Histopathological features of cutaneous and gastric habronemiasis in horse

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Abstract The aim of study was to describe clinico histopathological manifestations of cutaneous and gastric habronemiasis in horse. The adult worms live on the wall of the stomach and cutaneous of the host without internal migration. A 5 year old 700 kg warm-blood, cross gelding was referred to the Tehran School of Veterinary Medicine, Veterinary Teaching Hospital. The horse presented skin lesions around. In our survey, several raised granulomatous nodules with a cystic space and parasites within the cysts were observed. Also gastric rupture at greater curvature due to abscess and perforation through the serosa causing diffused peritonitis and subsequent death. Eosinophils and other inflammatory cells were present in large numbers. Furthermore, cutaneous lesions were characterized by single or multiple ulcerated tumorous masses with eosinophil epithelioid cell infiltration and scattered necrotic

debris. Granulation tissue and neutrophils were observed along the ulcerated area. In this report a case of cutaneous and gastric habronemiasis in a horse in Iran is described with special attention to confirmation of the clinical diagnosis.

Keywords Cutaneous · Histopathology · Horse · Habronemiasis · Ulcer

Introduction

Cutaneous habronemiasis (summer sores), a common condition in horses, is characterized by ulcerative, non-healing skin lesions and the formation of exuberant granulation tissue. It is caused by aberrant intradermal migration by third-stage larvae (juveniles) of equine spiruroid stomach worms, *Habronema musca*, *Habronema microstoma*, and *Draschia megastoma*. The adult forms of these parasites live in the equine stomach and their larvae as well as eggs are passed in the host faeces but are usually not observed in standard faecal flotation examination (Onmaz et al. 2013; Naem 2007; Pusterla et al. 2003; Collobert-Laugier et al. 2000). The aim of study was to describe clinico histopathological manifestations of cutaneous and gastric habronemiasis in horse.

Methods

A 5 year old 700 kg warm-blood, cross gelding was referred to a Veterinary Clinic of Tehran county because of a large, ulcerated lesion on the skin. This lesion started as a small swelling lateral to the right naris. The diagnosis was made on the basis of history, clinical signs, and

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identification of calcified concretions (sulfur granules) in lesions. A biopsy from the edge of the lesions were fixed in 10 % neutral buffered formalin and submitted for histopathologic evaluation. Histologic examination of biopsy specimens was used to confirm the diagnosis. The adult worms live on the wall of the stomach and cutaneous of the host without internal migration.

Results

In this study, several raised granulomatous nodules with a cystic space and parasites within the cysts were observed. Also gastric rupture at greater curvature due to abscess and perforation through the serosa causing diffused peritonitis and subsequent death. Eosinophils and other inflammatory cells were present in large numbers. Cutaneous lesions were characterized by single or multiple ulcerated tumorous masses with eosinophil epithelioid cell infiltration and scattered necrotic debris. Granulation tissue and neutrophils were observed along the ulcerated area.

Discussion

Habronemiasis in horses, caused by the nematodes *H. musca*, *H. majus* and *Draschia microstoma*. The types of This disease are consisted of: Gastric, cutaneous (“summer sores”) and ophthalmic habronemiasis (Naem 2007; Yarmut et al. 2008; Rebhun 1996). In cutaneous habronemiasis, Skin lesions are ulcerated, granulomatous masses that bleed easily appear. Gritty plaques appear as a pathognomonic sign. Gastric habronemiasis of horses is characterized by catarrhal gastritis, diarrhoea, progressive weight loss and ulcers (Traversa et al. 2006).

Common sites of infestation by *Habronema* larvae are limbs, ventral aspect of the abdomen, prepuce, external genitalia in males (penis, urethral process), ocular and periocular areas (conjunctiva, medial canthus, nasolacrimal duct) and commissure of the lips (Yarmut et al. 2008). vector.

Nadalian et al., observed gastric habronemiasis in a three year old horse in Iran. Their necropsy findings revealed a heavy worm infestation in the stomach that were consisted of *H. muscae* and *D. megastoma*. Their Histopathological survey showed two separate lesions including diffuse infiltration of mononuclear inflammatory cells with a number of eosinophils in the mucosa and submucosa that suggested eosinophilic gastritis. Another finding was a large granulation mass in the deep layer of the submucosa that contained granulomatous necrotic tissue and cross sections of *D. megastoma* (Nadalian et al. 1997).

In our survey, several raised granulomatous nodules with a cystic space and parasites within the cysts were observed. Also gastric rupture at greater curvature due to abscess and perforation through the serosa causing diffused peritonitis and subsequent death. Eosinophils and other inflammatory cells were present in large numbers.

Cutaneous lesions were characterized by single or multiple ulcerated tumorous masses with eosinophil epithelioid cell infiltration and scattered necrotic debris. Granulation tissue and neutrophils were observed along the ulcerated area.

The exact pathogenesis of habronemiasis is unknown but it is highly probable that the disease involves a hypersensitive reaction to dead. Although it is a rather sporadic disease, certain horses show an annual recurrence. Diagnosis is based on the history, clinical signs and location of the lesions. Histopathological examination of a biopsy, although less sensitive, is currently the method of choice for confirming the diagnosis. Characteristic histological lesions consist of eosinophilic dermatitis and coagulative necrosis with or without the degeneration of nematode larvae in the center (Traversa et al. 2006; Pusterla et al. 2003; Javanbakht et al. 2014a, b). Molecular diagnosis is being developed, but is not commercially available yet. A PCR assay has been used for the diagnosis of gastric habronemiasis (Giangaspero et al. 2005), cutaneous habronemiasis, and in epidemiological studies (Traversa et al. 2006).

In conclusion, this study confirms the presence of the cutaneous and gastric forms of habronemiasis in Iran. Thus habronemiasis should be included in the differential diagnosis when encountering typical lesions. The clinical diagnosis should be then confirmed and treated accordingly as described here. Studies to assess the current prevalence of *Habronema* spp are required in Iran to evaluate its significance.

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