

Short Communication

Dermatophytosis (ringworm) and its treatment approaches in Red Chittagong Cattle (RCC) calves under on-station condition

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Abstract: Dermatophytosis (ringworm), an infection of the superficial keratinized structures of the skin and hair, is the most common contagious skin disease in cattle. It is a remarkable public and veterinary health problem reported from different parts of the world and causes great economic loss. A number of calves were simultaneously affected with this disease in the cattle farm of Bangladesh Livestock Research Institute (BLRI). So, this study was undertaken to develop a suitable treatment approach for controlling the disease in the herd. A total of 20 calves of Red Chittagong Cattle (RCC) were selected for the trial. All the experimental calves were divided into five groups namely – T₀, T₁, T₂, T₃ and T₄. T₀ group was kept as control and T₁, T₂, T₃ and T₄ groups were allowed for treatment. The drugs used for treatment were griseofulvin, streptomycin-penicillin, antihistaminic and vitamin AD₃E in group T₁; ivermectin, streptomycin-penicillin, antihistaminic and vitamin AD₃E in T₂; topical antifungal ointment, griseofulvin, streptomycin-penicillin, antihistaminic and vitamin AD₃E in T₃; and topical antifungal ointment, ivermectin, streptomycin-penicillin, antihistaminic and vitamin AD₃E in group T₄. No drug was used in T₀ (control). The duration of the experiment was about one month. The fungal spores of *Trichophyton* spp., and *Microsporum* spp. were observed in the samples (skin scrapping) under microscope using 20% potassium hydroxide solution. All experimental calves were observed after 7 days to know the response of the treatment. On the basis of visual observation the result was recorded on day 14. All experimental calves were observed after 7 days to know the response of the treatment. On the basis of visual observation the result was recorded on day 14. Calves in control group remain same. Calves suffering from chronic dermatomycosis or dermatophytosis (ringworm) can be treated with topical antifungal ointment, griseofulvin tablet, streptomycin-penicillin injection, antihistaminic injection and vitamin AD₃E injection as per dosages used in this experiment. If the case is acute, topical antifungal ointment and griseofulvin tablet may be recommended as treatment measures. Vitamin AD₃E may or may not be used in this case.

Keywords: dermatophytosis; treatment approaches; RCC calves

1. Introduction

Dermatomycosis or dermatophytosis, commonly known as ringworm, is a fungal infection of keratinised tissue (skin, hair, and claws) which is caused by one of the three genera of fungi collectively called dermatophytes – *Trichophyton*, *Microsporum* and *Epidermophyton*. It is a remarkable public and veterinary health problem reported from different parts of the world and causes great economic loss (Calderone, 1989). The disease occurs more commonly in tropical than temperate climates particularly in countries having hot and humid climatic

condition (Pascoe, 1976). *Trichophyton* spp. has been regarded as the main fungi causing ringworm in cattle (Quinn *et al.*, 1994).

A high incidence of clinical cases in the winter and of spontaneous recovery in the spring is common, but outbreaks also occur during the summer months, so that close confinement and possible nutrition seem to be more important in the spread of the disease than other environmental factors such as temperature and sunlight. Humidity is known to be important, a high humidity being conducive to multiplication of the fungus. Animal susceptibility is determined largely by immunological status, so that young animals are most susceptible (Radostits *et al.*, 2000; Thomas, 2012).

Most importantly, if the affected calves are not treated, their growth becomes very slow or retarded. Noticeably, some RCC calves were affected with ringworm in the cattle farm of BLRI in 2011. But these cases did not cure automatically and became complicated in course of time. Therefore, the present study was executed in order to find out the best and most effective treatment approach of ringworm in RCC calves.

2. Materials and Methods

2.1. Sampling

A total number of 20 skin scrap and broken hair samples were collected by sterile instruments from the margin of lesions of dairy cattle RCC calves suspected to dermatophytosis. Then, the samples were taken to the laboratory for further examinations.

