

HISTOPATHOLOGY OF *SPIROCERCA LUPI*-INDUCED OESOPHAGEAL LESIONS

**H.M.S. Somarathne^{1*}, D.D.N. De Silva², R.P.V.J. Rajapakse¹,
D.M.S. Munasinghe³, K.A.N. Wijayawardhane² and N. Horadagoda⁴**

¹*Division of Parasitology, Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka*

²*Veterinary Teaching Hospital, Department of Veterinary Clinical Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka*

³*Department of Basic Veterinary Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka*

⁴*University Veterinary Teaching Hospital Camden, University of Sydney, Australia*

**suranjisk@gmail.com*

Spirocercosis is a common parasitic infection of dogs and wild carnivores in the tropics caused by the nematode *Spirocerca lupi*. The adult parasite commonly causes oesophageal granulomas. However, larval migration and tissue localization of mature worms are associated with sarcomas, aortic aneurysms, thrombosis, spondylosis, hypertrophic osteopathy and pyothorax. Even though the disease is life-threatening, the molecular biology, serology, population genetics and histopathology of the parasite are still unknown. The present study focuses on the histopathology of oesophageal lesions induced by *S. lupi* as a means to determine the host responses to the parasite and the development of the disease process which includes formation of granulomatous nodules in the distal oesophagus that may in some instances lead to or be closely associated with the development of malignancies of spindle cell origin. *Spirocerca lupi* associated specimens from the oesophagus and aorta were collected from 20 dogs at post-mortem examination, fixed in 10% neutral buffered formalin and processed routinely for histopathological studies. Tissue sections were stained with haematoxylin and eosin and selected sections were subjected to the Van Gieson stain. The sections revealed different stages of pathogenesis of *Spirocerca lupi*-induced lesions. In most cases adult *Spirocerca* worms were present within nodules that varied from 1 to 6 cm (diameter) at the distal oesophagus. Of the cases examined, fifteen were selected for further study of which 11 were classified as non-neoplastic oesophageal nodules while 4 had added lesions reflecting neoplastic changes. In the non-neoplastic group, evidence of worm migration was observed in most cases and single or multiple worm sections were present in 91% (10/11) of cases while eggs were noted in 45% (5/11) of cases. In the neoplastic cases, a solitary worm or multiple worms were present in 25% (1/4) of cases and eggs detected in 25% (1/4). In all four neoplastic cases, highly proliferative atypical chondroblasts were present in the wall of oesophageal nodules as a cluster of cells within a cartilaginous matrix. The occurrence of neoplasia was more frequent in middle to old aged male dogs. The chondroid tissue that spread over few areas of the oesophageal wall at the level of worm nodule revealed the potential ability of chondrosarcoma formation by *Spirocerca lupi*. The present study describes a spectrum of lesions induced by *Spirocerca lupi* and also revealed the association of chondrosarcoma, a malignancy of cartilage origin hitherto underreported with spirocercosis. This knowledge will help in the development of highly sensitive and specific tests using biomarkers (Interleukin 8 and 18) that will allow accurate and rapid diagnosis of *S.lupi* infection ensuring precise detection of the disease thus preventing wastage of medication and professional time which often accompanies an inaccurate diagnosis.

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