

Clinical Management of Dermatophilosis in a Jersey Crossbred Cow

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Abstract

A four years old crossbred Jersey cow was presented to the Large Animal Medicine Unit, Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal with a history of scaly lesions in both the hind limbs up to the stifle joint, on the udder and lower part of forelimbs since, 10 days and the animal had reduced feed intake and milk yield. On clinical examination, cow had normal rectal temperature (38.4°C), heart rate (78 bpm), respiratory rate (18 breaths per minute), icteric mucous membrane, weight-bearing lameness in both hind limbs along with matting of hairs and dermatitis. The skin scraping was subjected to direct microscopic examination which revealed hyphae, further the scab was made as smears stained with Geimsa which revealed multiple rows of septate filaments with numerous rows of spherical to ovoid cocci. Samples were submitted for culture. Based on microscopic examination, the case was diagnosed as dermatophilosis and treated with Inj. Streptopenicillin 5g IM, Inj. Chlorpheniramine maleate @0.5mg/kg body weight IM and Inj. Tribivet 10ml IM for one week and advised the owner to clean the area with 1% potassium permanganate and topical application of povidone iodine liquid (10%) in the morning and whitefield ointment in the evening. Since, dermatophilosis is having zoonotic importance, it was advised to handle the affected animals with gloves and thorough hand washing with an antibacterial soap was recommended after contact with infected animal.

Keywords: Cattle, Dermatophilosis, Strep-

topenicillin, Whitfield ointment

Dermatophilosis is an exudative, pustular dermatitis of cattle, sheep, goat, horses and also occurs in dogs, cat, wild mammals and occasionally humans. The disease is commonly called as mycotic dermatitis in sheep and cutaneous sporotrichosis in cattle (Constable *et al.*, 2007). Dermatophilosis is caused by the bacterium *Dermatophilus congolensis*, is a Gram positive, filamentous, branching actinobacterium with distinctive morphology. This organism is unusual because it produces motile coccoid zoospores about 1.5 µm in diameter. Mature filaments may be more than 5 µm in width and contain columns of zoospores which impart a 'tram-track' appearance to the filaments. Although skin infections caused by *D. Congolensis* occur worldwide, dermatophilosis is most prevalent in tropical and subtropical regions (Quinn *et al.*, 2011). Typically, infection gives rise to the formation of dense scabs on the skin. It causes severe economic losses to cattle farmers through inferior quality of hide, reduced milk production, weight loss, cost of treatment and culling of severely affected animals. Also, dermatophilosis is having zoonotic importance as reported by Maruthi *et al.* (2017), treatment of dermatophilosis have greater success when the disease is diagnosed and treated early (Dalis *et al.*, 2009).

Case History and Observations

A four years old crossbred Jersey cow was presented to the Large Animal Medicine Unit, Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal with the history of scaly lesions in both the hind limbs up to the stifle joint, udder and

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lower part of forelimbs in the past 10 days. The animal had reduced feed intake and reduced milk yield. On clinical examination, cow had normal rectal temperature (38.4°C), heart rate (78 bpm), respiratory rate (18 breaths per minute), icteric mucous membrane, weight-bearing lameness in hind limbs, matting of hairs (Fig.1) and dermatitis (Fig.2). The skin scraping was subjected to direct microscopic examination which revealed hyphae, further the scab was made as smears stained with Giemsa which revealed multiple rows of septate filaments with numerous rows of spherical to ovoid cocci. Based on microscopic examination, the case was diagnosed as dermatophilosis. Sterile samples of crusts and scabs were collected for culture isolation of dermatophytes and dermatophilosis (Sudhakar Reddy *et al.*, 2014). Direct microscopy examination of dung under Giemsa technique and culture of scab on blood agar plates to confirm the presence of Dermatophilosis (Jewaro Abdo *et al.*, 2013).

