

BOVINE SKIN LESIONS OF POSSIBLE FILARIAL ORIGIN ASSOCIATED WITH HEAVY HORNFLY INFESTATIONS (*HAEMATOBIA MERIDIANA*)

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ABSTRACT

NEWSHOLME, S. J., VERSTER, ANNA J. M. & JACOBS, J. C., 1983. Bovine skin lesions of possible filarial origin associated with heavy hornfly infestations (*Haematobia meridiana*). *Onderstepoort Journal of Veterinary Research*, 50, 73-75 (1983).

Circumscribed, ulcerative skin lesions, usually situated caudal to the scapula, affected cattle in the Republic of Venda during the summer of 1981-82. The occurrence of the lesions was associated with heavy infestations of the hornfly, *Haematobia meridiana*. Microscopically the lesions were characterized by intense eosinophilic dermatitis. Microfilariae were seen in histological sections of one lesion, but a species identification could not be made. The possible cause of the lesions is discussed.

INTRODUCTION

During the summer of 1981-82, circumscribed skin lesions affected adult cattle grazing throughout the region north of the Soutpansberg, in the Republic of Venda. This area is predominantly Mopani veld (Acocks, 1975). The lesions were first noticed in October 1981 and their incidence increased throughout the summer. In May 1982 an estimated 5-10% of these cattle were affected. Veterinary staff in the area had not previously observed such lesions. The occurrence of these lesions was associated with the appearance of unusually large populations of biting flies which attended the cattle throughout the summer.

This report deals with the pathology of the lesions and their possible origin.

MATERIALS AND METHODS

In May 1982, a biopsy specimen collected from a skin lesion on the lateral thorax of a heifer was fixed in 10% buffered formalin. Paraffin sections of this material were prepared and stained with haematoxylin and eosin (HE) according to standard procedures for light microscopy.

In June 1982 skin lesions were removed surgically from the lateral thorax of 2 cows. Part of this material was fixed in formalin for light microscopy, part was digested in pepsin/hydrochloric acid and the remainder was placed in a Baermann apparatus to recover any nematodes that might be present. One millilitre of venous blood, collected into 9 ml of formalin (2%) from each of 10 cattle showing lesions, was examined for microfilariae. Flies were collected from the backs of affected cattle for identification.

RESULTS

Clinical and macroscopic observations

The lesions were well-circumscribed, slightly raised, hairless areas of thickened skin, and varied in diameter from 5-30 cm. Smaller lesions were circular to oval and the largest ones were elongated dorsoventrally (Fig. 1 & 2). Lesions were frequently ulcerated, had multiple surface fissures (Fig. 2), and were occasionally covered in dried blood (Fig. 1). Small beads of fresh blood appeared if the lesions were squeezed.

Most of the lesions were situated on the lateral thorax immediately caudal to the scapula (Fig. 1). Occasional lesions also occurred at various sites over the thorax and abdomen (Fig. 3). Bilateral occurrence of the lesions was a striking feature in most cases.

Microscopical findings

Severe eosinophilic dermatitis, which was characterized by intense eosinophil infiltration throughout the dermis, was a consistent feature in all formalin-fixed

material (Fig. 4 & 5). Eosinophils were particularly abundant around small arterioles and venules in the deep dermis (Fig. 6 & 7), where they were accompanied by a few plasma cells. Epidermal loss with associated dermal fibroplasia was extensive (Fig. 8). Small segments of the remaining epidermis displayed moderate to severe acanthosis and parakeratosis (Fig. 4).



FIG. 1 Lesions caudal to the scapula



FIG. 2 Ulcerated lesion on lateral thorax

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FIG. 3 Lesions scattered over lateral thorax and abdomen

Microfilariae occurred singly or in small groups within the papillary dermis in several different areas of the material from the lesion first collected (Fig. 9). They measured approximately 3 μm in width, but their length could not be determined.

Microfilariae were not seen in the lesions from the other cases. No adult parasites could be found.

Parasitology

No nematodes were recovered from the biopsy material, nor were microfilariae present in the blood examined.

The flies collected were all identified according to Zumpt (1973) as specimens of the hornfly, *Haematobia meridiana*.

