Use of fenbendazole for treatment of *Crenosoma vulpis* infection in a dog

Erik N. Peterson, DVM; Stephen C. Barr, BVSc, PhD; Willard J. Gould III, DVM; Kathy A. Beck, DVM; Dwight D. Bowman, PhD

A 22-kg 8-month-old female Labrador Retriever dog was evaluated because of a productive cough of 1 month's duration. Treatment with ampicillin (22.7 mg/kg of body weight, PO, q 8 h, for 7 days) prior to referral had failed to relieve the cough. The dog had been living in a rural area in upper New York State.

On physical examination, a cough could be easily elicited by palpation of the cervical trachea, and mild expiratory wheezes could be auscultated over the hilar region of the thorax. Thoracic radiography revealed bronchial patterns with some interstitial component throughout the pulmonary parenchyma, which was consistent with severe bronchitis (Fig 1). Results of a CBC and serum biochemical analysis were normal other than eosinophilia (1,900 cells/μl). Result of a Knott's test was negative. Cytologic examination of fluid retrieved by transtracheal wash performed with the dog sedated revealed eosinophilic inflammation; bacteriologic culture of the fluid yielded no growth. First stage larvae (approximately 300 μm long with blunt anterior ends and smooth tapering tails without kinks) of *Crenosoma vulpis* were found in fecal samples examined by zinc sulfate centrifugation flotation and Baermann technique (Fig 2).

Treatment consisted of prednisone (1 mg/kg, PO, q 24 h, for 7 days, then 0.5 mg/kg, PO, q 48 h, for 8 days) and fenbendazole granules[a] (50 mg/kg, PO, q 24 h, for 3 days). The dog was no longer coughing 3 days after the onset of treatment.

Six weeks after initial referral, the dog was reexamined. Abnormalities were not detected on physical examination, and results of a CBC were normal. Fecal examination by zinc sulfate centrifugation flotation and Baermann analysis did not reveal larvae of *C vulpis*. Radiographically, the interstitial pattern had resolved. Bronchial markings were still seen, but were less evident than on previous radiographs.

Crenosoma vulpis is a metastrongyloid nematode of wild canids (foxes and wolves), raccoons, and dogs.[1] Intermediate hosts for this parasite are terrestial snails and slugs, and natural infection of domestic canids results from their ingestion of infected intermediate hosts.[1] Amphibians and reptiles have been reported to serve as paratenic hosts for *Crenosoma mephitidis* of skunks, and may also serve as paratenic hosts for *C vulpis*.[2] It was assumed that the dog of this report became infected by ingesting an infected intermediate or paratenic host. The adult nematode parasitizes the bronchial tree, inducing a mild, eosinophilic, inflammatory

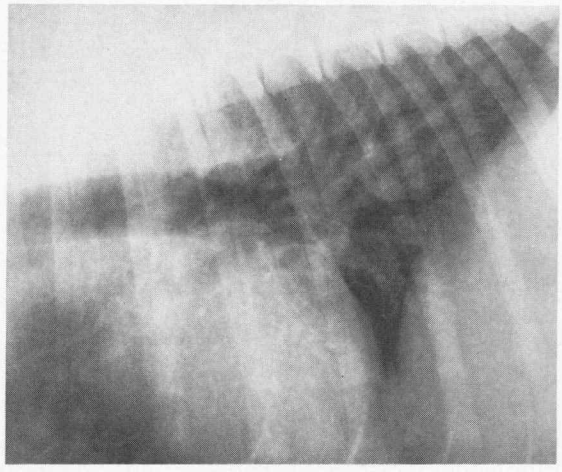

Figure 1—Lateral thoracic radiographic view of a dog with Crenosoma vulpis *infection. Notice bronchial patterns with some interstitial component throughout the pulmonary parenchyma.*

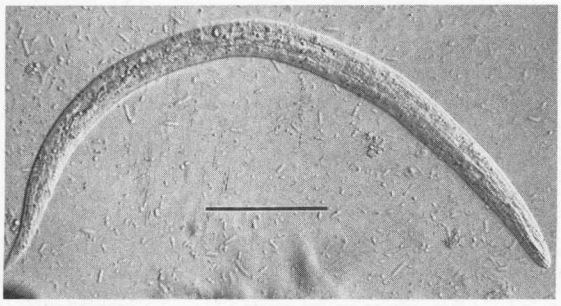

Figure 2—First stage larva of Crenosoma vulpis. *Notice the bluntly conical oral end and smoothly tapering tail devoid of ornamentation. Bar = 50 μm.*

From the Departments of Clinical Sciences (Peterson, Barr, Gould, Beck) and Microbiology, Immunology, and Parasitology (Bowman), College of Veterinary Medicine, Cornell University, Ithaca, NY 14853.

