Dermatophilosis in Cross-Bred Dairy Cattle in Debre Zeit, Ethiopia

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Abstract

In this paper, we present clinical and microbiological findings of dermatophilosis in five Holstein-Zebu cross-bred dairy cattle. All the cases occurred in wet (rainy) season, in adult dairy cows. Matted hair, raised, discrete or confluent scabs and crusted lesions were commonly observed on the skin of back and sides of the body. The ticks were observed on the body of all the five cattle. The presumptive clinical diagnosis was supported by direct microscopy of smears made from the active lesions and exudates and stained with Giemsa technique. Further, the isolation of Dermatophilus congolensis was done by culturing of the clinical materials on blood agar. Treatment was attempted with topical application of zinc sulphate and parenteral administration of combiotic (penicillin and streptomycin) for five consecutive days. The isolation of diseased cattle, proper disposal of crusts/scabs, control of ticks and other ectoparasites may help to reduce the incidence of disease. As D. cogenesis infection has been recorded in humans, care must be exercised in handling of the diseased animals to prevent transmission of infection to humans. The direct microscopy of clinical material by Giemsa technique can be recommended to confirm the diagnosis of dermatophilosis particularly in field or remote areas where the facilities for cultural isolation of microorganisms are not easily available.

Key words: Cross-bred cattle, Dermatophilosis, Giemsa technique, Tick, Wet season

Introduction

Dermatophilosis (Cutaneous streptothriicosis, Lumpy wool disease, Strawberry foot root) is an infectious, cosmopolitan, actinomycetic disease of a wide variety of animals and also man (Pal, 2007). It is an economically important disease of livestock caused by Dermatophilus congolensis which is a non-acid fast, Gram positive, pleomorphic, aerobic or facultative anaerobic actinomycete (Gordon, 1964; Pal, 2007). The hyphal forms of the organism produce motile zoospores which are released when scabs are exposed to moisture (Pal, 2007). Arthropods such as ticks of 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; Pal and Rao, 1998). Dermatophilosis is recognized as a zoonosis as humans can acquire infection by direct contact with the diseased animal (Dean et al, 1961; Hyslop, 1980; Pal, 1995). The rarity of published report on the disease from this area prompted us to present the clinical, microbiological and therapeutic observations on cutaneous dermatophilosis in adult cross-bred dairy cattle during wet season (mid-June to mid-September) from Debre Zeit, Ethiopia. In addition, the usefulness of Giemsa technique for direct microscopy of clinical material to confirm the diagnosis of dermatophilosis is also described.
Materials and Methods

The five clinically suspected dermatophilosis cattle brought to the Clinic of College of Veterinary Medicine and Agriculture constituted the material for this investigation. The age, sex and breed of each case were recorded in the card. The risk factors such as presence of ectoparasite, trauma to the skin, season etc., were also taken into account. The clinical materials were collected from the scab or exudate of each cattle to prepare the smears for direct microscopy by Giemsa technique and also to culture on blood agar plates to confirm the diagnosis. All the affected animals were treated with topical drugs (0.5% Zinc Sulphate) and with parenteral administration of combiotic (containing penicillin and streptomycin) at the dosage rate of 1 ml / 20 Kg body weight by intramuscular route for five consecutive days. The animals were inspected for clinical response of the drugs after five days of the treatment.

Results

All the five animals were Holstein-Zebu cross-bred adults dairy cows with no clinical evidence of other systemic disease as their respiration, pulse rate, body temperature were in normal range. The urination, defecation and appetite were also normal. These animals were brought to the clinic during rainy season, and tick infestation was noticed in all of them. Smears prepared from the exudates or scabs and stained with Giemsa revealed the presence of typically branched, longitudinally and transversely septate filaments and coccoid forms of organism morphologically simulating D. congolensis (Pal, 1989). Each specimen when cultured onto the plates of blood agar showed many grey, yellowish onto the plates of blood a gar showed many grey-white yellowish, convex, dry and rough colonies at 37 °C (Pal, 2007). Urease and catalase tests were positive. The treatments were effective in all the adult cross-bred dairy cows.

Discussion

Dermatophilosis in cattle is recorded from many countries of the world including India (Pal, 1989) and Ethiopia (Admasu and Alemu, 2011). Besides cattle, the disease is also encountered in a wide range of hosts such as antelope, bear, buffalo, cat, deer, dog, donkey, giraffe, goat, horse, monkey, pig, rabbit, sheep, Zebra and rarely in man (Bridges and Romane, 1961; Albrecht et al 1973; Kharole et al 1976; Nagpal et al, 1995; Pal, 1989; Pal and Matsusaka, 1993; Pal; 1995). The direct microscopy and isolation of the organism from all the five clinically suspected cases established an unequivocal diagnosis of dermatophilosis. All the cattle were cross-bred, adult, and infested with ticks. The disease occurred more frequently in wet season. Our observations are in agreement with the findings of Admasu and Alemu (2011) who reported higher prevalence of dermatophilosis in cross-bred, adult cattle during wet season and infested with ticks. The damage to the skin by thorn, wooden splinter, wire or by ectoparasites, predispose the animals to infection. The treatment is imperative to prevent the further spread of disease. As D.congolensis infection is zoonotic in nature, the livestock owner, animal attendant
and veterinarian should wash their hands with antiseptic soap or solution after handling the sick animals 
or collecting the clinical specimens (Pal, 2007). The person with abrasion, cut, injury or wound on the 
skin should not deal with infected crusts/ scabs. The isolation of sick animal, destruction of crusts/scabs, 
control of ectoparasites, maintenance of sanitary conditions in animal shed will certainly help to minimize 
she prevalence and incidence of disease in livestock (Pal, 2007).Our limited experience indicated that 
Giemsa technique is very useful to detect organisms in the exudates and therefore, we recommend the 
wider application of this simple direct microscopy technique in veterinary clinics in rural areas with no 
facility of isolation to confirm the diagnosis of dermatophilosis. This will help the field veterinarian to 
start the specific therapy combat the disease.

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