

Case of the Month

Clinical History:

Rowdy, an approximately 8 year old male neutered Golden Retriever, was presented to the UMN-VMC Emergency Service on January 10th, 2019 for evaluation of swelling and pain associated with his right eye.

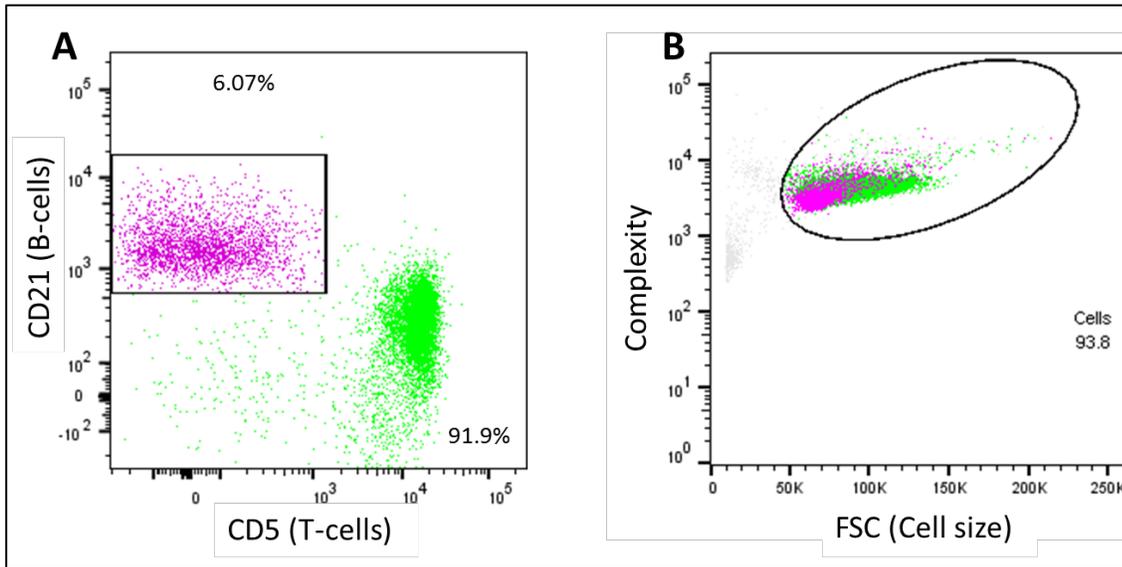
Physical Examination:

On physical exam, Rowdy was dull and depressed. His pulse and respiratory rate were within normal limits, but his right eye was exophthalmic with serous discharge and decreased retropulsion. In addition, his right submandibular lymph node was firm and enlarged, approximately 3-4 cm in diameter. All other peripheral lymph nodes palpated small, soft, symmetrical and freely moveable.

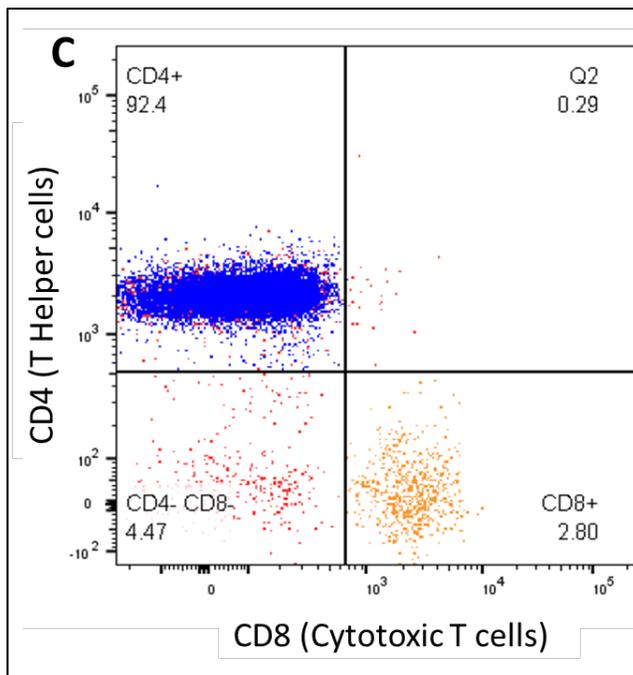
Rowdy was transferred to the UMN-VMC Small Animal Surgery service for CT scan and possible surgical intervention.

