

Case #: KSVDL 071345 - Synopsis**Presenter:** Brandy Kastl, DVM (bckastl@vet.k-state.edu); Nora Springer, DVM, DACVP**Signalment:** Canine, Australian Shepherd, spayed female, 8 years old

Significant Blood Film Findings (Modified-Wright's stain): Leukocytes consist primarily of segmented neutrophils and a concerning uniform population of small to medium lymphocytes (nuclei ~1.0-1.25 x a neutrophil). These small to medium sized lymphocytes have a moderately increased volume of very pale blue to clear cytoplasm sometimes containing a few small pink cytoplasmic granules. Nuclei are paracentrally located and round to indented with mild nuclear membrane irregularity. Chromatin patterns are lightly clumped and nucleoli are not visible.

Cytology and Blood Film Interpretation: Based on the presence of a uniform population of lymphocytes in both the mandibular lymph node and the peripheral blood, a small cell lymphoma with circulating neoplastic cells (leukemic phase) was suspected. Immunophenotyping was recommended for further characterization.

Flow Cytometric Immunophenotyping of Lymph Node Aspirate:

91% of cells in the lymphocyte gate were CD45-, CD5+, CD8+, CD21+, and MHCII+

Diagnostic Summary: The cytomorphologic characteristics of the lymphocyte population in both the lymph node aspirate and peripheral blood smear along with the unique immunophenotypic pattern were consistent with a diagnosis of T-zone lymphoma¹.

Comments: Canine T-zone lymphoma (TZL) is a distinct form of peripheral T-cell lymphoma in dogs which arises from the clonal expansion of T-lymphocytes within the paracortical region (T-zone) of the lymph node. In contrast to other canine peripheral T-cell lymphomas, TZL has an indolent clinical course and excellent overall survival of 21-33 months^{1,3}. Canine TZL reportedly accounts for 15.5-62% of all indolent canine lymphomas^{2,3}.

TZL cells characteristically have a moderate volume of very pale blue to clear cytoplasm that may fully encircle the nucleus. This cytoplasmic appearance is the origin of TZL's alternative name, small clear cell lymphoma^{1,5}. Additionally, the neoplastic T-cells often have "hand-mirror" cytoplasmic projections (uropods) on cytologic evaluation of affected lymph nodes^{4,5}. Although associated with TZL, these cytoplasmic characteristics are not pathognomonic and may also be seen in non-neoplastic lymphocytes. However, the presence of these unique cytomorphologic features within a monomorphic population of lymphocytes should raise the index of suspicion for a TZL. Histologically, TZL appears as a diffuse proliferation of uniform small lymphocytes with the same characteristic moderate volume of pale cytoplasm. Compressed, fading follicles and extensive capsular thinning without invasion into the surrounding perinodal fat are also noted¹.

Immunophenotyping via flow cytometry can be an invaluable tool in the diagnosis of canine TZL. The neoplastic T-lymphocytes may be CD4+, CD8+, or CD4CD8-/-¹. However, 95-100% of the neoplastic cells in TZL are characteristically CD45- (panleukocyte marker) and often CD21+ (B-cell marker)^{1,3}. Flow cytometry can be performed on lymph node aspirates or peripheral blood if circulating cells are present. Approximately 50% of dogs with TZL will present with a mild to moderate peripheral lymphocytosis due to circulating neoplastic cells¹, similar to the case presented here.

References:

1. Seelig, DM. Canine T-zone lymphoma: unique immunophenotypic features, outcome, and population characteristics. *J Vet Intern Med.* 2014; 28:878-886.
2. Valli, VE. Canine indolent nodular lymphoma. *Vet Pathol.* 2006;43:241-256.
3. Flood-Knapik, KE. Clinical, histopathological and immunohistochemical characterization of canine indolent lymphoma. *Vet Comp Oncol.* 2013;11:272-286.
4. Yeuroukis, CK. What is your diagnosis? Inguinal lymph node aspirate from a dog. *Vet Clin Path.* 2017;46:365-366.
5. Suwa, A. Concurrent T-zone lymphoma and high-grade gastrointestinal cytotoxic T-cell lymphoma in a dog. *J Vet Med Sci.* 2017;79:736-739