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SPECIMEN: Blood smear

SIGNALMENT: 1-year-old male castrated domestic shorthair cat

HISTORY AND CLINICAL FINDINGS:

The patient was presented to the NC State Veterinary Hospital for a one week history of intermittent open-mouth breathing and tachypnea. On physical exam, the patient was dyspneic with an increased inspiratory effort, significant stridor, which obscured auscultation of bronchovesicular sounds, and extension of the head and neck with an exaggerated swallow. The remainder of the physical exam was considered unremarkable. Initial diagnostics performed at this time included CBC, serum chemistry panel, thoracic and cervical radiographs, CT of the head and neck, and upper airway endoscopy. A pathologist review of the patient's blood smear was ultimately performed. Prior to CT imaging, intubation was noted to be difficult due to markedly swollen, pale, and edematous arytenoids and epiglottal folds.

The patient previously presented to NC State Veterinary Hospital about 5 months prior for evaluation of a 3-month history of large to mixed bowel diarrhea and a 1-month history of vomiting. A CBC was not performed at this visit. The patient's GI signs ultimately improved on a select protein diet and tylosin administration.

LABORATORY DATA:

Hemogram Results:

TEST	UNITS	RESULT	REFERENCE INTERVAL
WBC	x 10 ³ /UL	23.72 H	3.77 - 16.73
RBC	x 10 ⁶ /UL	8.55	7.11 - 12.02
HGB	G/DL	13.8	11.3 - 17.2
HCT	%	39.4	33 - 51
MCV	FL	46.1	38.3 - 49.9
MCH	PG	16.1	13.1 - 16.8
MCHC	G/DL	34.9	32.2 - 35.7
RDW	%	15.3	13.4 - 16.9
PLATELET	x 10 ³ /UL	281	198 - 434
MPV	FL	15.4	8.8 - 21.3
PCT	%	0.43	0.28 - 0.85
PCV	%	41	32 - 48
Plasma Protein	G/DL	7.5	6.6 - 8.1
Segmented Neut	x 10 ³ /UL	14.47H	2.773 - 6.975

Lymph	x 10 ³ /UL	7.119H	0.415 - 4.996
Monocyte	x 10 ³ /UL	1.186H	0.068 - 0.78
Eosinophil	x 10 ³ /UL	0.949H	0.118 - 0.879
Absolute Retic	/UL	36000	

Serum Chemistry Results:

The patient had mild elevations in both ALT and AST. The remainder of results were within reference intervals.

TEST	UNITS	RESULT	REFERENCE INTERVAL
ALT	IU/L	184 H	22 – 105
AST	IU/L	67 H	12 – 44

Figure 1(A)