2.2. Microscopic examination

Direct microscopic examination was performed. After treating with 20% potassium hydroxide solution, the samples were examined under light microscope.

2.3. Culture

Samples were cultured in growth medium and growth of fungus was observed after three days.

2.4. Animals and treatment

A total of 20 calves of Red Chittagong Cattle (RCC) were selected for the trial. One calf had acute dermatomycosis and the rest had chronic ones. All the experimental calves were divided into five groups namely – T₀, T₁, T₂, T₃ and T₄. T₀ group was kept as control and T₁, T₂, T₃ and T₄ groups were allowed for treatment by using Grisovin® tablet, SP- vet® injection, Astavet® injection and VITA-ADE® injection for T₁; Vermic® injection, SP- vet® injection, Astavet® injection and VITA-ADE® injection for T₂; Dermin® ointment (topical antifungal ointment), Grisovin® tablet (systemic antifungal tablet), SP vet® injection (antibiotic injection), Astavet® injection (antihistaminic injection) and VITA-ADE® injection (vitamin A, D₃, E injection) for T₃; Dermin® ointment, Vermic® injection, SP vet® injection, Astavet® injection and VITA-ADE® injection for T₄. Dermin® ointment (benzoic acid 6% and salicylic acid 3%) was applied topically twice daily. Grisovin® tablet (griseofulvin) was administered @ 10 mg/kg body weight orally twice daily for 7 days. Vermic® injection (ivermectin) @ 1 ml/50 kg body weight was injected subcutaneously twice with 7 days interval. SP-vet® inj. (streptomycin-penicillin) @ 1 ml/10 kg body weight was injected intramuscularly once daily for 7 days. Astavet® injection (pheniramine maleate) @ 1 ml/10 kg body weight was injected intramuscularly once daily for 7 days. VITA-ADE® injection @ 1 ml/10 kg body weight was injected intramuscularly three times with 3 days interval.

There were four calves in each group as replications. During trial the average age and body weight of the animals were 45 days and 25 kg respectively. The experiment was carried out during March-April/2011. The duration of the experiment was about one month.

2.5. Observation and data recording

All experimental calves were observed daily after 7 days to know the response of the treatment. On the basis of visual observation the result was recorded on day 14.

3. Results and Discussion

The fungal spores of *Trichophyton* spp. and *Microsporum* spp. were observed in the samples (skin scrapping) under microscope. Growth of fungus was observed in the growth medium (Figure 1).

The study revealed that the drugs used in group T₃ cured the calves after 7 days of last drug administration, while the drugs used in other groups did not cure the calves after 7 days but cured after 14 days of last treatment. The best result, however, was found in group T₃ (Table 1, Figures 2 and 3). This treatment protocol

was further applied to control group (T_0) and it was observed that calves in control group got cured within 14 days. Interestingly enough, the present findings were in agreement with Quinn *et al.*, 1994 and Radostits *et al.*, 2000.

Table 1. Treatment result of dermatophytosis (ringworm) in calves.

Group	No. of calves	Duration of treatment	Result
T_0	4	-	-
T_1	4	7 days	++
T_2	4	7 days	+
T_3	4	7 days	+++
T_4	4	7 days	++

N.B.: +++ indicates rapidly cured, ++ indicates moderately cured, + indicates slowly cured and - indicates not cured.



Figure 1. Fungal growth in growth medium.



Figure 2. Acute case before (left) and after (right) treatment.



Figure 3. Chronic case before (left) and after (right) treatment.

4. Conclusions

The present study suggests that RCC calves suffering from chronic dermatomycosis or dermatophytosis (ringworm) should be treated with topical antifungal ointment, griseofulvin tablet, streptomycin-penicillin injection, antihistaminic injection and vitamin AD3E injection as per dosages used in this experiment. If the

case is acute, topical antifungal ointment and griseofulvin tablet may be recommended as treatment measures. Vitamin AD3E may or may not be used in this case.

Conflict of interest

None to declare.

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