

Scientific Report

Oesophageal and gastric gongylonemiasis in a donkey

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Summary

Members of the genus *Gongylonema* are nematodes that commonly infect ruminants, particularly sheep and goats. An 11-year-old donkey mare was referred to the Veterinary Teaching Hospital, School of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, northeastern Iran, with a history of acute colitis. At post-mortem examination, there were several white to pink zigzag tracks in the mucosa of the oesophagus and the stomach which contained long white worms. Microscopic examination of the parasite revealed that it was *Gongylonema pulchrum*.

Key words: Nematode, *Gongylonema*, Donkey

Introduction

Members of the genus *Gongylonema* are spalled nematodes that commonly infect ruminants throughout the world. They may be encountered in the stratified squamous mucosa of the upper alimentary tract including the oesophagus, in ruminants and swine (Baker *et al.*, 1993). *Gongylonema pulchrum* occurs in the sheep, goat, cattle, pig, zebu, buffalo and less frequently the horse, camel, donkey and wild boar (Soulsby, 1982; Eslami and Farsad-Hamidi, 1992). It also occurs in deer, macaque, squirrel and marmoset (Yokohata and Suzuki, 1993; Uni *et al.*, 1994; Brack, 1996; Craig *et al.*, 1998). It has been also reported in human, particularly in the oral epithelium but also subcutaneously (Soulsby, 1982; Jelinek and Loscher, 1994; Eberhard and Busillo, 1999). In normal hosts, the worms invade the oesophageal epithelium, when they burrow stitch-like shallow tunnels (Schmidt and Roberts, 1989). This report describes the post-mortem and histopathological findings in a donkey with oesophageal and gastric gongylonemiasis.

Case presentation

The carcass of an 11-year-old donkey mare, weighing 115 kg, was presented at the necropsy section of the School of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, northeastern Iran. According to the owner, there was a history of acute colitis. A systemic necropsy was performed to determine the cause of death.

Post-mortem examination revealed blood-tinged hydroperitoneum, fibrinous clots and extensive adhesions between different parts of the viscera. Small intestine volvulus associated with perforation was diagnosed after further inspection. Examination of the upper alimentary tract showed another lesion that was not related to the previous findings directly. There were several white to pink zigzag tracks in the mucosa of the oesophagus and the stomach. Examination of these tracks revealed 6–13-cm-long white threadlike worms embedded in the mucosa. The worms were sent to the diagnostic laboratory. The anterior end was covered with typical bosses (scutes) that were arranged in longitudinal rows (Fig. 1).

The bosses began at the anterior end and extended posteriorly. The caudal alae were asymmetrical in shape and ornamented with numerous pedunculate papillae. The nematode was identified as *G. pulchrum* based on its morphological characteristics.

Histopathological examination revealed coiled sections of the parasite in the squamous epithelium of the oesophagus and the stomach (Fig. 2). There were minor to moderate mixed inflammatory infiltrates of the perioesophageal connective tissue and gastric submucosa.

Fig. 1: The anterior part of parasite with the cuticular bosses, (×160)

Fig. 2: Cross section of an adult parasite embedded in the epithelium of the stomach, (H&E, ×64)

Discussion

Of the 25 or so species in the genus *Gongylonema*, *G. pulchrum* is probably the best known one. Primarily a parasite of ruminants and swine, the worm has also been reported from monkeys, hedgehogs, bears and humans. It has been demonstrated experimentally that the life cycle involves an insect intermediate host, either a dung beetle

or a cockroach. Although these would appear rather unpalatable fare for people, they have been ingested often enough and numerous cases of human gongylonemiasis have been reported (Illescas-Gomez *et al.*, 1988; Schmidt and Roberts, 1989; Jelinek and Loscher, 1994; Eberhard and Busillo, 1999). Eggs containing first stage larvae are passed on the host's faeces and, if ingested by intermediate host, develop to the infective stage in about one month. The definitive host becomes infected by ingesting the infected insect (Bowman, 1999). The route of migration is not known in all animals but in the guinea pig, Alicata found larvae embedded in the wall of the gastro-oesophageal region (Soulsby, 1982). In an abnormal host, such as humans, they behave similarly but do not mature and seem to wander further, being found often in the epithelium of the tongue, gums, or buccal cavity (Schmidt and Roberts, 1989). In a high percentage of these cases, the sensation of a moving worm is reported by the patient (Eberhard and Busillo, 1999). Treatment is surgical removal of worms that can be seen. Chemotherapy is seldom employed (Schmidt and Roberts, 1989). *Gongylonema* spp. are usually harmless and their presence is inconsequential to the host (Baker *et al.*, 1993; Bowman, 1999), but humans become infected by accidental ingestion of infected insects (Eberhard and Busillo, 1999), so the possible human cases should be considered in an affected area. The authors believe this to be the first recorded case of equine gongylonemiasis in Iran.

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