[a]Panacur, Hoechst Roussel Agri-Vet Co, Somerville, NJ.

response,[1,3,4] and crenosomiasis is a potential cause of allergic airway disease in dogs.[3,4]

On the basis of successful treatment of 3 experimentally infected dogs, a single oral dose of levamisole (8 mg/kg) has been recommended for treating crenosomiasis in dogs.[5] However, levamisole is not approved for use in dogs. Diethylcarbamazine (80 mg/kg, PO, q 12 h, for 3 consecutive days) has also been successfully used for treating experimentally induced infections.[5] Because we could not obtain permission from the owner to use levamisole in the dog of this report, we chose to use fenbendazole. Fenbendazole is approved for use in dogs and has been demonstrated to be effective in treating metastrongyle infections in swine.[6] In the dog of this report, fenbendazole at the same dosage approved for the removal of roundworms and hookworms (50 mg/kg, PO, q 24 h, for 3 days) was effective in removing *C vulpis*.

1. Georgi JR, Georgi ME. *Canine clinical parasitology.* Philadelphia: Lea & Febiger, 1991;184–186.

2. Hobmaier M. Description and extramammalian life of *Crenosoma mephitidis* N. sp. (Nematoda) in skunks. *J Parasitol* 1941;27:229–232.

3. Bauer T. Pulmonary hypersensitivity disorders. In: Kirk RW, ed. *Current veterinary therapy X Small Anim Pract.* Philadelphia: WB Saunders Co, 1989;369–376.

4. Hawkins EC, Ettinger SJ, Suter PF. Diseases of the lower respiratory tract (lung) and pulmonary edema. In: Ettinger SJ, ed. *Textbook of veterinary internal medicine.* Philadelphia: WB Saunders Co, 1989;835–839.

5. Stockdale PG, Smart ME. Treatment of crenosomiasis in dogs. *Res Vet Sci* 1975;18:178–181.

6. Georgi JR, Georgi ME. *Parasitology for veterinarians.* Philadelphia: WB Saunders Co, 1990;179.

Book Review: Pocket Companion to Textbook of Veterinary Internal Medicine

The stated purpose of this handbook is to provide clinicians with an easily accessible source of information focusing on identifying important and relevant clinical data in an abbreviated summary form. The source of the information is the *Textbook of Veterinary Internal Medicine,* Stephen Ettinger, editor.

The size of the handbook makes it easy to carry or have on one's desk or in the examination area or home. The information is presented in broad outline form with boldfaced subtitles under each chapter and information following these subtitles. Tables and figures reprinted from the parent text are well placed and appropriate to each subject. A well-designed set of appendices listing drugs, their indications, canine and feline dosages, and brief precautions is located in the back of the handbook. Also helpful are page references to the parent text for more complete information on the various topics.

The summaries of information from the parent text are well condensed and maintain the important information. Rarely was material I thought useful left out of the summaries. This is always a risk in condensing a vast amount of information.

This handbook is a good value at $35.00 for those who need a portable, compact source of summaries of relevant information on clinical small animal medicine. As this handbook is not intended to be a substitute for the parent text, its usefulness would be limited to those to whom the parent text is not immediately accessible. Students in clinics, mobile practitioners on the road, busy multiperson practices, and as an at-home reference source are among the persons and places for which this handbook would be valuable.—*[Pocket Companion to Textbook of Veterinary Internal Medicine. By Stephen J. Ettinger. 912 pages; illustrated. WB Saunders Co, The Curtis Center, Independence Square West, Philadelphia, PA 19106-3399. 1993. Price $35.00.]*—JAMES E. HAGEDORN