



Latin Comparative Pathology Group

The Latin Subdivision of the CL Davis Foundation

Diagnostic Exercise

Case #: 41 Month: February Year: 2014

Answer Sheet

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Clinical History: Male, non-castrated, 6.5-year-old Labrador, which had arrived to Chile from Venezuela a few months ago. The animal developed progressive regurgitation, dyspnea and exercise intolerance. At clinical examination, the animal was thin with dry coughing and submandibular lymphadenomegaly. The thoracic limbs were edematous and painful on palpation. Blood work revealed nonregenerative hypochromic normocytic anemia, leukocytosis with neutrophilia, hypoproteinemia with hypoalbuminemia, hypercalcemia and increased alkaline phosphatase. The urinalysis was unremarkable. Due to poor prognosis, the animal was euthanized.

Gross and/or microscopic image:

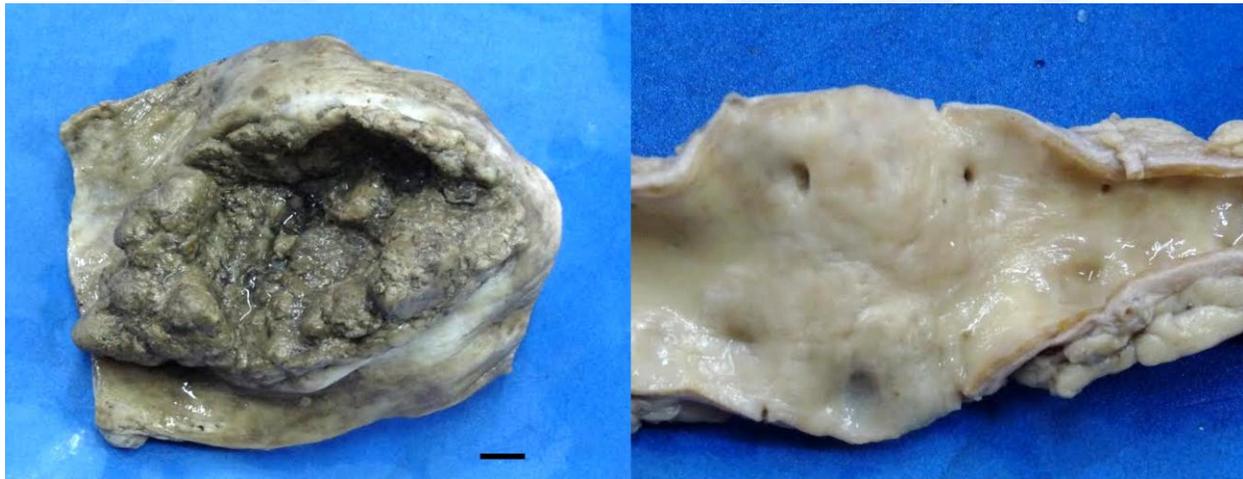


Figure 1 (left): Distal portion of the esophagus (formalin-fixed). Bar: 1 cm. **Figure 2 (right):** Thoracic aorta (formalin-fixed).

Follow-up questions: Morphologic diagnosis for each figure, cause, pathogenesis, and microscopic findings.

1. Morphologic (gross) diagnoses: A. Esophagus: Focally extensive (necro) ulcerative esophagitis. B. Aorta: Subintimal fibrosis, multifocal to coalescing.

In this case, the esophageal ulcer corresponded microscopically to osteosarcoma.

2. Cause: *Spirocerca lupi*
3. Pathogenesis: Eggs are released in feces and hatch only if ingested by dung beetle. The larvae develop to the infective stage and become encysted in the beetle, mainly on tracheal tubes. If beetles are ingested by unsuitable host (paratenic host), larval worms encyst in the esophagus and other organs of this host. In fact, larvae can be transferred from one paratenic host to another. When the final host is infected by swallowing the beetle or any infected paratenic host, the larvae migrates from the gastric mucosa into gastric and gastroepiploic arteries, and then to the celiac arteries and finally to the aorta. After approximately two months, the parasite reaches the esophagus. And there is formation of a passage (fistula) between the granuloma and the lumen of the esophagus, through which the parasite discharge ova. The prepatent period for this infection is at least 5 months.
4. Microscopic findings: At initial states, there is a granulomatous reaction with fibrosis of the esophageal wall, which can be transmural. Approximately 25% of the chronic cases will develop an intralesional mesenchymal tumor; in this case, osteosarcoma.

Comments: Esophageal tumors correspond to 0.5% of all canine tumors with the main etiology being canine spirocercosis. This patient came from Venezuela where this disease is endemic. *Spirocerca lupi* induces a focal granulomatous reaction, that in chronic infections derives into a fibrosarcoma or osteosarcoma. The definitive diagnosis of canine spirocercosis is achieved by observation of parasite eggs in feces or vomitus, but image studies and histopathology are necessary to ascertain the lesions. Interestingly, adult parasites cannot be found in all animals, and the diagnosis is based on a combination of findings, as in this particular case. In this case, this patient also developed hypertrophic osteopathy, which is associated with inflammatory and/or neoplastic conditions in the thoracic cavity. The prognosis of spirocercosis is often unfavorable. Some clinicians propose surgery and treatment with doramectin, however these procedures are only useful in early stages of the disease.

References:

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Head KW, Else RW, Dubielzig RR. Tumors of the alimentary tract. In: Tumors in Domestic Animals, Meuten JD ed. Blackwell Publishing, Ames, IA. 2002: 401-482.

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Please send your comments/questions to the whole LCPG list by hitting "reply to all".

A final document containing this material with answers and a brief discussion will be posted on the C. L. Davis website by the end of the current month (http://www.cldavis.org/lcpg_english.html).