Cutaneous habronemiasis in horses and domestic donkeys (Equus asinus asinus)


INTRODUCTION

Cutaneous habronemiasis is a skin disease of Equidae. The disease was reported to be caused by Draschia or Habronema larvae which are deposited in existing wounds by infected flies (2, 8, 10, 11, 12, 13). The irritation associated with the deposited larvae resulted into friable granulation tissue which protrudes above the normal skin surface as a non-healing lesion (3).

The disease is well known among horses in many parts of the world (2, 10). However, to the authors knowledge, it has not been reported in the domestic donkey.

Case history

Over a period of nine months, 15 horses and 5 donkeys were presented to the University of Khartoum Veterinary Hospital with ulcerative granulomatous lesions involving the different parts of the body. According to the history given the owners the lesions were persistent, gradually enlarged with time and were initially observed 6 to 10 weeks before the animals were brought for clinical examination and treatment.

Clinical examination

The animals were clinically examined. Blood for complete haemogram was collected from the jugular vein and wet blood films were prepared from the tips of the ears during the morning and evening. Faecal samples were also collected. The animals were then premedicated with 150 g/kg body weight N-(3-dimethylaminopropyl)-3 propionylphenothiazine (Combelen™, Bayer AG, Leverkusen, Germany), injected intramuscularly and were anaesthetized by the intravenous administration of chloral hydrate at the dose rate of 8-14 mg/100 kg body weight given as 10 per cent solution. Biopsy specimens from the lesions in all animals and deeply curretted material from the lesions in five horses and three donkeys were taken for laboratory investigation.

Laboratory investigations

Haematological examination

Complete haematological examination was conducted in all the blood samples following the methods descri-
bed by SCHALM et al. (9), and wet blood films were examined for the presence of microfilariae.

Faecal examination
Faecal samples were examined for endoparasites by direct smears, McMaster and salt floatation methods described in the manual of Veterinary Parasitological Techniques (7).

Curretted material
The curretted material was suspended in 10 per cent potassium hydroxide, allowed to digest and examined under a dissection and a light microscope for presence of parasitic larvae.

Histological examination
Biopsy specimens were fixed in 10 per cent formal saline, processed, embedded in wax, cut at 5 μm and stained with haematoxylin and eosin.

TREATMENT

During anaesthesia the animals were treated surgically as follows:

— wounds filled with friable granulation tissue and having a dense connective tissue in the deeper layers; were thoroughly curretted until the under-lying fibrous tissue had appeared. The wounds were then cleaned, disinfected and dusted with Terramycin™ powder (Pfizer, New York) and left to heal as open wounds;

— granulomatous lesions without evidence of cicatriz-ation in the deeper layer were excised, dusted with Terramycin™ and sutured (giving allowance for drain-age) whenever possible, otherwise they were left to heal as open wounds.

The lesions were dressed and examined periodically until healing had occurred.

RESULTS

Clinical picture
The animals examined were 7-11 years old, and were clinically normal apart from the cutaneous lesions.

The lesions were 4 to 20 cm in diameter and were seen on the medial canthus (Fig. 1) of the eyes, shoulder (Fig. 2) and pectoral regions, knee and fetlock (Fig. 3) joints, abdominal wall and prepuce. Twelve animals (10 horses and 2 donkeys) had 2 to 3 lesions located on different sites. Some of these lesions were pruritic and the animals were seen gnawing and scratching the affected areas against objects.

Macroscopically the lesions were ulcerative and filled with soft light red granulation tissue. In some lesions especially those involving the medial canthus, knee and fetlock joints, the deeper layer of the granulation tissue was converted into dense yellowish fibrous mass showing small calcified foci and necrotic foci (1-3 mm x 1-2 mm) containing caseated pus; a feature which was not seen in lesions involving the preputial muscular areas, in which the lesions were infiltrative in nature and did not show any evidence of cicatriz-ation.

Fig. 1: A lesion of cutaneous habronemiasis involving the medial canthus of the eye of a horse.
Laboratory investigations

Haematological examination
Apart from the marked eosinophilia (11 ± 2 per cent) in horses and (14 ± 3 per cent) in donkeys, the haematological picture in all animals fell within the normal range recorded by SCHALM et al. (9) for these animals. No microfilariae were seen in wet blood films from all animals.