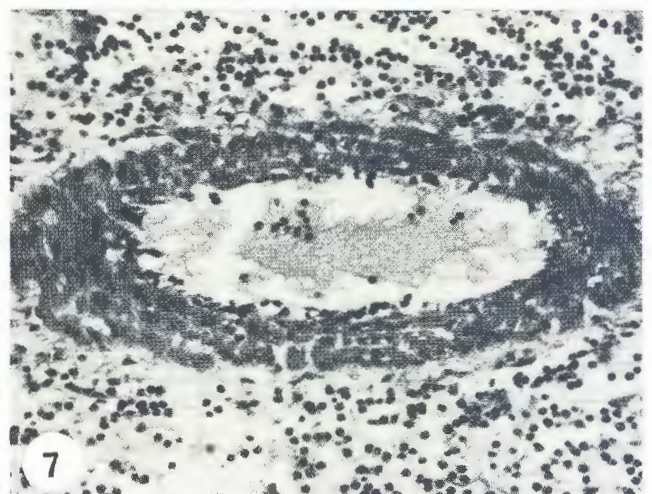
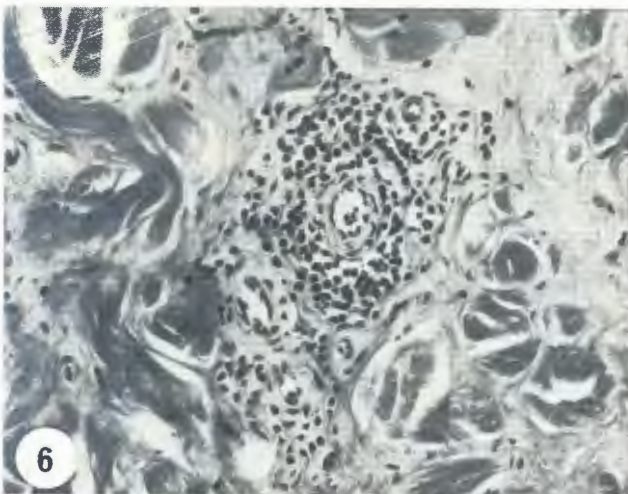
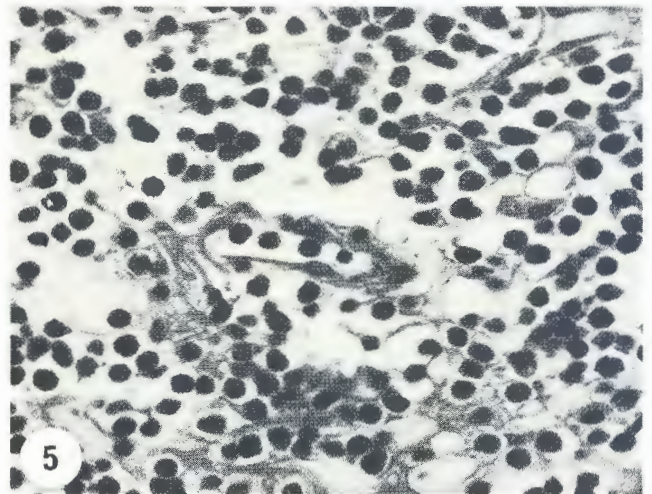
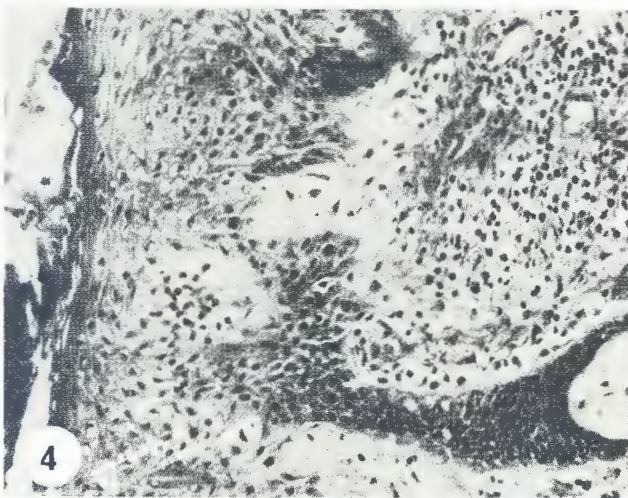
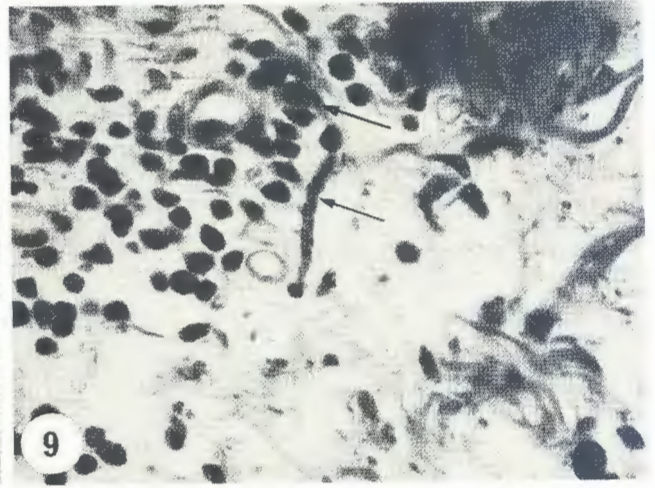


