

***Haemobartonella canis* infection following splenectomy and transfusion**

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H*aemobartonella canis* is a rickettsial parasite of the dog that can cause anemia. Haemobartonellosis is infrequently encountered (1,2) in Canada and there are few reports in the literature, which reflects the absence of clinical disease, unless the dog is receiving chemotherapy or has been splenectomized. The parasite's life cycle involves the brown dog tick, *Rhipicephalus sanguineus*, which does not survive the winter in northern climes.

A 9-year-old, spayed female, golden retriever was admitted to hospital for sudden listlessness. She has resided her entire life in British Columbia. There was no history of trauma and she was kept confined. Her previous medical history included amputation of the 5th digit of the right forelimb for excision of a mast cell tumor. A 2nd mast cell tumor developed on her right hock 8 mo after the 1st excision, but the owners declined further therapy.

The dog was in lateral recumbency and could not rise. Further examination revealed a temperature of 38.8°C, a heart rate of 170 beats/min, and a respiratory rate of 42 breaths/min. The femoral pulse was thready. The clinical assessment supported hemorrhage; auscultation of the thorax did not reveal any abnormalities, so an abdominal tap was performed and yielded frank blood. The packed cell volume (PCV) on the peripheral blood was 0.310 L/L. An emergency exploratory laparotomy was performed. The abdomen was full of blood and there was a friable mass (11 cm diameter) on the spleen. The spleen was removed. Within 12 h, the PCV had fallen to 0.140 L/L, the mucous membranes were pale, and the capillary refill time was prolonged. A large dog of unknown origin and history was acquired and used to collect 800 mL of blood for transfusion. The patient was given the freshly collected blood and her PCV increased to 0.260 L/L. The patient improved after the transfusion and was discharged. When she was returned for suture removal 10 d postsurgery, the PCV was 0.360 L/L. Twenty-nine days after the surgery, she returned with weakness and anemia. Our immediate concern was that the dog was bleeding from further

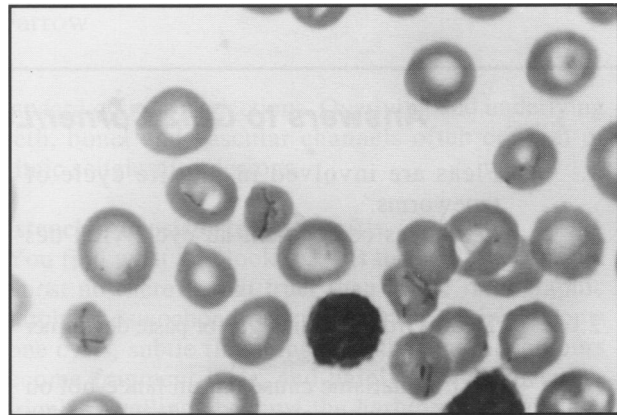


Figure 1. Wright Geimsa stained blood film (1000×). Note numerous red blood cells showing *Haemobartonella canis* organisms on the cell membrane.

abdominal masses, but blood was not detected on an abdominal tap. A complete blood count (CBC) was performed. The PCV was 0.182 L/L, with 30% of the red blood cells (RBCs) demonstrating distinct surface inclusions (Figure 1). The anemia was markedly regenerative with a 35% reticulocyte count. A diagnosis of haemobartonellosis was made and the animal was placed on oral tetracycline (Apo Tetra, Apotex, Inc., Weston, Ontario) at a dose of 500 mg q8h. Within 3 d, the PCV had improved to 0.280 L/L, and subsequent CBCs at 25 and 40 d posttetracycline treatment demonstrated a return to normal parameters (Table 1). One year postsurgery, the dog continues to do well.

Few cases of canine haemobartonellosis have been recognized at this laboratory over the past 11 y. Animals become infected with the parasite and a carrier state develops until either splenectomy or chemotherapy causes disease expression (1,3). This dog was not only splenectomized but also received a blood transfusion from an unscreened donor dog. The transfusion was deemed a requirement of survival with speed of the essence, so no screening or cross match procedures were performed. The prepatent period following IV injection of the parasite is considered to range from days to 2 wk or more (1,2). This dog had a very regenerative anemia on day 29, indicating that the anemia had been present for at least 7 d. The dog was native to British Columbia and the brown dog tick does not occur in this area, which suggests that the donor was the likely source of the parasite.

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Table 1. Hematology data from dog with haemobartonellosis (time interval reflects days from splenectomy)

	Day 29	Day 54	Day 69	Reference range
WBC ($\times 10^9/L$)	20.3	9.8	9.6	6.0–17.0
RBC ($\times 10^{12}/L$)	2.1	5.2	5.4	5.5–8.5
Hemoglobin (g/L)	59	126	131	120–180
PCV (L/L)	0.182	0.361	0.375	0.370–0.550
MCV (fL)	87	69	69	60–77
MCH (pg)	28	24.2	24.3	19–25
MCHC (g/L)	324	349	350	320–360
NRBCs/100 WBCs	4	1	0	none
Reticulocyte (%)	35	NA	NA	0–1.0
Hemobartonella	+++	none	none	

WBC: white blood cell
RBC: red blood cell
PCV: packed cell volume
MCV: mean corpuscular volume
MCH: mean corpuscular hemoglobin
MCHC: mean corpuscular hemoglobin concentration
NRBC: nucleated red blood cell
NA: not applicable

Splenic masses are common in older dogs, with rupture often associated with acute abdominal hemorrhage (4). Hemangiosarcomas used to be considered the most common cause of splenic masses, but a recent publication concluded that splenic hematoma and hyperplastic nodules account for 43% of splenic masses (5). These 2 conditions are grossly indistinguishable from hemangiosarcoma, which accounted for 10% of the nodules. Other forms of neoplasia accounted for a further 10% of the splenic nodules. Since the owner declined to have the splenic mass examined histologically, no definitive diagnosis was possible.

This case illustrates the necessity of considering unusual causes of anemia and of pursuing various diagnostic tests to determine the cause. Transfusions may be lifesaving, and unscreened blood is commonly used in veterinary practice, particularly in emergency situations (4). The increased movement of animals may

result in an increase in unusual blood-transmitted disease. However, many of the parasitic diseases can be effectively treated once the diagnosis is made, and the resulting improvement is rapid.

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