

COMPANION ANIMALS

Update on *Echinococcus multilocularis* in Ontario

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In the March 2013 issue of the AHL Newsletter, Dr. Brooks et al. described a case of hepatic *Echinococcus multilocularis* infestation in a 2-year-old Boxer dog. Since that time, 3 additional cases have been identified in dogs by the OVC Department of Pathobiology and the Animal Health Laboratory from within Southern Ontario, a region in which this pathogen had not been previously identified.

Very recently, a 4-year-old male castrated Boxer dog was presented to the OVC Health Sciences Center with lethargy, vomiting, abdominal pain, and radiographic findings of a cranial abdominal mass. Clinical pathology on admission included severe leukopenia, neutropenia, and mild lymphocytosis. Analysis of free abdominal fluid revealed septic suppurative inflammation. On exploratory laparotomy, 3 large cavitated masses were identified in the liver varying from 10-25cm in diameter; 2 were amenable to surgical excision and submitted for histopathology (Fig. 1). These masses were filled with tan purulent fluid and had coalescing white nodules within their wall; histologically, the wall of each mass contained a mix of granulomatous and neutrophilic inflammation surrounding multilocular cysts lined by PAS-positive hyaline membranes, and occasionally contained calcareous corpuscles and cross sections of protoscolices (Fig. 2). The diagnosis of *Echinococcus multilocularis* was confirmed using PCR and sequencing at the Institut für Parasitologie in Bern, Switzerland.

Overall, 3 cases of abdominal visceral and 1 case of subcutaneous *Echinococcus multilocularis* infestation have been identified recently in Ontario dogs, comprising 3 Boxer dogs and 1 Leonberger. Only one case had a history of travel outside of Ontario. Visceral infestations are uncommon in canids, which are typically definitive hosts with infestations limited to the intestinal tract; visceral infestations typically result from ingestion of large numbers of parasite eggs, most likely in the feces of wild canids. Because of the tendency to produce multifocal and often dramatic masses, **alveolar echinococcosis should be considered a differential diagnosis for intraabdominal neoplasia in dogs.**

This pathogen is of significant public health interest, as Swiss studies have demonstrated that approximately **one-third of canine visceral cases also have enteric infections**; as such, it is considered likely that more cases will be seen in Ontario. Canine enteric infections are potentially infectious to humans in close contact; human cases are typically visceral, mimic neoplasia, and have a high case fatality if not treated (particularly when diagnosed late). **Dogs and people in contact with infected dogs are typically screened serologically for exposure.**

Beginning in September 2015, Bayer Animal Health is funding an MSc research project that will investigate levels of infestation within hunter-trapped foxes and coyotes (the typical definitive wildlife hosts for this parasite) across southern Ontario.

For additional information on this parasite, a YouTube video presentation by Dr. Andrew Peregrine is available at: <https://www.youtube.com/watch?v=XSss8BaD7Lg&feature=youtu.be> AHL

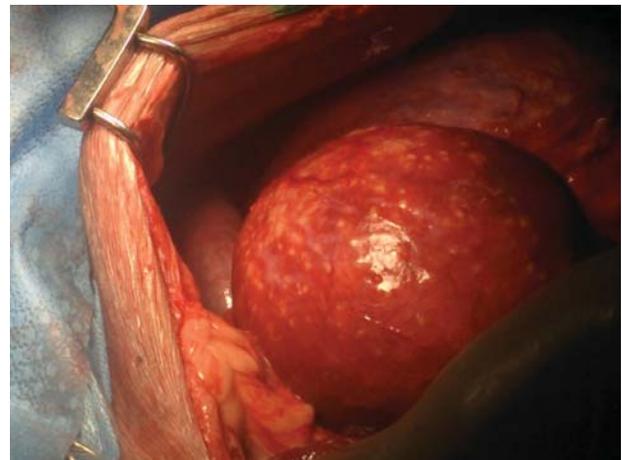


Figure 1. Intraoperative photograph of liver masses with characteristic miliary pale surface nodules (Dr. Tom Gibson, Ontario Veterinary College, with permission).

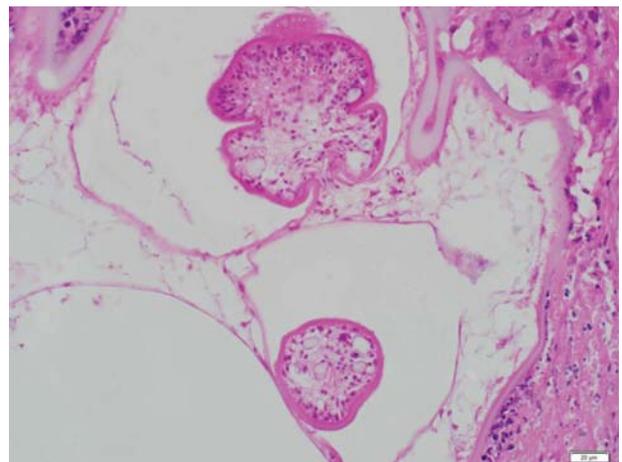


Figure 2. Histology from the wall of one of the resected masses, with 2 protoscolices from encysted tapeworms (H&E, 400 X magnification).