

Distribution of Lesions of Dermatophilosis in Cattle Sheep and Goats in Zaria and Jos, Nigeria

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Abstract: A study was undertaken to determine the distribution of lesions of dermatophilosis on the body of cattle, sheep and goats found around Zaria and Jos in Nigeria. One thousand nine hundred and twenty cattle, 1200 goats and 800 sheep were examined for skin lesions. Skin scab samples were collected from 211 cattle, 102 goats and 20 sheep that had dermatophilosis-like lesions and processed for bacteriology at the Diagnostic Microbiology Unit of the Veterinary Teaching Hospital, Ahmadu Bello University, Zaria. One hundred and sixty seven (8.7%) cattle, 61 (5.1%) goats and 12 (1.5%) sheep were positive for *Dermatophilus congolensis*. Lesions of dermatophilosis were found to occur on any part of the body on cattle, sheep and goats. However, the dorsal distribution predominated in cattle (32%) whereas, lesions around the head region occurred most frequently in goats (78.9%) and sheep (50.0%). The need to study the distribution of lesions of dermatophilosis on domestic ruminants of the various ecological zones where the disease is prevalent is emphasized.

Key words: Dermatophilosis lesions, distribution, cattle, sheep, goats, Jos and Zaria, Nigeria

INTRODUCTION

Dermatophilosis is a contagious zoonotic skin disease caused by a Gram-positive *Actinomycete*, *Dermatophilus congolensis*. It has a world-wide distribution affecting a variety of mammalian species including man. The disease had been reported to be more severe in ruminants and was of particular importance in the tropics and sub-tropics where it caused substantial economic losses (Zaria, 1993; Koney, 1996; Ambrose *et al.*, 1999; Makinde, 2004).

Since, it was first reported in Nigeria by Henderson (1927), it has increasingly become a disease of economic concern in the country. Lloyd (1976) reported that Nigeria was losing an estimated N10.33 million annually due to the effect of dermatophilosis on cattle hides. The losses of skin due to downgrading had been estimated to be approximately N19.1 million annually because of *Dermatophilus* infection in sheep and goats (Zaria, 1993). It is however, believed that the described losses due to dermatophilosis had been grossly underestimated (Abdullahi, 2001). *Dermatophilus* infection had been observed by various workers to assume epizootic form during the rainy season when relative humidity is also high (Macadam, 1964; Lloyd, 1971; Opong, 1996; Dalis *et al.*, 2004) and up to 20% of the infected animals

had also been observed to shed their lesions during the dry season (Macadam, 1970; Blancou, 1976). Lloyd (1971) reported a prevalence of 6.2% in cattle during the rainy season whereas, Bwangamoi (1976) found a prevalence of 16, 5.55 and 2.5% in cattle, goats and sheep, respectively.

Various forms of the disease are recognized in different species. The disease in cattle is characterized by acute or chronic, local or progressive and sometimes fatal exudative dermatitis, which starts as an erythema, progressing through serous exudation, drying to form characteristic matting of the hair (Abdullahi, 2001; Ali-Emmanuel *et al.*, 2003; Dalis *et al.*, 2007). In small ruminants lesions were reported to be confined to the head region especially on the ears and muzzle (Isitor *et al.*, 1987; Loria *et al.*, 2005).

The diagnosis of dermatophilosis is primarily based on clinical appearance of lesions on the affected animals and by demonstrating the causal organism in scabs from the lesions or in exudates beneath the scabs (Ambrose *et al.*, 1999), whereas confirmatory diagnosis was achieved by isolating the organism from clinical specimens (Haalstra, 1965).

Treatment of dermatophilosis could have greater success when the disease is diagnosed and treated early before lesion become chronic and generalized. Adequate knowledge of the clinical presentation and the distribution

of lesions of dermatophilosis on the body of animals in the various ecological zones where the disease is prevalent are important for quick presumptive diagnosis and treatment. This is critical particularly in most parts of Africa, where facilities for culture and isolation of the etiologic agent are not readily available.

This study describes, the distribution of lesions of dermatophilosis in cattle, sheep and goats in Zaria and Jos, Nigeria.

MATERIALS AND METHODS

A total of 3,920 animals, comprising 1,920 (49.0%) cattle, 1200 (30.6%) goats and 800 (20.4%) sheep from various parts of Jos and Zaria in Nigeria, were examined for lesions of dermatophilosis. Skin scabs from animals suspected to be suffering from the disease were collected in sterile containers. Date of sampling, species of animals and the site from which sample was collected from an animal were recorded. Only one sample was collected/animal and after sampling an animal, it was marked with an indelible ink on the left ear to avoid re-sampling of that same animal on subsequent visits. Properly labeled samples were taken to the microbiology unit of the Veterinary Teaching Hospital, Ahmadu Bello University, Zaria for analysis.

