

Instructional Objectives / Learning Outcomes
DMP 775, Veterinary Clinical Pathology
Department of Diagnostic Medicine/Pathobiology
College of Veterinary Medicine, Kansas State University

Chapter 3: Leukocytes

42. Given leukograms and reference intervals for domestic mammals with common clinical disorders:
 - a. List and classify abnormalities using appropriate terms.
 - b. Propose appropriate diseases, syndromes, pathologic states or conditions that might cause the defined abnormalities.
 - c. Based on your conclusions or ideas, explain the pathogenesis of each defined abnormality if the abnormality could be caused by the disorder.
43. Define and contrast the following or similar states (information not in FVCP, 1st ed.).
 - a. Absolute neutrophilia
 - b. Relative neutrophilia
44. Recognize and explain the situations or conditions when the following are true (information not in FVCP, 1st ed.).
 - a. There is a relative lymphocytosis but there is not a lymphocytosis.
 - b. There is a relative lymphopenia but there is a lymphocytosis.
 - c. There is a normal leukocyte differential count but there is a neutropenia.
45. Define, in the context of blood neutrophils: left shift, right shift, regenerative left shift, degenerative left shift.
46. List and recognize these diseases or conditions that may cause a right shift: glucocorticoid hormones, Poodle marrow dyscrasia syndrome, and *in vitro* aging. For each, explain the pathogenesis of the right shift (if known).
47. List and recognize these 4 categories or types of neutrophilia: inflammatory, glucocorticoid-associated, physiologic, neoplastic. For each, explain the processes that produce neutrophilia (if known). List the types of diseases/disorders that may create an inflammatory neutrophilia.
48. List and recognize these 4 categories or types of neutropenia: inflammatory, peripheral destruction, granulocytic hypoplasia, ineffective production. For each, explain the processes that produce neutropenia (if known). List the types of diseases/disorders that may create an inflammatory neutropenia, destruction neutropenia, granulocytic hypoplasia, and ineffective-production neutropenia.
49. List and recognize these 4 categories or types of lymphocytosis: inflammatory, physiologic, neoplastic, hypoadrenocorticism. For each, explain the processes that produce lymphocytosis (if known). List the types of diseases/disorders that may create an inflammatory lymphocytosis.
50. List and recognize these 4 categories or types of lymphopenia: inflammatory, glucocorticoid-associated, depletion, lymphoid hypoplasia/aplasia. For each, explain the processes that produce lymphopenia (if known). List the types of diseases that may create an inflammatory lymphopenia or glucocorticoid-associated lymphopenia.
51. List and recognize the categories or types of disorders that cause these findings.
 - a. Monocytosis
 - b. Eosinophilia (see Table 3.9, p. 71)
 - c. Eosinopenia
 - d. Basophilia

- e. Mastocytemia
52. Explain the species variations in leukocyte kinetics which cause the following.
- a. Inflammatory neutropenia in cattle with relatively mild inflammatory diseases
 - b. Leukocytosis, neutrophilia, or lymphocytosis in frightened cats.
53. List and recognize the categories or types of disorders that cause these findings.
- a. Leukocytosis (major concepts)
 - b. Leukopenia (major concepts)
54. Explain the clinical significance of the following if found in an animal's blood.
- a. Toxic neutrophils
 - b. Giant neutrophils
 - c. Hypersegmented neutrophils
 - d. Reactive lymphocytes
55. For morphologic examination, identify abnormal leukocytes or leukocyte inclusions of the following and explain their clinical significance.
- a. Erythrophage
 - b. Ehrlichial morulae
 - c. *Hepatozoon americanum*
 - d. *Histoplasma capsulatum*
 - e. *Leishmania* spp..
 - f. *Mycobacterium* spp.
 - g. Pelger-Huët neutrophils or eosinophils
56. Extra credit (potential) - For morphologic examination, identify abnormal leukocytes or leukocyte inclusions of the following and explain their clinical significance.
- a. Hereditary disorders that have leukocyte inclusions (p. 79)
 - b. Bone marrow dyscrasia of poodles (p. 80)
 - c. Idiopathic hypersegmentation of horses (p. 80)
 - d. Pseudo-Pelger-Huët neutrophils (p. 80)