et al.*, 2001).

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