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Gastrointestinal Signs in a Cat

A 9-year-old, 3.6-kg spayed female domestic shorthair cat was presented for evaluation of a 1-month history of poor appetite, weight loss, and intermittent vomiting.

History. Three weeks earlier the patient had been examined by another veterinarian, who prescribed an antibiotic (amoxicillin trihydrate/clavulanate potassium, 62.5 mg PO Q 12 H) and a gastroprotectant (famotidine, 2.5 mg PO Q 24 H). No improvement was reported, and clinical signs had gradually worsened since that time. The patient lives in a single-cat household, is current on all vaccinations, and does not spend time outdoors. The owner reported no history of exposure to toxins or ingestion of foreign material.

Physical Examination & Laboratory Results. The patient was bright and alert; approximately 5% dehydrated; and had moderate, diffuse muscle wasting. Oral mucous membranes were pink and tacky. Findings on thoracic auscultation were unremarkable. Abdominal palpation revealed thickened, ropey small intestinal loops and a midabdominal mass effect. The **Table** lists the laboratory results.

Table. Laboratory Results

	Result	Reference Range
Complete Blood Count		
Hematocrit	22%	29%–45%
Neutrophils	16,650 cells/mcL	2500–12,500 cells/mcL
Serum Biochemical Profile		
Albumin	2 g/dL	2.3–3.9 g/dL
Globulin	2.9 g/dL	3–5.6 g/dL
Potassium	3.6 mEq/L	3.9–5.3 mEq/L
Urinalysis	No abnormalities	
Serum ELISA for FeLV/FIV	Negative	

ELISA = enzyme-linked immunosorbent assay; FeLV = feline leukemia virus; FIV = feline immunodeficiency virus

Diagnostic Imaging.
Thoracic radiography: Cardiac and pulmonary structures unremarkable

Abdominal ultrasonography: Multiple thickened segments of small intestine with loss of normal wall layering; multiple large, round, hypoechoic masses in midabdomen (presumed mesenteric lymph nodes)

Cytology. Differential diagnoses were neoplasia (lymphoma, intestinal adenocarcinoma, mast cell tumor), inflammatory bowel disease, and infectious enteritis. Multiple ultrasonography-guided fine-needle aspirates were collected from the abdominal masses (**Figures 1 and 2**).

ASK YOURSELF...

- Describe morphologic characteristics of the cells.
- Does the sample represent a neoplastic or reactive cell population?
- What is your final diagnosis, and what is the origin of the abnormal cells?