Treatment and Discussion

Microscopical examination of Giemsa stained smears revealed filamentous Gram positive *Dermatophilus congolensis* organisms with characteristic rail road track arrangement. On microbial culture a typical characteristic of hemolytic, dry, golden yellow colonies with 1 mm diameter on defibrinated sheep blood agar (Avanth Reddy *et al.*, 2020). The animal was treated with Inj. Streptopenicillin 5 gm IM, Inj. Chlorpheniramine maleate @ 0.5 mg/kg body weight IM and Inj. Tribivet 10 ml IM for one week and advised the owner to clean the area with 1% potassium permanganate and apply Drez 10% (povidone iodine) liquid in the morning and Whitfield ointment in the evening. The animal should recovery from clinical signs after treatment (Fig. 3 & Fig. 4)

Dermatophilosis in cattle is recorded from many countries of the world including India (Pal, 1989) and Ethiopia (Admasu and Alemu, 2011). *Dermatophilus congolensis* does not usually invade healthy skin. Trauma and persistent wetting predispose to skin invasion (Quinn *et al.*, 2011). Climate is the most important risk factor and in tropical

and subtropical regions; the disease has its highest incidence and severity during the humid, high-rainfall season (Constable *et al.*, 2007). In cattle, the lesion commences as a circumscribed moist patch, often with raised or matted hairs, giving a characteristic "Paintbrush" appearance. Discrete lesions occur in the initial stages which coalesce to form large areas of hyperkeratotic scab and crust (Saliman Aliye *et al.*, 2020). Lesions of dermatophilosis in cattle were found to occur on various parts of the body including back, groin, udder, chest, head region, neck and legs. The back of animals is also more exposed than the other parts of the body and subjected to excessive wetness and maceration by rain water (Dalis *et al.*, 2009). The treatment is imperative to prevent the further spread of disease (Jewaro Abdo *et al.*, 2013). Direct contact with active lesions of the infected animals and also mechanical transmission through instruments, bedding materials can occur. Arthropods such as ticks particularly *Amblyomma variegatum*, mites, flies and mosquitoes act as mechanical vectors in the transmission of disease between animals. The disease can occur as sporadic as well as in outbreak forms (Sharma *et al.*, 1992 and Pal and Rao., 1998). *Amblyomma variegatum* showed the highest and most significant correlations with the occurrence of dermatophilosis. Dermatophilosis has got public health importance as it affects humans, especially persons with challenged immunity may get the infection after direct contact with a diseased animal. In humans there will be development of painless pustules on the hands and arms which later break down and form shallow red ulcers that heal and leave scars. Hence, while handling the infected animals and dealing with the samples, one must wear the gloves, protective clothing and hands should be washed thoroughly after the work (Avanth Reddy *et al.*, 2020).

Conclusion

Treatment of dermatophilosis is a challenge for veterinarians to date. In the present case use of topical povidone iodine scrub with parenteral in. streptopenicillin 5 gm IM was



Fig.1. Matting of hairs and dermatitis in the hind limbs.

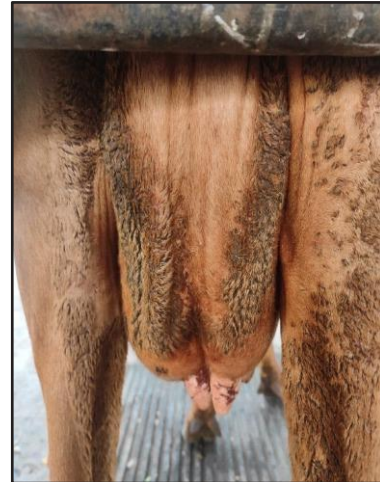


Fig.2. Alopecia between in the thigh region



Fig.3. Recovery of the animal after treatment. (Day- 15).



Fig.4. Complete recovery of the animal. (Day-20).

found to be effective. A lot of therapeutic interventions have been described inspite of it there are recurrences. A planned preventive measure should be adopted especially during the rainy season to prevent the movement of zoospores which are the main factor for the spread.

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