Prevalence of Bovine Dermatophilosis in a Tropical Highland Region of Ethiopia

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ABSTRACT

A study was made of bovine dermatophilosis on 540 animals at a high altitude (2400–2500 m above sea level) in Ethiopia. Eighty-two (15.4%) of the animals were affected by the disease which was more prevalent in local animals than was previously assumed. There was a significant (p < 0.05) difference in the prevalence among different age groups. However, the difference in the prevalence of the disease between males and females was not significant (p > 0.05). Associated risk factors included the relatively high average annual rainfall and humidity, tick infestation (76%) and management, related to the mixed crop-livestock production system. The possible impact of the disease on Ethiopian agriculture is indicated.

Keywords: age, cattle dermatophilosis, high altitude, prevalence, ticks

INTRODUCTION

Cutaneous infection caused by Dermatophilus congolensis (Gillespie and Timoney, 1981) has a worldwide distribution with severe effects in tropical Africa (Ibu et al., 1987). It can be severe in cattle, horses and sheep, especially in tropical countries (Hermes de Mendoza et al., 1994), where it is of great importance in cattle owing to associated economic losses (Isior et al., 1988).

The disease is known to be enzootic in cattle in Ethiopia (FAO, WHO, OIE, 1997) and has recently been reported to be a threat to livestock production in the country (Woldemeskel, 2000). It is one of the causes of rejection of hides and skins due to poor quality. Because of the knowledge gap about the associated factors and epidemiology of the disease, it is not possible to devise and implement effective control measures against the disease. There are very few published reports on the occurrence of the disease in cattle in Ethiopia and these mainly relate to cattle from the lowlands (700–1850 m above sea level) of the country (Berhanu and Woldemeskel, 1999; Woldemeskel, 2000). There is no published report on the distribution of bovine dermatophilosis at higher altitudes. This paper describes the disease and its associated risk factors in cattle in a tropical highland region of Ethiopia.
MATERIALS AND METHODS

Study area

The study was conducted in the highlands of Bale, in and around Robe, 430 km south-east of Addis Ababa, at an altitude of 2400–2500 m above sea level. The mean annual rainfall and mean day–night air temperature ranges are 1100–1300 mm and 8.4–22.4°C, respectively (BRADB, 1997).

Study animals and protocol

The study was carried out from October 1997 to April 1998 on 540 cattle (525 zebu and 15 Holstein–Friesian crosses) of different ages and sexes (307 female, including the 15 Holstein–Friesians, and 233 males) in different areas (Hora Boka, n = 142; Robe, n = 138; Robe-Akababi, n = 135; Shaya, n = 125). The animals were kept in a mixed crop–livestock farming system as sources of milk and draught power, except for Holstein–Friesian cows, which were kept in semi-intensive dairy farms. The animals were selected at random and were inspected visually and by palpation for skin lesions. Scabs were collected into sterile tubes from suspected cases of dermatophilosis and direct microscopic examination was made on Giemsa-stained smears, following the procedures given by Scott (1988). A case was regarded as positive on the demonstration of typical D. congolensis showing transverse and longitudinal septations in the stained smear. Ticks were collected and identified according to Hoogstraal (1956). The age, sex and breed of the examined cattle were recorded, age determination being made following the procedures given by Aiello and Mays (1998). The results were analysed by χ²-tests.

RESULTS

The overall prevalence of the disease, and that in the different sexes and in the local zebu cattle and Holstein–Friesian crosses, are shown in Table 1. Prevalence rates of 5.7% (4/70), 13.9% (24/172), and 18.1% (54/298) were recorded in animals below 1 year, 1–3 years and above 3 years old, respectively. The difference in the prevalence rate among the three age groups was statistically significant (χ² = 6.93; d.f. = 2; p < 0.05). The prevalence rates in cattle from Hora Baka, Robe, Robe-Akababi and Shaya were 18.3% (26/142), 11.6% (16/138), 16.3% (22/135) and 14.1% (18/125), respectively, with no statistically significant variation (χ² = 2.6, d.f. = 3, p > 0.05).

In indigenous animals, the lesions were chronic and mainly located on the dorsum, especially on the back, sides and rump. The lesions were characterized by dry scab material, with matting of the hair leaving a concave hairless area on removal. In the Holstein–Friesian cows, there was an acute lesion that left a raw, exuding surface on removal of the scab. The affected animals were weak and emaciated. The disease was observed mainly during and after the rainy season.