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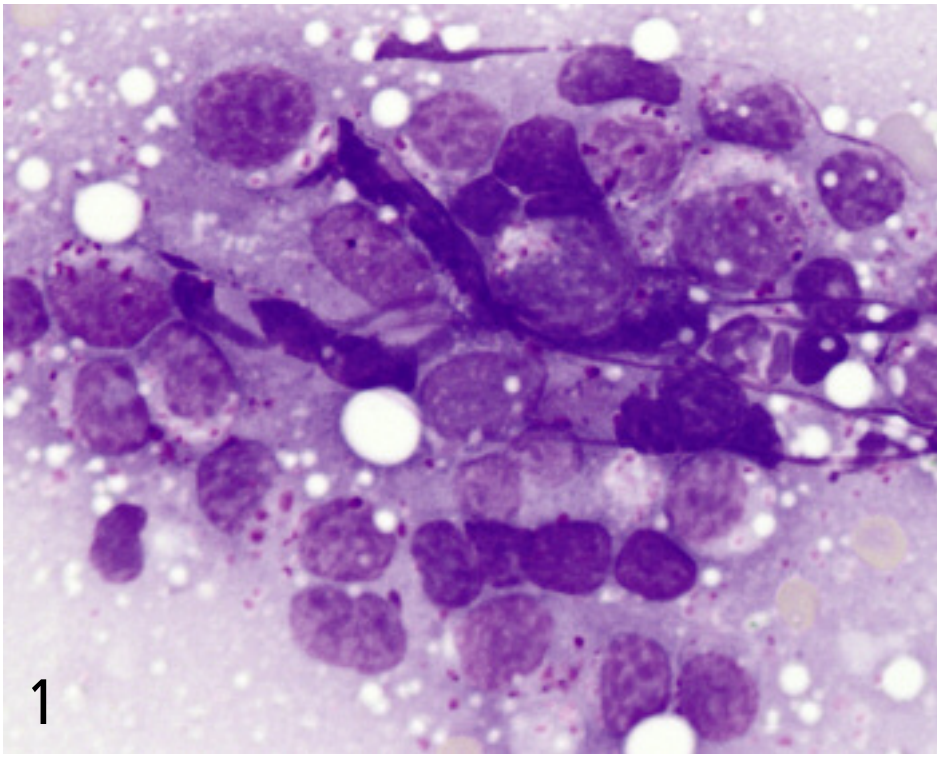
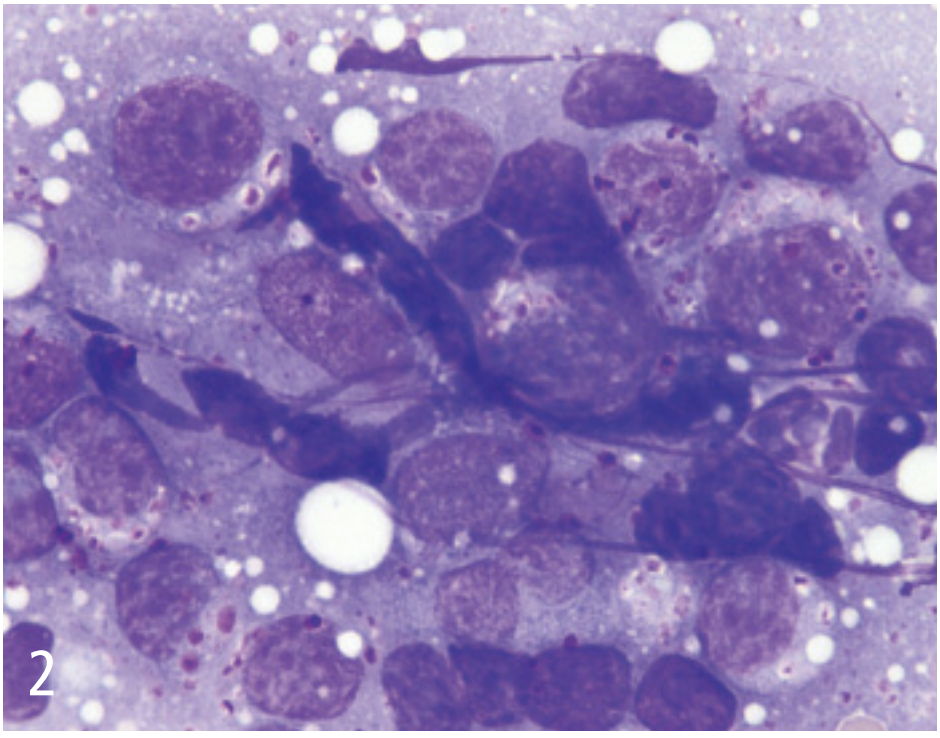




Fine-needle aspirate samples from abdominal mass (Original magnification, 500×)
Courtesy Dr. Tracy Stokol

Diagnosis: Lymphoblastic Lymphoma (Large Granular Cell Type)

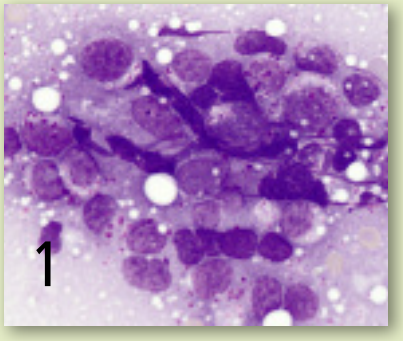
Lymphoma of large granular lymphocytes (LGLs) is an uncommon form of lymphoma. It has been described retrospectively in several small series of cats[1,2] and less commonly in dogs.[3]

