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CLINICAL CASE

# Large granular leukemia with concurrent central nervous system and articular infiltration in a cat☆

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**KEYWORDS**
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**Summary** A 2-year-old female domestic shorthair cat was referred with a 2 month history of lethargy, weight loss, recurrent hyperthermia and polyarthropathy despite prednisolone. Upon physical examination, the cat showed apathy, hyperthermia, multiple appendicular joint pain and swelling. The CBC showed severe macrocytic normochromic non-regenerative anemia and thrombocytopenia. A population of immature large granular lymphocytes (LGL) was noted on blood smear. Abdominal ultrasonography revealed enlarged mesenteric lymph nodes (LNs), hyper echoic liver and splenomegaly. Cytology of fine needle aspirate of synovial fluid, spleen, liver, enlarged abdominal LNs and bone marrow supported a diagnosis of LGL leukemia with concurrent articular infiltration.

*Abbreviations:* CBC, Complete Blood Count; CNS, Central Nervous System; COP, Cyclophosphamide, Oncovin, Prednisolone; CSF, Cerebrospinal Fluid; FeLV, Feline Leukemia Virus; FIV, Feline Immunodeficiency Virus; FNA, Fine Needle Aspirates; FA, Felty's Syndrome; LGL, Large Granula Lymphocytes; LN, Lymph Node; NK, Natural Killer; PCR, Polymerase Chain Reaction; RA, Rheumatoid Factors; RBC, Red Blood Cells; SAA, Serum Amyloid A; WBC, White Blood Cells.

☆ Crédits de formation continue. — La lecture de cet article ouvre droit à 0,05 CFC. La déclaration de lecture, individuelle et volontaire, est à effectuer auprès du CNVFCC (cf.sommaire).

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A COP-based protocol was initiated with L-asparaginase (400 UI/kg intramuscularly) and prednisolone (1 mg/kg/day orally). However, the cat presented 1 week later with obtundation and paresis, indicating the involvement of the central nervous system (CNS). LGL were also observed on cerebrospinal fluid analysis. Histologic examination noted LGL in the spleen, liver and LNs. Immunohistochemistry (IHC) yielded negative results for both B- and T-cells thus suggesting NK-cells. The diagnosis was LGL leukemia with concurrent articular and CNS involvement. Articular infiltration with LGL is rarely reported in small animals, whereas CNS involvement was previously only suspected in a cat at necropsy.



## Introduction

Large Granular Lymphocyte (LGL) leukemia is an aggressive malignant hemopathy that carries poor prognosis in cats [1]. Although some reports are available on LGL lymphoma [2—4], there is little information on feline LGL leukemia. Major clinical signs are not specific and include lethargy, fever, anorexia and weight loss [1—4] whereas anemia, leucopenia or leukocytosis are common hematologic abnormalities encountered [5]. Neoplastic infiltration with LGL does not appear to be associated with positive testing for FeLV and FIV [1—5]. Neoplastic LGL can be found within bone marrow, lymph nodes (LNs), spleen, liver and many other organs [1]. Treatment involves chemotherapy but is often unrewarding [6,7]. Some feline LGL leukemia with concurrent articular involvement have been reported [1—4], as well as some necropsy description of CNS infiltration with LGL [8]. However, there is for now no reported description of feline LGL leukemia with simultaneous infiltration of both compartments. We report a case of LGL leukemia with presumptive concurrent articular and CNS infiltration with LGL in a cat. Some clinicopathological abnormalities were compared to those found in Humans' Felty's Syndrome.

## Case Description

A 2-year-old spayed female domestic shorthair was referred to the Small Animal Teaching Hospital, for a 2 month history of lethargy, loss of appetite, weight loss with recurrent hyperthermia and multiple articular pain despite prednisolone administration.

The cat was initially presented to the referring veterinarian for anorexia, weakness and discomfort. The CBC, biochemistry and lateral spine radiography were unremarkable. An indirect fluorescent antibody test did not detect anti-feline coronavirus antibodies. Blood testing for feline leukemia virus (FeLV) antigen and feline immunodeficiency virus (FIV) antibodies were negative. The cat was prescribed prednisolone for 3 weeks at 0.5 mg/kg q24 h orally. Despite transient and partial improvement, clinical signs recurred after discontinuation of treatment.

Upon physical examination, the cat remained in lateral recumbency and showed generalized weakness. It displayed hyperthermia with a rectal temperature of 40.4 °C (104.7 °F), right systolic heart murmur and signs of hypovolemia (pallor, tachycardia, unevaluable capillary refilling time and weak femoral pulses). Gait analysis revealed low head carriage, hunched back, bilateral pelvic limb plantigrade stance without lameness. Joint palpations revealed sudden, sharp and repeatable pain on mobilization of each of the elbows, stifles, carpi and the lumbosacral joint. Swelling around both stifles and elbows was also noted.

CBC findings (Table 1) included severe macrocytic, normochromic, nonregenerative anemia and moderate thrombocytopenia. On blood smear, white blood cell differential count was the following: Neutrophils: 13%, Small lymphocytes: 53%, Large Granular lymphocytes (LGL): 27%, Monocytes: 4%, Eosinophils: 3%. Abundant population of LGL measuring 30 to 35 μm in diameter with a high nucleocytoplasmic ratio was observed. The cytoplasm was basophilic and contained thin azurophilic granules. The nuclei were round, eccentric and contained a reticular chromatin with 1 or 2 inconspicuous central or paracentral nucleoli (Fig. 1). The biochemistry profile and urinalysis were unremarkable except that the serum amyloid A (SAA) was moderately increased (22.7 mg/L, reference interval 0—10). The serum

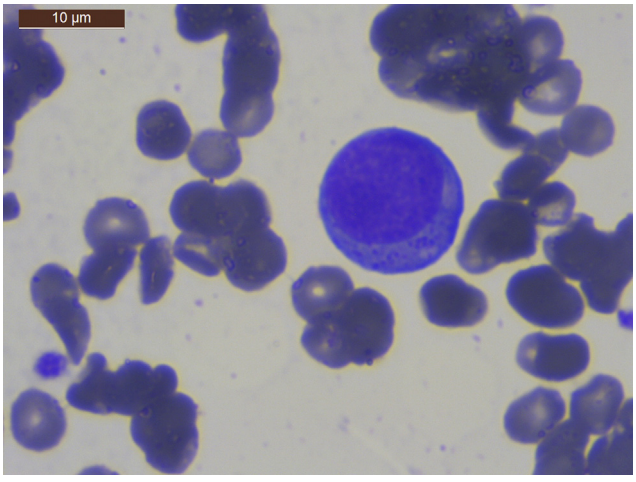


**Figure 1.** Blood smear showing one large granular lymphocyte. Magnification × 100.

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