Short Paper

A survey on Dermatophilosis in sheep in the North of Iran

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Summary

Dermatophilosis is one of the bacterial skin diseases of animals and man caused by Dermatophilus congolensis (D. congolensis) and was first reported by Van Saceghem, 1915 in cattle in the Belgian Congo. This disease has a worldwide distribution. The prevalence of the disease is higher in animals living in warm and humid conditions. The disease usually occurs immediately after the first heavy rain. Dermatophilosis has not yet been reported in sheep in the North of Iran. Skin scab samples were collected from 120 sheep in this region after the first rain in the middle of summer. Smears were prepared and stained by Gimsa method. Because of unique appearance of D. congolensis, a strong presumptive diagnosis was made on the direct examination of stained smears alone. However, in the absence of the bacteria in stained smears, bacterial cultures were performed by Haalstra method. Only 5 out of 120 samples confirmed D. congolensis in direct examination. Bacterial cultures from negative samples were also unsuccessful.

Key words: Dermatophilosis, Dermatophilus congolensis, Skin lesions, Sheep, Iran

Introduction

Dermatophilosis is a chronic or acute skin disease of animals (Radotis et al., 1994) and man (Harman et al., 2001) caused by Dermatophilus congolensis. This organism is a gram-positive and pleomorphic bacterium that appears in culture as filamentous hyphae and spore-like cocci, the zoospores. The zoospores invade the skin and cause an acute, subacute or chronic skin disease. Dermatophilosis is a superficial infection of the epidermis, resulting in an exudative epidermitis with scab formation (Zaria, 1993). In sheep, Dermatophilosis causes significant wool production loss both directly and indirectly. Other losses associated with the disease are due to down grading of wool and hides, low meat production and high mortality particularly in young sheep. Dermatophilosis has a worldwide distribution (Stewart, 1972) and has been reported by the Food and Agricultural Organization (FAO) to be one of the four major bacteriological diseases which affects cattle and other animals in the tropical and subtropical regions. The disease was first reported in 1915 in cattle in the Belgian Congo (Van Saceghem, 1915). The prevalence of the disease occurs during and immediately after the first rain (Hyslop, 1980) and is between 10% to 12% in cattle. The number of cattle affected by the disease is about one million annually and near to 287000 cases became chronic and then die or are sold in poor condition (Bida and Dennis, 1976). The economic losses of the disease have been estimated to millions of dollars in Africa (Bida and Dennis, 1976). The disease has also been reported in goat in Tanzania (Msami et al., 2001) and in sheep in Ethiopia (Woldemesk and Ashenafi, 2003). The principal economic losses of the disease in Western Australia result from the culling of affected sheep, deaths, reduced skin, fleece values and its predisposition of sheep to body strike (Gherardi et al., 1983; Edwards et al., 1985). The disease has been reported in the United States (Richard, 1981) and also in Italy (De Meneghi et al., 2002). Dermatophilosis has been reported in many countries of Asia such as India (Sirak and Infante, 1994) Bangladesh, Hong Kong
(Zaria, 1993) and Israel (Yeruham et al., 1995). The disease has not yet been reported in sheep in the North of Iran.

**Materials and Methods**

One hundred and twenty sheep with skin lesions in head (Fig. 1), foot (Fig. 2) and body were studied during one-year period (2000-2001).

Small pieces of scab materials from each sheep were shared. Samplings were immediately performed after the first raining. The flakes of scabs were softened in a few drop of distilled water on a microscope slide. Smears were made and stained by Gimsa method. Negative samples on direct examination were cultured using Haalstra method (Quinn et al., 1994).

**Results**

From 120 sheep in the North of Iran, skin scab samples were collected after the first rain in the middle of summer. Smears were prepared and stained by Gimsa method. Of 120 smears, 5 filamentous and branching bacteria, which composed of coccal zoospores, were observed (Fig. 3) and it was enough to confirm diagnosis of the disease. Negative samples, which were cultured using Haalstra method, were unsuccessful.

**Fig. 1: Skin lesions on the head of sheep**
Fig. 2: Skin lesions around the foot of sheep

Fig. 3: Filamentous and branching bacteria which composed of coccal zoospores
Discussion

D. congolensis has a worldwide range of animal host species, any of which may act as a potential source of the infection. The geographical distribution of the organism and its ability to cause serious outbreaks during rainy seasons show the presence of an association between the disease outbreak and heavy rainfall. This accelerates the spread and increases the severity of the disease by skin damage; the release and increase motility of infective zoospores (Edwards et al., 1985). Nevertheless, there has not yet been any perfect report of Dermatophilosis in sheep in Iran. Only two cases have been reported in horse (Kajori and Mehri Ghah-Farrokhi, 1998) and in sheep (Moradpour, 1989) in Iran. Among the predisposing factors of Dermatophilosis, two factors such as skin lesions and humidity are very important. Therefore, infection on the healthy skin is not possible even with inoculation of Dermatophilus-infected culture. Humidity causes the release of infected motile and flagellated zoospores. The low rate of CO₂ results in the absorption of zoospore while high concentration of CO₂ causes release of them (Scott, 1988). During the recovery or acute phase, diagnosis of D. congolensis based on direct smears may be rarely positive. However, culture of this organism can also be unsuccessful because of the growth of commensal skin bacteria, which inhibit the growth of D. congolensis. But smear of suspicious cases regarding to specific form of bacteria could confirm the diagnosis of D. congolensis.

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References

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