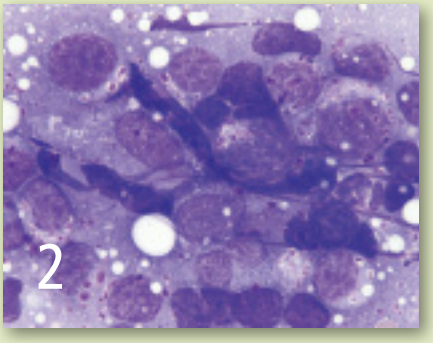
Discussion. Clinically, LGL lymphoma is an aggressive, rapidly progressive disease. Patients typically have a clinical history of abnormal clinical signs lasting only a few weeks to months. The distribution of affected organ systems can mimic that of other forms of lymphoma; in cats, however, the gastrointestinal tract is the most commonly involved primary site because cells are most commonly derived from intraepithelial lymphocytes.[4] In dogs, LGL neoplasia can present as acute leukemia or chronic lymphocytosis.[3]

Immunohistochemistry has determined that LGL lymphocytes are typically derived from CD8+ cytotoxic T cells or natural killer (NK) cells. CD8+ T cells will also stain positive for CD3 (a pan–T-cell marker). In contrast, NK cells do not demonstrate CD3 or CD8 and instead are characterized by expression of CD56.[2]

DID YOU ANSWER...

- The sample demonstrates a mostly homogenous population of discrete, round cells. Cells are large (2–3 × the size of erythrocytes), with well-defined borders, and a high nuclear–cytoplasmic ratio. Cells have prominent round to ovoid nuclei—most with several nucleoli: and a moderate amount of basophilic cytoplasm. Most cells contain intensely staining magenta cytoplasmic granules. Moderate anisocytosis and anisokaryosis are present (**Figures 1 and 2**).
- The monomorphic, homogenous cell population strongly supports a neoplastic process, especially in the absence of obvious inflammation.
- The cellular characteristics support a diagnosis of high-grade lymphoblastic lymphoma of large granular cell type.

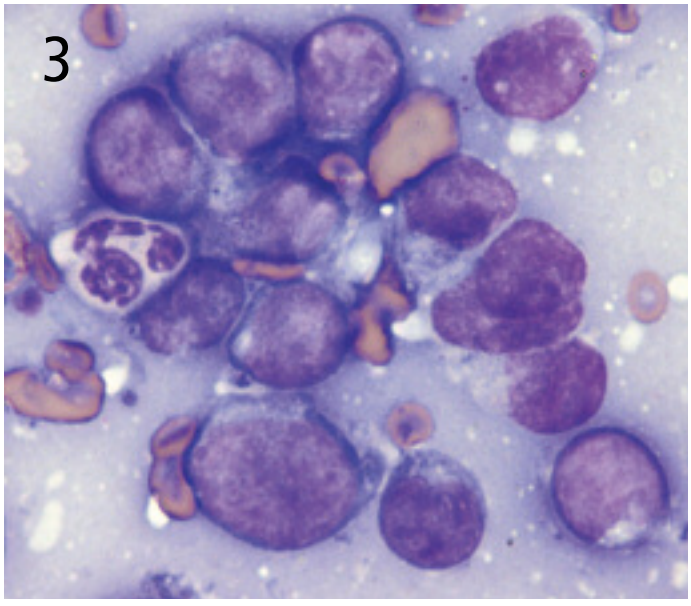




Cytologically, the primary morphologic feature that distinguishes LGL lymphoma from other forms of lymphoma (**Figure 3**) is the presence of obvious cytoplasmic granules. These granules probably represent preformed elements used in cell-mediated cytotoxicity (granzymes, perforin proteins), and appear as an intense azurophilic-magenta color on routine Wright–Giemsa stains.[5]