Direct examination of skin scabs using standard techniques were carried out involving a drop of sterile water placed on a clean glass slide with the suspected skin scab held with a pair of forceps and mixed with the sterile water to make a smear. The smear was allowed to dry in air, heat-fixed and Gram-stained. The slides were examined with high power ($\times 100$) objective of the microscope for the presence of *D. congolensis*. Isolation of *D. congolensis* was carried out using the method described by Van Breuseghem *et al.* (1976). Skin scabs were minced with a sterile scalpel blade and placed in a Bijou bottles. Five milliliters of sterile water was added to each of the specimens in the Bijou bottles. The bottles were closed loosely and incubated at 37°C in a candle jar for 30 min. One loopful from the surface fluid of the suspension from each of the bottles was inoculated onto blood agar plates. The inoculated plates were incubated at 37°C in a candle jar for 48 h. The plates were examined for colonies of *D. congolensis*. Smears were made from suspected colonies on each of the plates, Gram-stained and examined with the oil emersion objective of the microscope for morphology typical of *D. congolensis*.

RESULTS

In cattle, a variety of lesions were observed. Some of the cattle examined had few papules, together with some



Fig. 1: A cow with generalized dermatophilosis lesions



Fig. 2: A group of sheep showing dermatophilosis lesions (arrow)

hard, dry, crusty lesions which were confined to certain areas of the body particularly the back. In some few cases, the lesions were generalized and covered the whole body especially the back, neck, the perineal region, lower limbs, tail, muzzle and ears of the affected animals (Fig 1). In sheep, the clinical signs observed were slightly different from those observed in cattle. The affected sheep presented a normal appearance; scabby lesions were noted on the ears and muzzle (Fig. 2). In goats, the clinical presentation was similar to those observed in sheep except that the disease was found to be more severe than in sheep. Lesions were observed on the muzzle and ears, but in some cases lesions were found to extend to the neck, back and side of the animals (Fig. 3).



Fig. 3: A goat showing dermatophilosis lesions (arrow)

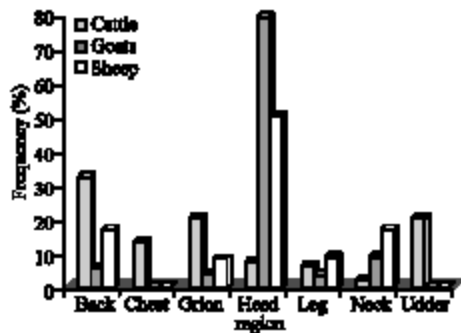


Fig. 4: Distribution of dermatophilosis lesion in cattle, goats and sheep

Out of the 106 *D. congolensis* positive cattle, 53 (32%) had lesions on the back; 34 (20.0%) had lesion on the groin; 33 (20.0%) on the udder; 23 (13.0%) on the chest; 11 (7.0%) on the head region; 3 (2.0%) on the neck and 10 (6.0%) had lesions on the legs (Fig. 4).

Out of 57 *D. congolensis*-positive goats, 45 (78.9%) had lesions around the head region; 5 (8.8%) on the neck; 3 (5.3%) on the back; 2 (3.5%) in the groin and 2 (3.5%) had lesions on the legs (Fig. 4).

Out of 12 *D. congolensis* positive sheep, 6 (50.0%) had lesions around the head region; 2 (16.7%) on the neck; 2 (16.7%) on the back; 1 (8.3%) on the groin and 1 (8.3%) had lesion on the legs (Fig. 4).

DISCUSSION

In the present study, 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. In some animals, generalized lesions were seen. The occurrence of more lesions on the back (32.0%), groin (20.0%), udder (20.0%) and less frequently on the chest (7.0%), legs (6.0%) and head region (2.0%) of cattle is consistent with the findings of Bida (1973), who reported

that the back lesions of dermatophilosis occurred more frequently than on the other parts of the body in cattle. This could be attributed to the activities of the ox-pecker bird (*Buphagus erythrorhynchus*), which alight more on the back of cattle (Bida and Dennis, 1967; Oduye, 1976). 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. It is conceivable that this part of the body would be more vulnerable to injuries by the ox-pecker bird and therefore predisposing the back to infection by *Dermatophilus congolensis*. The occurrence of more lesions (8.9 and 50%) around the head region in sheep and goats agrees with the report of Loria *et al.* (2005), which is usually attributed to their feeding habit. It is generally observed that when small ruminants use their lips to grasp feed materials they usually get injured by thorny bushes and hard shrubs particularly during the dry season when there is scarcity of feed. The wound so created could serve as a portal of entry for *D. congolensis*, leading to clinically severe disease observed in the following rainy season when dermatophilosis is more commonly found in animals. we conclude that lesions of dermatophilosis occur more on the back, groin and udder in cattle while the occurrence of *Dermatophilus* lesions around the head region are more prevalent in sheep and goats.

The study highlighted the need to prevent domestic ruminants from injuries in certain areas of the body (back, groin and udder in cattle and the head region in sheep and goats) as a way of reducing infection with *D. congolensis* and maintaining the quality of hides and skin.

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