ZINC DEFICIENCY IN SHEEP: FIELD CASES

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SUMMARY

Zinc deficiency was diagnosed in a sheep farm in Khartoum Province; the young sheep and lambs were mostly affected. Skin lesions, depression, wool eating, flexed knees and a markedly stiff gait were observed. Histopathology of the skin revealed mainly hyperkeratosis accompanied sometimes by parakeratosis. The animals responded rapidly to oral administration of zinc oxide.

INTRODUCTION

Though Abu Damir (1980) and Suliman (1980) reported low zinc values in soil and pasture in Sudan and despite the fact that the major animal population in the country is dependent on natural grazing, description of zinc deficiency cases appears to be limited (Mahmoud, Fatma, Amal and Hassan 1983). Loss of wool, wool eating and skin cracking are the major clinical signs observed in both natural and experimental zinc deficient sheep (Nelson, Wolff, Blodgett, Luecke, Ely and Zachary 1984). Parakeratosis as the predominant skin lesion was described by some workers but Nelson et al. (1984) have also observed the development of hyperkeratosis in zinc deficient sheep. The investigations reported here describe the occurrence of zinc deficiency in sheep in a farm around Khartoum together with subsequent trials for treatment.

MATERIALS AND METHODS

The sheep were from a flock of about 360 animals reared on a farm outside Khartoum. The flock composed of ewes, rams and lambs. The sheep were fed on a basic ration of groundnut shell cake and groundnut cake. They were occasionally left to graze on a near-by field of old and dry elephant grass (Pennisetum purpureum). The diet was not changed during treatment.

The clinical signs varied with the age of the animals, the younger sheep and lambs being mostly affected while adults were least affected. The clinical signs included general malaise, depression and bilateral shedding of wool starting from the dorsal aspect of the back and neck, the skin was crusty, cracked and covered with scabby scales (Fig. 1). Marked bending of the knee joint, a stiff gait and arching of the back were observed (Fig. 2). The affected animals showed nasal discharges and occasionally coughing and diarrhoea.

Twelve adult sheep and eight lambs from the flock were used for laboratory investigation. Blood in EDTA and serum were collected before and one week after the last treatment. Skin scrapings and biopsies were taken. Blood films from the ear vein and faecal samples from the rectum were also collected for the detection of blood protozoa and internal parasites respectively. Feed samples of groundnut cakes and groundnut shell cake were collected separately into plastic bags for proximate analysis and trace element determination.

The packed cell volume (PCV) was measured in a microhaematocrit centrifuge. Haemoglobin values (Hb) were determined by the cyanmethaemoglobin technique. Total protein and albumin concentration in serum were measured by
FIG. 1. Patchy loss of wool with skin crust and cracking in a depressed lamb.

FIG. 2. Loss of wool in a young ram showing marked bending of the knee joint and stiff gait with arching of the back.

biuret reagent and the globulin fraction calculated by subtraction. The serum zinc and copper were determined by using an atomic absorption spectrophotometer. The activities of serum alkaline phosphatase (AP) and lactate dehydrogenase (LDH) were assayed by using Boehringer Mannheim GMbH Diagnostic assay set. The skin biopsies were fixed in 10% formalin, embedded in paraffin, sectioned and stained with haematoxylin and eosin (H & E) and aniline blue. The skin scrapings were examined for external parasites and cultured for mycotic pathogens. The proximate analyses of the feed materials were carried out