Faecal examination
Faecal examination revealed Strongylus spp. in five horses and two donkeys. No Draschia or Habronema eggs nor larvae were seen in the faecal samples obtained from all animals.

Currentted material
Fragments of nematode larvae were seen in digested currentted material and were suggestive of the larvae of Draschia or Habronema.

Histopathology
The histopathological changes seen comprised: scab formation and degenerative changes of the epidermal cells surrounding the granuloma. The dermis showed multiple necrotic foci (Fig. 4) encapsulated by dense connective tissue and infiltrated with eosinophils, macrophages and few neutrophils. In some areas necrotic foci were not seen, but dense whorls of connective tissue, showing marked proliferation of fibroblasts and infiltrated with eosinophils, macrophages and a few giant cells were encountered. Lesions involving the muscular areas showed few oblique,
Fig. 4 : A section of lesion of cutaneous habronemiasis showing a caseated and necrotic material (arrows) surrounded by dense fibrous tissue and infiltrated with inflammatory cells. Bar = 250 µm.

Fig. 5 : Section from a lesion of cutaneous habronemiasis from the shoulder area. Note : Oblique section of spine tailed larva (stage L3) of a nematode (arrows) between muscle tissue and the severe local eosinophilia. Bar = 100 µm.

The lesions of cutaneous habronemiasis in horses encountered in the current investigation were similar to those described by previous workers (2, 4, 6, 8, 12, 13). Moreover, the occurrence of these lesions in the domestic donkeys appears to be the first report of the disease in this animal. In the domestic donkeys the lesions were clinically similar in appearance and distribution to those encountered in horses.

The occurrence of Draschia megastoma, Habronema microstoma and H. muscae in the Sudan is well established (1, 5). The history and the clinical appearance of the lesions were highly suggestive of cutaneous habronemiasis. A finding which authenticates the reports of Dunn (4), who stated that the history of the condition, the clinical picture of the lesions and their prevalence during the warm season, are usually accepted as sufficient diagnostic evidence in endemic areas. Moreover, the present demonstration of the fragments of the nematode larvae in curved material confirmed the diagnosis and accord with the findings.

**DISCUSSION**

The lesions of cutaneous habronemiasis in horses encountered in the current investigation were similar to those described by previous workers (2, 4, 6, 8, 12, 13). Moreover, the occurrence of these lesions in the domestic donkeys appears to be the first report of the disease in this animal. In the domestic donkeys the lesions were clinically similar in appearance and distribution to those encountered in horses.

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**Treatment**

Recovery and healing by scar tissue was complete within 4 to 6 weeks following surgical treatment.
The local eosinophilia seen in the fibrous stroma in most of the histological sections were similar to those described by BLOOD et al. (2), JONES and HUNT (6) and TREES et al. (11). In addition, the sections of the larvae with severe local eosinophilia in lesions involving the muscular areas and absence of cicatrization in these granulomata were highly suggestive that the lesions were subjected to a severe and persistent irritation due to the deposition of fresh larvae by the housefly (Musca domestica) and the stablefly (Stomoxys calcitrans) which are quite prevalent throughout the year. This environment is quite conducive for the flourishing and breeding of the flies Musca domestica and Stomoxys calcitrans, vectors of Draschia and Habronema larvae. This might explain why no spontaneous regression nor healing of the lesions was noticed. This was in contrast to the observations of BLOOD et al. (2) and DUNN (4) who reported that the lesions regress with the disappearance of the vector flies in cool weather and to those of BOYD and BULLARD (3), SOULSBY (10) and TREES et al. (11) who recorded that the lesions of cutaneous habronemiasis might heal spontaneously in cool weather.

The surgical treatment adopted in this investigation proved to be satisfactory and resulted into complete healing of the lesions. This was probably due to the removal of the parasite present within the deeply curretted or excised tissues. Moreover, the proper dressing of the wounds prevented the deposition of fresh larvae by the infected vector flies. Although medical treatment of cutaneous habronemiasis was reported to be effective (2, 3), the authors raise the question whether medicinal treatment could be of any value in the granulomatous lesions described in the current investigation which are continuously infected with larvae due to the prevalence of infected vector flies throughout the year.
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REFERENCES