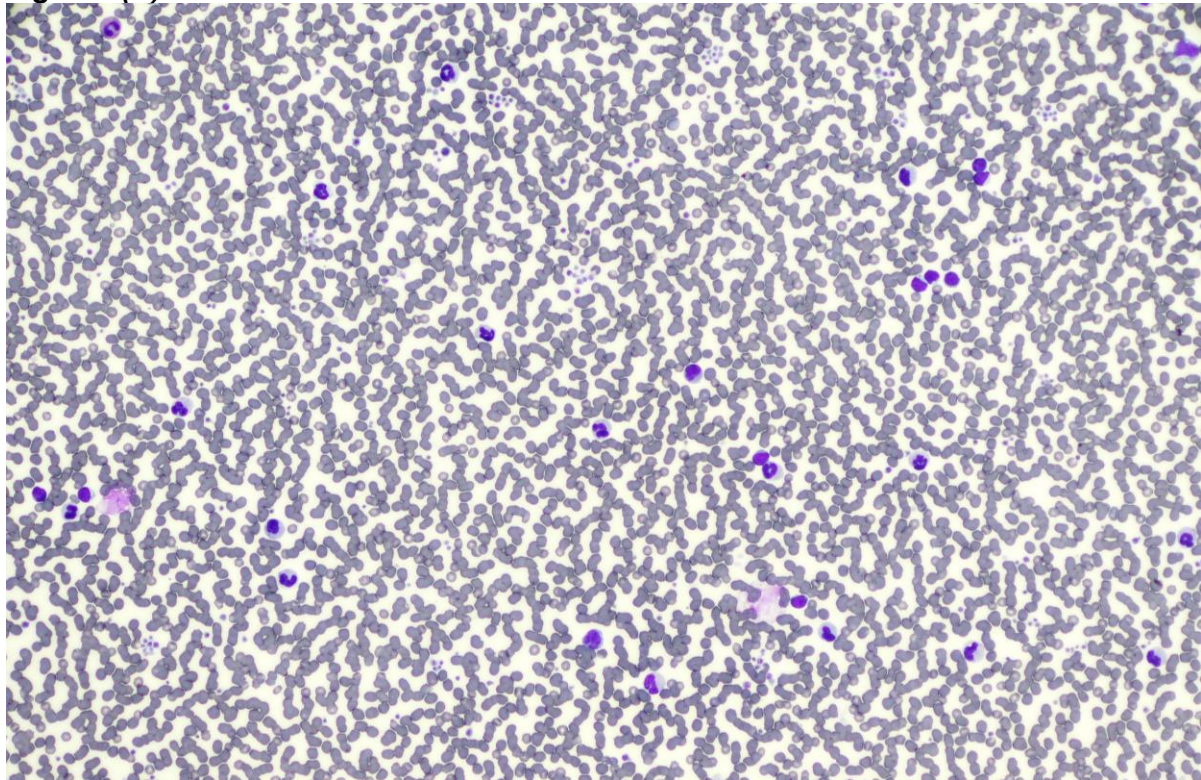


Figure 1(B)

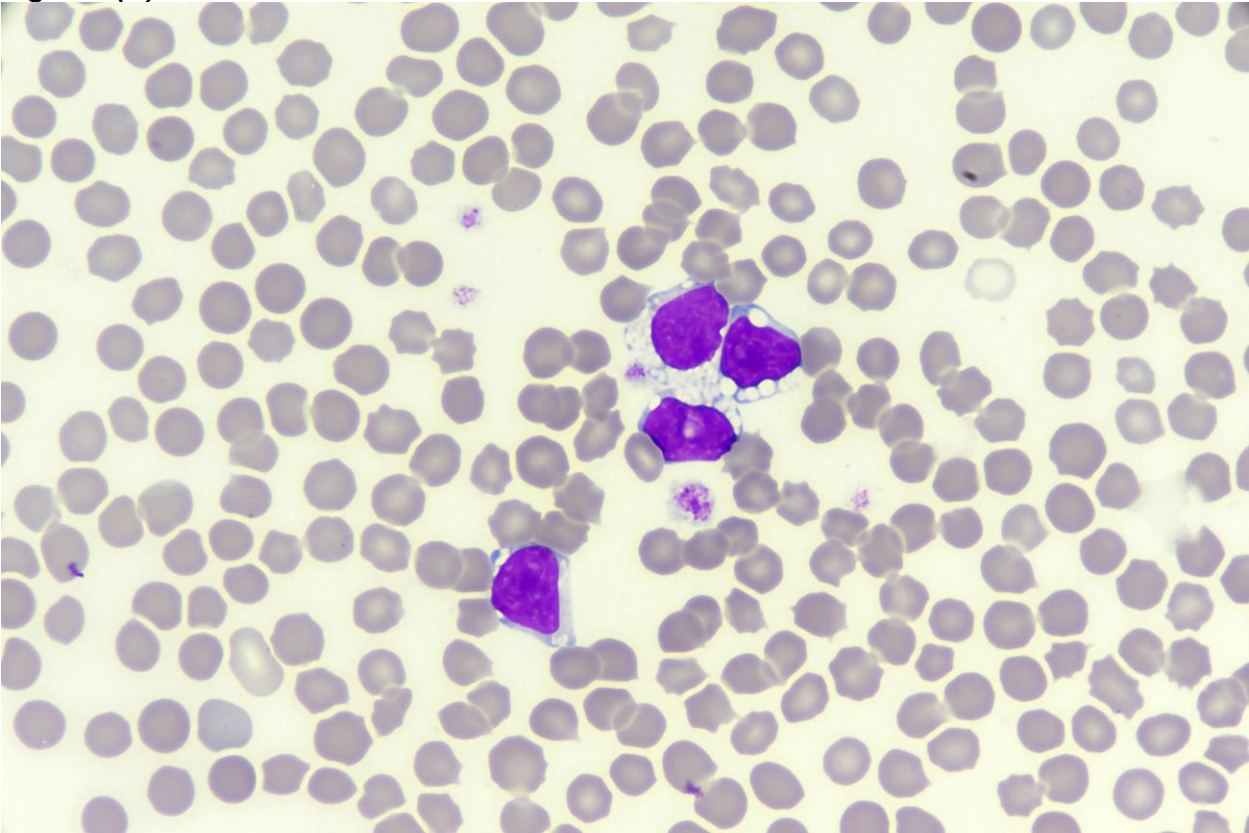


Figure 1(C)

