

# BLOOD DISORDERS OF CATS

Charley E. Gilmore, DVM, and Jean Holzworth, DVM

*Angell Memorial Animal Hospital, Boston, Massachusetts*

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The cause and treatment of blood disorders, especially anemia and a type of leukoproliferative disease, constitute a major challenge in cat practice. The PCV (average 37%) and the hemoglobin level (12 to 14 Gm/100 ml) in cats are normally lower than in other species. Total WBC counts are normally about 12,000/cmm but much lower counts are common in healthy cats. The normal differential count is 60 to 70% neutrophils, 10 to 40% lymphocytes, 5% eosinophils and 3% monocytes.

A stained film is the most valuable single hematologic procedure, used for differential and estimated total WBC counts, diagnosis of infectious anemia, and to determine if the marrow is producing a normal number of platelets or young RBC in anemia. A drop of fresh blood should be spread thinly and evenly on a slide and dried rapidly to prevent red-cell crenation. A space should be left between the smear and the slide edge since infectious anemia bodies are best recognized on the margin of the film.

To obtain a marrow smear in suspected cases of aplastic anemia or leukemia the soft tissue and periosteum at the crest of the ilium are infiltrated with 2% procaine. Through a tiny incision an 18-ga needle with seated stylet is rotated back and forth through the cortex of the iliac crest. Enough marrow is aspirated to fill the needle and a smear is made.

The 3 basic causes of anemia are acute blood loss, blood destruction, and

deficient production. With the first 2 the marrow reacts by pouring young red cells into the circulation, while in the last the marrow lacks a material to make blood cells or is itself inhibited or damaged. Acute blood loss due to injury, surgery or bleeding tumors or ulcers is uncommon. Hemolysis is primarily due to infectious anemia, but also to immune or autoimmune reactions, and toxic agents or drugs such as naphthalene in dry shampoo and methylene blue in urinary antiseptics.

Infectious anemia most commonly affects young adult males, with signs of fever, weakness, pallor, splenic enlargement and sometimes mild jaundice. The pathognomonic bodies may no longer be present once treatment is started. Treatment consists of 50 to 80 ml whole blood to tide the cat over the crisis and 100 mg oxytetracycline b.i.d. for 3 weeks. Often cats are carriers of this infection and show it clinically only when they become ill from other causes.

Primarily infectious anemia accounts for only a small proportion of feline anemias, and when it fails to respond to treatment, the basic problem may be something else. The majority of feline anemias are caused by deficient marrow production due to marrow infection, poisoning, chronic liver and kidney disease, neoplasia, and unknown causes. In many cases treatment is unsuccessful and the marrow is irreversibly depressed.

Many cats with anemia are devoid of other clinical or pathologic signs. On necropsy the spleen and liver may be enlarged and in most cases the marrow is morphologically normocellular or deficient in erythropoiesis to varying degrees. Nutritional anemias are uncommon for few respond solely to liver injections, B<sub>12</sub> or folic acid. In truly aplastic anemia — depression of WBC and RBC formation with no evidence of infection — treatment with prednisone and testosterone occasionally reactivates the marrow.

Replacement of marrow by malignant blood cells (leukemia or lymphoma) is an important cause of anemia. Often secondary conditions such as fevers, respiratory infections or stomatitis may mask this condition. An enlarging spleen, liver or lymph nodes or terminal icterus may be present. A marrow film may disclose a heavy infiltration with primitive cells. The WBC count may be high, normal or low.

Only about 10% of affected cats have lymphocytosis or abnormal or immature lymphocytes in the peripheral blood. At necropsy most cats have masses of neoplastic lymphocytic tissue involving lymph nodes, kidneys, anterior mediastinum and other organs. In a few cases, cure or remissions have occurred following corticosteroid or cyclophosphamide (Cytoxan: Mead Johnson) treatment.

Another important group of leukoproliferative disorders termed reticuloendotheliosis is characterized by severe refractory anemia and undifferentiated cells in the peripheral blood and bone marrow. Clinically they are not distinguishable from other malignant blood conditions. Affected cats become depressed, weak, anorectic, anemic (avg 10% PCV), and have persistent fever (103 to 106). Spleens are greatly enlarged, liver and lymph nodes less so.

There is always progressive deterioration despite antibiotic, vitamin, hematinic and steroid treatment, and death ensues within weeks. Total WBC counts are usually moderately elevated (avg 22,000). Diagnosis is based on the severe anemia and presence of completely immature and undifferentiated cells in the blood and marrow. The etiology is unknown but generally regarded as a "reticulum cell" leukemia. Cats of both sexes, 1 to 10 years old, have been affected.