FIG. 4 Dermal inflammatory infiltrate, acanthosis and parakeratosis: HE \times 100

FIG. 5 Abundant eosinophils in dermis: HE \times 400

FIG. 6 Perivascular eosinophils in deep dermis: HE \times 100

FIG. 7 Eosinophils around an arteriole in the deep dermis: HE \times 100

FIG. 8 Epidermal loss and necrotic debris overlying affected dermis: HE \times 30FIG. 9 A microfilaria (arrowed) in the dermis: HE \times 600

DISCUSSION

The cause of these lesions could not be determined, nor was it possible to identify the species of the microfilariae that were seen in tissue sections of the lesion from the heifer. The abundance of eosinophils, however, did suggest a parasitic aetiology. The cattle were situated in an area where bovine parafilariosis is known to occur (Carmichael & Koster, 1978). However, lesions caused by *Parafilaria bovicola* are situated predominantly in the subcutis with minimal dermal and no epidermal involvement (Pienaar & Van den Heever, 1964). Furthermore, microfilariae of *P. bovicola* are markedly broader than the microfilariae in our material which, according to Levine (1968), are comparable in breadth to those of *Onchocerca* spp. and *Stephanofilaria* spp. in cattle. To our knowledge, *Onchocerca* spp. do not cause cutaneous lesions resembling these in cattle. Skin lesions associated with *Stephanofilaria* spp., which resembled the lesions in the Venda cattle both morphologically and in their bodily distribution, have been described in cattle in Indonesia in the condition known as "cascado" (Bubberman & Kraneveld, 1933), in cattle in Australia (Johnson, Parker, Norton, Jaques & Grimshaw, 1981) and in Nigeria (Oduye, 1971). Bovine stephanofilariasis has not been reported in South Africa, but ulcerative skin lesions situated caudal to the scapula and associated with microfilariae have been described in black rhinoceros (*Diceros bicornis*) in Hluhluwe and Mkuzi, Zululand (Schulz & Kluge, 1960). Nematodes recovered from similar lesions in black rhinoceros from Hluhluwe were identified subsequently as *Stephanofilaria dinniki* Round, 1964 (Verster & Hitchins, unpublished record, 1969).

Failure to find adult parasites in these lesions and the demonstration of microfilariae in only one of them do not exclude a filarial aetiology. Although *Stephanofilaria* has been associated with bovine skin lesions in Australia, workers often failed to find filariae in such lesions (R. W. Sutherst, CSIRO, Long Pocket Laboratories, Indooroopilly, Queensland, Australia, personal communication, 1981). A direct effect of the heavy fly infestations upon the development of the lesions cannot be discounted, but in our view severe eosinophilic dermatitis is not a feature of fly bites alone.

Should such lesions occur in future, further investigation is warranted to establish their aetiology.

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