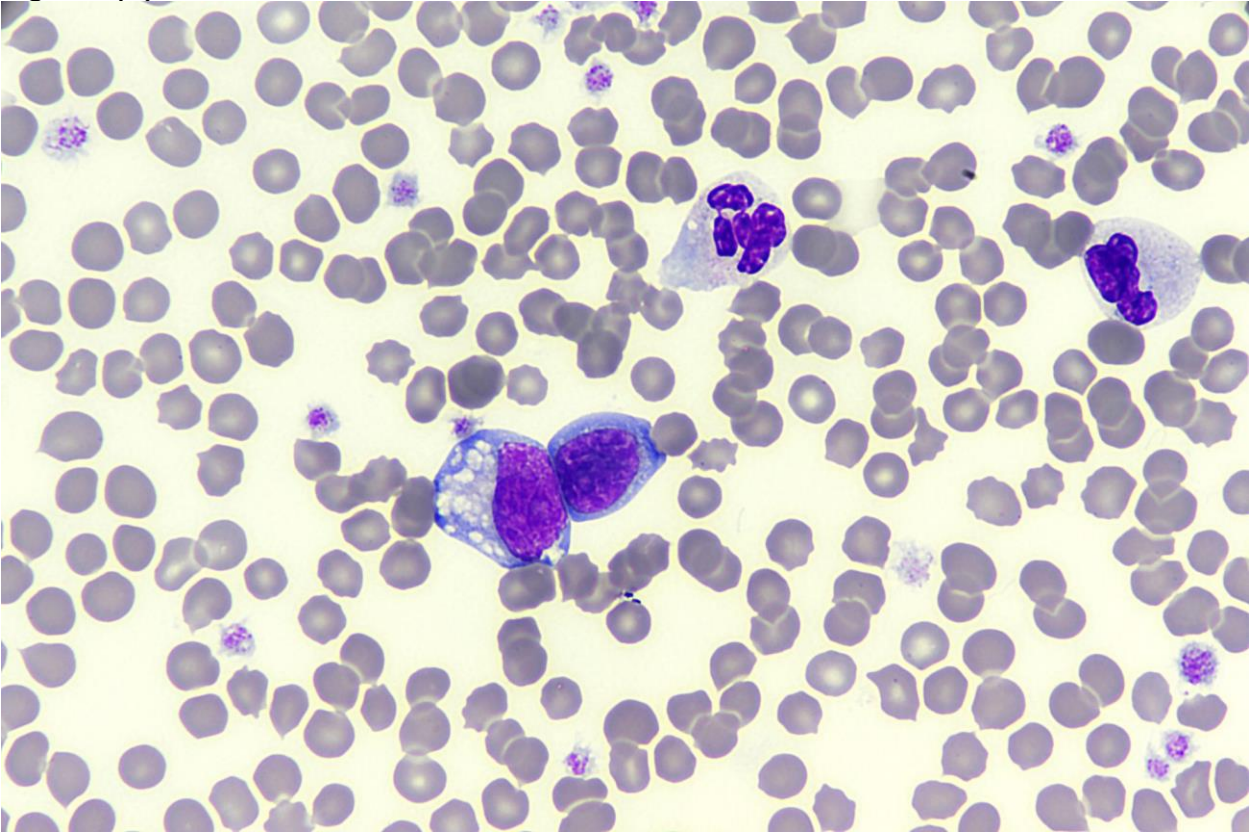


Figure 1 (A-C). Photomicrographs of blood smear from a 1-year-old male castrated domestic shorthaired cat. Wright-Giemsa stain. (A) Direct Smear Preparation $\times 20$ objective. (B-C) Direct Smear Preparation $\times 100$ objective.

ADDITIONAL DIAGNOSTIC TESTS:

Imaging Findings

- Thoracic radiographs: No radiographic evidence of lower airway disease
- CT findings: Swollen peri-arytenoid tissues and moderate regional lymphadenopathy. No other oral, nasal, pharyngeal, or laryngeal abnormalities noted. No polyps, masses or foreign material identified.

Upper Airway Endoscopy:

Proliferative tissue noted at the dorso-caudal aspect of the soft palate.

Pharynx aspirate and cytological interpretation

Marked suppurative inflammation with bacterial infection (predominantly cocci); uniform epithelial cells

QUESTIONS:

- A) What are three differentials for the blood smear findings?
- B) Which statement is correct?
- A) Primary lysosomes originate from the Smooth Endoplasmic Reticulum
 - B) Mannose-6-phosphate (M6P) present on lysosomal soluble hydrolases are degraded in the cis-Golgi network
 - C) Lysosomal proteases play a significant role in regulating macroautophagy
 - D) Glycosaminoglycans (GAGs) are typically absent in the extracellular matrix (ECM)