

Neutropenia

Julie Allen, BVMS, MS, MRCVS, DACVIM (SAIM), DACVP
Cornell University

FOR MORE

Find more Differential Diagnosis lists in upcoming issues of *Clinician's Brief* and on cliniciansbrief.com

- ▶ Panting
- ▶ Hypercholesterolemia
- ▶ Hypocholesterolemia
- ▶ Hypoalbuminemia
- ▶ Decreased Total Thyroxine
- ▶ Increased Total Thyroxine
- ▶ Hypoglycemia
- ▶ Epistaxis
- ▶ Regurgitation

Following are differential diagnoses, listed in order of likelihood, for patients presented with neutropenia.

- ▶ Increased migration into tissue due to severe inflammation (eg, pneumonia, peritonitis) or acute endotoxemia due to increased margination; can occur within an hour of endotoxin release by gram-negative bacteria
- ▶ Decreased bone marrow production (often in association with other cytopenias) resulting from:
 - Chemotherapeutics
 - Estrogen toxicity (endogenous [eg, Sertoli cell tumor] vs exogenous)
 - Other drugs (eg, potentiated sulfonamides)
 - Myelophthisis
 - Myelofibrosis
 - Neoplasia (eg, lymphoblastic leukemia, multiple myeloma)
 - Bone marrow necrosis (eg, from sepsis, heatstroke, or drugs [eg, phenobarbital, carprofen, metronidazole, cyclophosphamide, colchicine, fenbendazole])
 - Canine parvovirus and feline panleukopenia virus
 - FeLV and FIV
 - Tick-borne disease (eg, *Ehrlichia canis*, *Ewingii*, *Anaplasma phagocytophilum*, babesiosis)
 - Gray collie syndrome (ie, cyclic hematopoiesis)
 - Trapped neutrophil syndrome of border collies
- ▶ Increased neutrophil destruction resulting from:
 - Immune-mediated neutropenia (primary or secondary [eg, to drugs or infection])
 - Hemophagocytic syndrome, often with other cytopenias
 - Histiocytic sarcoma, often with other cytopenias
 - Drugs
 - Toxins
 - Viruses
- ▶ Vitamin B12 deficiency, particularly in border collies, Australian shepherd dogs, giant schnauzers, and beagles
- ▶ Breed-associated cause of unknown mechanism, particularly in Belgian Tervurens and Australian shepherd dogs
- ▶ Idiopathic neutropenia (cats) ■■■

References

- Brown MR, Rogers KS. Neutropenia in dogs and cats: a retrospective study of 261 cases. *J Am Anim Hosp Assoc*. 2001;37(2):131-139.
- Devine L, Armstrong PJ, Whittemore JC, et al. Presumed primary immune-mediated neutropenia in 35 dogs: a retrospective study. *J Small Anim Pract*. 2017;58(6):307-313.
- Latimer KL, Prasse KW. Leukocytes. In: Latimer KS, Mahaffey EA, Prasse KW, eds. *Duncan and Prasse's Veterinary Laboratory Medicine: Clinical Pathology*. 4th ed. Ames, IA: Blackwell Publishing Professional; 2003:45-82.
- Schnelle AN, Barger AM. Neutropenia in dogs and cats: causes and consequences. *Vet Clin North Am Small Anim Pract*. 2012;42(1):111-122.
- Schultze AE. Interpretation of canine leukocyte responses. In: Weiss DJ, Wardrop KJ, eds. *Schalm's Veterinary Hematology*. 6th ed. Ames, IA: Blackwell Publishing Ltd; 2010:321-334.
- Soare T, Noble PJ, Hetzel U, Fonfara S, Kipar A. Paraneoplastic syndrome in haemophagocytic histiocytic sarcoma in a dog. *J Comp Pathol*. 2012;146(2-3):168-174.
- Stockham SL, Scott MA. Leukocytes. In: Stockham SL, Scott MA. *Fundamentals of Veterinary Clinical Pathology*. 2nd ed. Ames, IA: Blackwell Publishing; 2008:53-106.
- Suwa A, Shimoda T. Lymphoma-associated hemophagocytic syndrome in six dogs. *J Vet Med Sci*. 2018;80(8):1271-1276.