

Research Article

Spirocerca lupi Esophageal Nodules. Case Report

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Abstract: Is Caused to parasitism by nematodes of the *Spirocerca* Sort, That Affect dog and other carnivores (wolf, fox, coyote, jaguar, lynx, leopard and only sporadically to the cat), Characterized by the presence of nodular injuries in the esophagus and aorta and, more rarely, in the stomach, digestive with respiratory and nervous manifestations. In the present work 10 canine were analyzed. I sacrifice them in humanitarian way to make the autopsy findings were the anathomopatologic: esophageal nodules of 3 and 5 cm of diameter, Which contained 3 and 15 *S. lupi* nodules whitin the respectively. Were Obtained weave samples, histopathology alters processing for STIs.

Keywords: Nodule, *Spirocerca lupi*, spondylitis, osteosarcomas

INTRODUCTION

Spirocercosis is a disease occurring predominantly in Canidae, caused by the nematode *Spirocerca lupi*. Typical clinical signs are regurgitation, vomiting and dyspnoea. The life-cycle involves an intermediate (coprophagous beetle) and a variety of paratenic hosts. Larvae follow a specific migratory route, penetrating the gastric mucosa of the host, migrating along arteries, maturing in the thoracic aorta before eventually moving to the caudal oesophagus. Here the worm lives in nodules and oases larvated eggs which can be detected using zinc sulphate faecal flotation (Rudolphi, 1809) is in the order Spirurida, family Spirocercidae. The most prevalent species is *S. Lupi*, whose definitive hosts are dogs and other wild canids and felines. Its distribution is wide being located in tropical and subtropical areas but also relatively common in temperate; It affects animals especially in rural areas. Involved in the life cycle of dung beetles *Geotropus* gender, *Scarabeus*, *Copris* and *Akis*, as intermediate hosts. A large variety of Amphibia, reptiles, birds, and small mammals Such as hedgehogs, mice, and rabbits can act as hosts paratenic (Londoño *et al.*, 2003) if they ingest these infected arthropods, and act as hosts paratenic.

S. lupi is in fibrous nodules in the wall of the esophagus or stomach. Eggs have a size of 12×30 microns which contains an embryo vermiforme when in the faeces. If ingested by dung beetles, the pear containing embryo develops to form a layered larvae infect dogs, and a wide range of paratenic hosts The

prepatent period of the infection lasts 5-approximately 6 months (Londoño *et al.*, 2003) When infected larvae are ingested by a dog, they migrate through the adventitia of the visceral arteries and aorta up to the walls of the stomach and esophagus. Some larvae lose their way and encyst in ectopic locations being in subcutaneous abscesses where an adult specimen described *S. lupi* 3cm. Long abscess which emerged at the time of surgical drainage, but usually adult parasites found in esophageal nodes that communicate the lumen of the esophagus and stomach through fistulas.

Spirocercosis symptomatology is variable depending on the intensity of the parasitic and parasitic esophageal granuloma size of lesions. The aortic alterations are seen clinically and only if the case of rupture of the vessel sudden death by internal bleeding occurs. Esophageal nodules may alter the function, so that frequently dysphagia, regurgitation, dilatation of proximal esophagus, vomiting and nausea followed sporadically expulsion of a parasite are noticed. Lack of appetite and wasting are common. Furthermore In dogs it has been reported a high incidence of osteosarcoma and fibrosarcoma esophageal, suggesting positive correlation between this parasite and the development of neoplasia. Currently, they have been elucidated some molecular and cellular mechanisms that are related to development of osteosarcoma in humans and other mammals such as dogs. Setoguchi *et al.* (2001) found that inactivation of tumor suppressor gene p53, is essential for the development of osteosarcoma and other tumors that occur naturally in

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the dog step. Ferracini *et al.* investigated the role of the MET oncogene in seven large breed dogs naturally affected by skeletal osteosarcoma and found a high correlation between the expression of the oncogene and the malignancy of the tumor; thus it is conceivable that the granulomatous inflammatory state. chronic S. Lupi inducing the dog, can trigger neoplasia by molecular mechanisms of oncogene expression or inhibiting the action of suppressor genes, key in the neoplastic process (Londoño *et al.*, 2003) Other changes that occur are: aneurysm or aortic rupture and secondary pulmonary osteoarthropathy, spondylosis, spondylitis and necrosis of salivary gland. Unfortunately spirocercosis diagnosis is performed at necropsy In this paper the method of diagnosis was by autopsy however, Endoscopy is more sensitive than radiography in the diagnosis of an S. lupi infection, Which May Have progressed only to a small nodule in the esophagus. A previous study Showed 100% sensitivity of endoscopy, 80% sensitivity of fecal flotation and 53% sensitivity of radiography in the diagnosis of an esophageal mass. The lateral radiographs with positive contrast medium to identify a circumscribed, back to the heart and also mass, you can see other pathological changes such as thoracic spondylosis, megaesophagus and neoplasia (Londoño *et al.*, 2013). A previous study antoher Also Demonstrated That endoscopy is useful for the diagnosis of S. lupi (Hiroki, 2013), so it is recommended that the fecal test routine, carefully examine the presence of eggs of S. lupi in areas where this parasite is endemic. The flotation technique is most recommended for the diagnosis of this parasitosis. However, the S. lupi eggs Were Identified MGL using the method, which is not the stool examination standard test used in clinical practice. This method should be aggressively applied in cases of esophageal masses at veterinary hospitals (Hiroki, 2013),

Current medical treatment of this parasitosis is based on Doramectin subcutaneous administration of 200 mg/kg every 14 days for three or more applications and also orally with 500 mg/kg every 24 h for six weeks (Hiroki, 2013), Although it can be used at a dose of 0.5 mg/kg PO of milbemycin oxime on days 0, 7 and 28 and then a monthly (Hiroki, 2013).