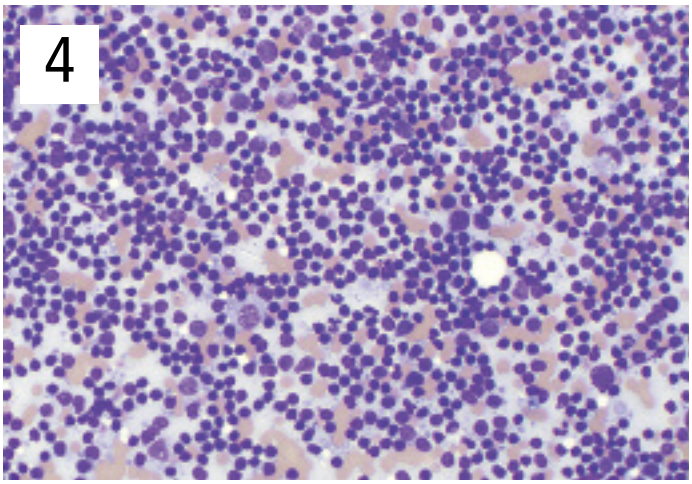
Small Cell Lymphoma. An equally uncommon form of lymphoma is low-grade small-cell lymphoma (SCL). This disease is characterized by well-differentiated cells that resemble normal lymphocytes (**Figures 4 and 5**). As with LGL lymphoma, this disease is sporadically reported in dogs and is well-described in cats. It primarily affects the gastrointestinal tract in the latter species.[6]

In stark contrast to the high-grade lymphomas, SCL tends to be an indolent, slowly progressive disease. Clinical signs can develop over several months, and cats are often treated empirically with various medical regimens before tissue sampling is pursued. Cytologically, samples consist of a monomorphic population of small, differentiated lymphocytes. Cells are similar in size to erythrocytes and neutrophils, have intensely basophilic nuclei, and have scant amounts of basophilic cytoplasm. It can mimic inflammatory bowel disease and can therefore be difficult to diagnose on the basis of cytology alone. Instead, tissue biopsy (endo-

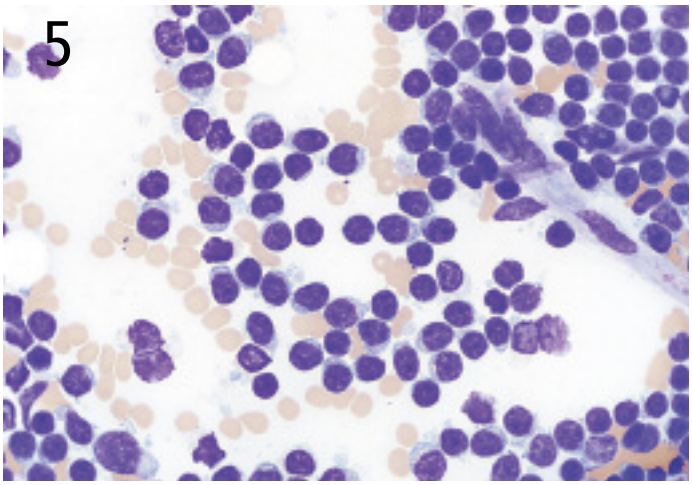


Cytology sample of high-grade lymphoblastic lymphoma (small intestines). Neoplastic cells are round, discrete, and large (2–3 × the size of erythrocytes). Cells have round nuclei, multiple nucleoli, and a rim of intensely basophilic cytoplasm. (Original magnification, 1000×) Courtesy Dr. Tracy Stokol

LGL = large granular lymphocyte; SCL = small-cell lymphoma



Cytology sample of low-grade lymphocytic lymphoma (small intestines). The sample is hypercellular and predominated by a homogenous population of small, intensely basophilic round cells. Scattered erythrocytes and occasional larger lymphoblast cells are also present. (Original magnification, 500×)
Courtesy Dr. Sonjia Shelly



Cytology sample of low-grade lymphocytic lymphoma (small intestines). Neoplastic cells are small (1–1.5 × the size of erythrocytes) and resemble normal lymphocytes. Cells have intensely basophilic nuclei and a very thin rim of light blue cytoplasm. (Original magnification, 1000×)
Courtesy Dr. Sonjia Shelly

scopic, or preferably surgical full-thickness) is the preferred diagnostic approach because depth of tissue invasion is a key feature for distinguishing SCL from inflammatory bowel disease.

See Aids & Resources, back page, for references, contacts, and appendices.