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Scientific Report

Zinc-responsive dermatosis in an Iranian cross-breed ram

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Summary

An adult (two years old) Iranian cross-breed ram with alopecia, rough hair coats, thick and wrinkled skin, especially on the face, brisket, scrotum, tail and legs, presented with severe pruritus, poor condition and generalized unthriftiness. The animal was referred to the Veterinary Clinic of Shahid Bahonar University of Kerman. The vital signs and haematologic indices of the animal were normal. According to the history and clinical signs, mineral deficiencies, infestations with external parasites or endocrinopathy were suspected. Laboratory examinations of skin scrapings ruled out external parasites. Skin biopsy confirmed parakeratosis, which could be attributed to zinc deficiency. Zinc sulphate (250 mg, daily) was administered orally for 4 weeks. The clinical signs subsided after 4 weeks of treatment.

Key words: Ram, Zinc-responsive, Dermatosis, Alopecia, Parakeratosis

Introduction

Zinc is an integral component of a wide range of metalloenzymes and acts as a co-factor for RNA and DNA polymerases. Its presence is of particular importance in rapidly-dividing cells, including those of the epidermis. Zinc is also essential for the biosynthesis of fatty acids and participates in both the inflammatory and immune systems. It is also involved in the metabolism of vitamin A (White *et al*., 1994; Nishi, 1996; Watson, 1998). Zinc deficiency results in failure of keratinization, which leads to parakeratosis, loss and failure of growth of wool and hair, lesions of coronary bands, retarded testicular development and cessation of spermatogenesis in zinc deficient animals (Kendall *et al*., 2000). This probably reflects the importance of zinc in protein synthesis. The lesions of the arteriolar walls of the dermis have also been reported (Kendall and Telfer, 2000). Natural cases of zinc deficiency occur in cattle, sheep and goats. The natural disease in sheep is characterized by loss of wool and development of thick and wrinkled skin. Wool eating also occurs in sheep and may be one of the earliest signs noticed in lambs (Radostits *et al*., 2000). To the best of our knowledge, so far, zinc-responsive dermatosis has not been reported in Iranian cross-breed ram.

Materials and Methods

An adult (two years old) ram with alopecia, rough hair coats, thick and wrinkled skin—especially on the face, brisket, scrotum, tail and legs (Fig. 1)—severe pruritus, poor condition and generalized unthriftness was referred to the Veterinary Clinic of Shahid Bahonar University of Kerman. Body temperature, heart and respiratory rates, haematologic indices including packed cell volume, total and differential white blood cell (WBC) count and total red blood cell (RBC) count

Fig. 1: Rough hair coat, alopecia, thick and wrinkled skin on the face, ear and neck

Fig. 2: The same animal in Fig. 1: normal appearance of integument is returned after treatment with oral zinc sulphate

were measured. Skin scrapings and skin biopsy were also taken for further examinations.

Results and Discussion

Body temperature, heart and respiratory rates, haematologic indices including packed cell volume, total and differential white blood cell (WBC) count and total red blood cell (RBC) count were normal. According to the history, physical findings, vital signs and haematologic indices, mineral deficiencies, infestations with external parasites or endocrinopathies were suspected. Laboratory examinations of skin scrapings ruled out external parasites. Skin biopsy confirmed parakeratosis, which could be attributed to zinc deficiency. Zinc sulphate was administered orally at a dose of 250 mg/day for four weeks (Radostits *et al*., 2000). After the treatment, all clinical signs subsided (Fig. 2).

The affected ram was being fed with a diet of alfalfa—a legume high in calcium—which can block zinc uptake. So it can be concluded that the main factor, which could block zinc absorption, was the high dietary calcium (Singer *et al*., 2000).

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