The prophylactic effect of doramectin was investigated by Lavy *et al.* (2003) in experimentally infested dogs. Five dogs were injected subcutaneously with doramectin (400 mg/kg bw on three occasions 30-days apart) and then a Inoculated With S. lupi 40 infectious larvae (L3) 1 month after the last doramectin treatment. Although doramectin did not entirely prevent canine spirocercosis, it reduced the clinical signs Associated With infection and delayed and reduced egg shedding. In a previous study was to Evaluate the preventive with monthly treatment efficacy of imidacloprid 10%/moxidectin 2.5% spot-on (Advocate®) administered over a period of 9 months in

young dogs naturally exposed to S. lupi on Réunion Island (Hiroki, 2013).

MATERIALS AND METHODS

Animals 10 domestic dogs were used, weighing 20 and 15 kg. Which they were obtained from the municipal dump the city of Villahermosa, Tabasco. It should be mentioned that these animals were used as part of the practical matter of parasitic diseases so that students learn to search for parasites and put into practice the knowledge acquired in the classroom, in search of parasites found as finding esophageal nodules S. Lupi.

Euthanasia: the animals are humanely euthanized using pentobarbital sodium given intravenously (IV) using the radial vein at a dose of 60 mg/Kg Lethal dose.

Autopsy: The proposed method was used (Aluja and Constantino, 2002).

CBC: was performed at entry of the dogs into practice, the results were hypochromic microcytic anemia with eosinophilia agranulocytosis associated with concomitant parasites Toxocara canis canis and Ancylostoma.

Blood biochemistry: We performed upon entry of the dogs into practice, the results showed an increase of creatine.

Parasites: The parasites were counted for each node obtained was preserved in 10% buffered formalin and later proceed to identify them.

Samples: tissue samples were obtained from esophageal nodules, which were preserved in 10% buffered formalin for subsequent histopathological processing in the pathology laboratory of the hospital of children "RNP".

Histopathological technique: the paraffin embedding technique was used, using hematoxylin and eosin staining.

Case 1: Lesions of the first case correspond to the formation of a granuloma with inflammatory pseudo-capsule ranging from altered mucosa to the muscle wall. The cavity is occupied by adult worms of S. lupi observed that the walls are constituted by a mixture of exuberant granulation tissue and inflammatory exudate is of mixed type (neutrophils and histiocytes).

Case 2: The lesion in the second case shows two nodes are coalesced with both pseudo - and unlike the previous capsule cavity is occupied by cylindrical trabeculae constituted 0.3 cm thick, partially covered by

a firm tissue proved to be granulation tissue endothelium. Among these trabeculae there is a lot of adult parasites *S. Lupi*. Observed that between the trabeculae which are part of esophageal tissue comprises multicystic spaces that correspond to adipose tissue sites, but others appear to be cavities formed by surrounding egg granulomas larval which in turn are surrounded by inflammatory exudates. This mix of eggs scattered in the gap surrounded by granulomas most of which are empty but some still contain eggs which gives a peculiar aspect to cuts.

DISCUSSION

The cases presented here spirocercosis in dogs, found accidentally when making the practice of autopsy; It is important to note that these cases have been found in dogs living basureo municipal city of Villahermosa, which showed no clinical signs of coccidiosis. Spirocercosis the two cases were found in the thoracic region of the esophagus making it impossible diagnosis to clinical examination. Injuries caused by the adult parasite are eliminated exclusively to the esophageal area features not found spondylitis or aneurysms in the aorta. Histopathological findings within a granulomatous reaction around the cavities formed by the parasites, and finding reported by Bailey (1972), moreover Carlile *et al.* (1997) discloses that the adult parasites form nodules on the luminal surface of the esophagus was seen observed adult parasites in each node in which a fibrous reaction, where the cavities are filled with pus seen. Neutrophils microscopically observed around the parasite, describes the connective

tissue are infiltrated macrophages, lymphocytes and plasma cells. Histopathological cut parasites have a double layer of specialized muscle of meromiario type, observing the pregnant uterus which contains embryonated eggs, which is consistent with findings in these two cases.

CONCLUSION

It is likely that cases of spirocercosis in the state of Tabasco occurs frequently, which indicates that you should consider this parasite in cases of esophageal problems, unfortunately, many cases of espirocerca are diagnosed at necropsy; but this obliges us and requires veterinarians Zootechnistas dedicated to the health of small species, endoscopy studies to rule out or say cases of esophageal nodules *S. Lupi*. Although sometimes this possibility is limited by the cost it represents.

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