



# Gastrointestinal haemorrhage due to *Ancylostoma caninum* infection

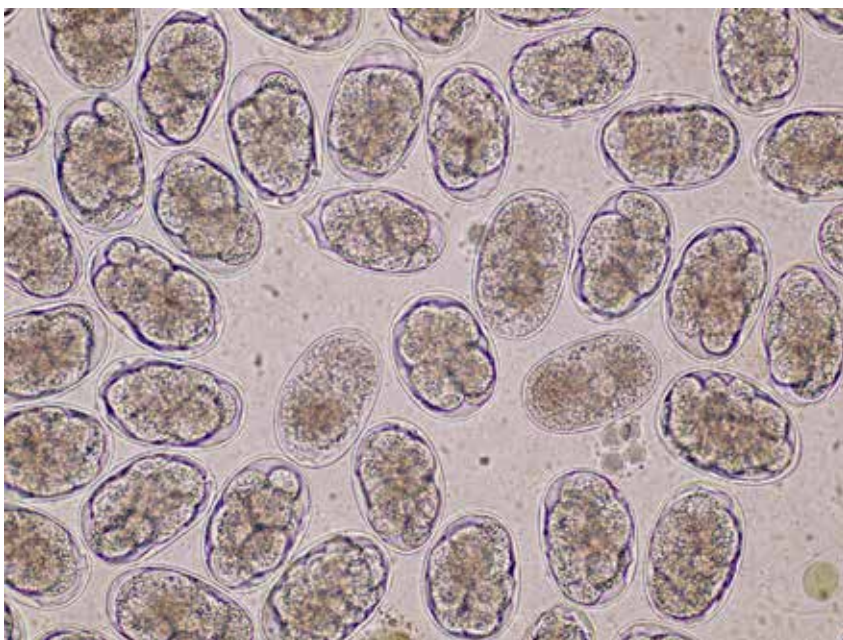
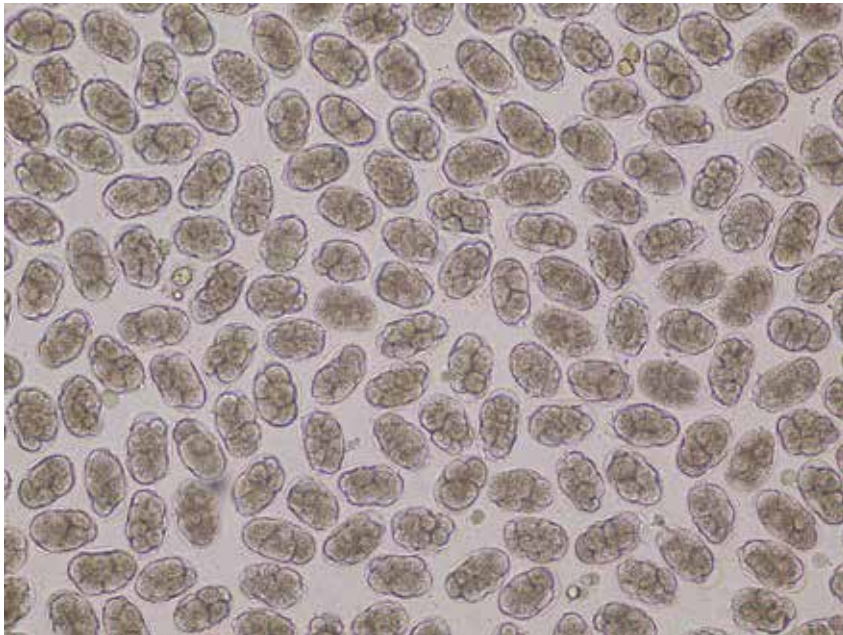
**Rebecca Allan**, of Gribbles Veterinary Palmerston North, reports on a striking case of severe hookworm infection.

**A TWO-YEAR-OLD, ENTIRE** male Greyhound presented for emergency veterinary care following an episode of collapse at the end of a race. The dog was bright and alert, but physical examination revealed pale gums, and the owner reported a history of dark faeces in the preceding two to three weeks. Results from a CBC revealed a moderately severe, hypochromic, microcytic, regenerative anaemia, with no spherocytes or agglutination noted on blood film examination. Hypoproteinaemia due to both low albumin and globulin concentrations was evident in the biochemistry panel (see results in Table 1).

A presumptive diagnosis of gastrointestinal haemorrhage was made, and the dog was discharged after treatment with IV fluids and gut protectants, along with instructions for

**TABLE 1:**  
**Significant CBC and biochemistry results.**

	Day of presentation	Two days later	Reference range
<b>RBC</b>	2.96	1.6	6.7-9.3 x 10 <sup>12</sup> /L
<b>Haemoglobin</b>	59	29	163-220g/L
<b>Haematocrit</b>	0.19	0.10	0.47-0.63 L/L
<b>MCV</b>	64	62	66-72fl
<b>MCHC</b>	311	284	341-360g/L
<b>Reticulocytes</b>	115	18	0-70 x 10 <sup>9</sup> /L
<b>Total protein</b>	36	-	46-83g/L
<b>Albumin</b>	21	-	29-39g/L
<b>Globulin</b>	15	-	17-30g/L



**FIGURE 1:** *Ancylostoma caninum* eggs, 200x and 400x. Photomicrographs of hookworm eggs from this case are courtesy of Bernie Vaatstra.

the owner to collect and deliver a faecal sample to the laboratory for a faecal egg count (FEC).

The dog collapsed again two days later, this time with haemorrhagic diarrhoea, and was seen by his primary care veterinarian. A repeat CBC demonstrated a now severe, microcytic, hypochromic, non- or pre-regenerative anaemia. No abnormalities were detected in a coagulation profile, which ruled out a concurrent coagulopathy. Results from

the FEC demonstrated a staggering 154,800 strongyle eggs/gram, confirming a severe hookworm infection (see Figure 1). Subsequent examination of adult worms identified them as *Ancylostoma caninum*. Treatment included a whole blood transfusion and anthelmintic treatment, and the dog went on to make an excellent recovery.

The initial presentation of this dog with a history of collapse, pale gums and possible melena, paired with a moderately severe regenerative anaemia and panhypoproteinaemia, strongly suggested gastrointestinal haemorrhage. Hypochromatic and microcytic red cells indicated blood loss was likely to be chronic. Differentials for GI blood loss would include upper GI ulceration due to stress or NSAID use, hookworm infection, rat bait toxicity or a bleeding tumour.

In this case, a severe hookworm infection was the cause of the gastrointestinal blood loss, with *Ancylostoma* worms identified by parasite identification. Of the two species of hookworm (the other being *Uncinaria*) that cause infection in dogs, *Ancylostoma* is the least common and most pathogenic. A small parasitic burden in a healthy adult dog may be asymptomatic, but in large numbers can cause severe anaemia and substantial gastrointestinal blood loss. Adult worms are voracious bloodsuckers that consume up to 0.1ml of blood in 24 hours, so 100 worms will consume 10ml in a single day. They also cause local bleeding at the site of attachment due to the production of anticoagulants, and a single adult worm will detach and reattach up to six times a day. In addition to infecting dogs, occasionally cats and humans can be infected, so they are of zoonotic importance. <sup>10</sup>

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