Diagnostics:

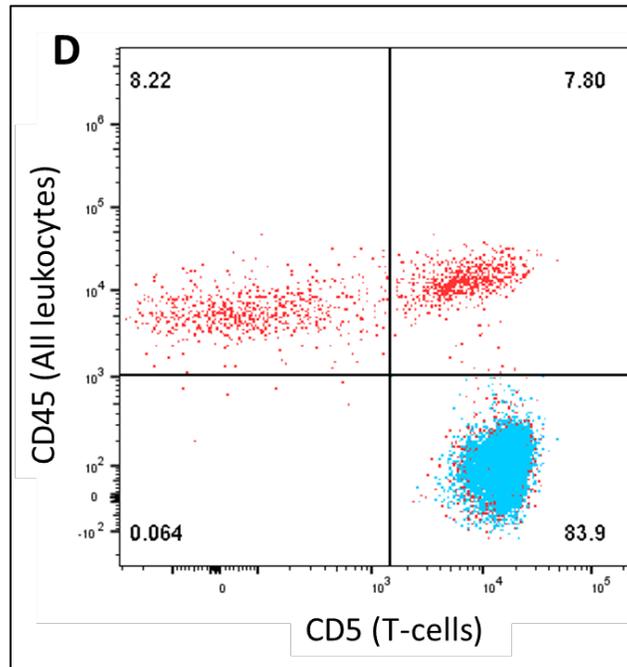
1. CT of head and neck:
 - a. The appearance of the right retrobulbar region is most compatible with abscessation and regional myositis, zygomatic sialoadenitis, and cellulitis. Neither foreign material nor a discrete soft tissue mass are identified
 - b. The favored differential diagnoses for the regional lymphadenomegaly are lymphadenitis and reactive hyperplasia.
2. Cytology of the retrobulbar mass:
 - a. Marked suppurative inflammation.
3. Cytology of the right mandibular lymph node:
 - a. Reactive lymph node with intermediate lymphocytes with hand-mirror morphology concerning for T-zone lymphoma.
4. Flow Cytometry:
 - a. Fresh aspirates of the right mandibular lymph node were submitted to the UMN Diagnostic Flow Cytometry Service



When cells from the lymph node were evaluated according to their expression of lymphocyte markers (panel A), the sample contained 6% B-cells (purple) and 92% T-cells (green). According to their light scatter properties (panel B), the T-cells (green) were slightly larger than the B-cells (purple). Based upon the marked expansion of T-cells, these findings are diagnostic for T-cell lymphoid neoplasia.



When the T-cells are analyzed according to their expression of CD4 and CD8 (panel C), we see that the 92% of them are CD4+ (blue). These findings further refine our diagnosis to CD4+ T-cell lymphoid neoplasia.



Finally, when the T-cells are analyzed for their expression of CD45 (panel D), we see that the vast majority (84%) are CD45-negative (blue). Thus, we are able to further refine the diagnosis to a CD4+, CD45- T-cell lymphoid neoplasia. These findings are diagnostic for a form of T-cell neoplasia known as T-cell lymphoma / leukemia.

University of Minnesota Clinical Flow Cytometry Report			
			
Patient Information			
Patient Name	Rowdy	Breed	Golden Retriever
Last Name	██████████	D.O.B. or Age	██████████
Clinic Number	██████████	Sample ID	██████████
Species	Canine	Sex	Male - castrated
Sample Information			
Sample Type	Aspirate	Date Collected	1/11/2019
Sample Origin	Lymph node	Date Received	1/11/2019
		Date Processed	1/11/2019
Results			
Interpretation	T-Zone lymphoma / leukemia		
Comments	<p>The flow cytometry study revealed an expansion of medium-sized CD4+ T cells that have lost expression of the pan-leukocyte antigen CD45. These findings are diagnostic for T-Zone lymphoma, which is associated with an indolent clinical course (Seelig et al, JVIM 28:878, 2014) (median survival > 2 years) and may not require aggressive chemotherapy (Flood Knapik, Vet Comp Onc, 11:272-286, 2012).</p>		

Discussion Points:

- T-Zone Lymphoma/Leukemia (TZL) is a unique subtype of canine lymphoma that, in contrast to many other forms of T-cell lymphoma, is characterized by an indolent disease course and a unique flow cytometric phenotype.
- TZL is characterized by the presence of aberrant T-cells that lack expression of the pan-leukocyte antigen CD45. As such, TZL is most efficiently diagnosed by flow cytometry.
- Cytologically, the neoplastic cells in TZL are often described as having a “hand-mirror” morphology, although this finding is not considered to be sensitive or specific.
- Clinically, TZL is typically characterized a prolonged disease course (median survival time > 2 years) and often does not require systemic chemotherapy.
- TZL is most frequently seen in Golden Retrievers and Shih Tzus.
- Peripheral blood involvement is common in TZL, but does not appear to impact prognosis. Thus, the disease is often referred to as T-Zone Lymphoma / Leukemia.

Additional reading (include links?):

1. Canine T-zone lymphoma: unique immunophenotypic features, outcome, and population characteristics. Seelig DM, Avery P, Webb T, Yoshimoto J, Bromberek J, Ehrhart EJ, Avery AC. *J Vet Intern Med.* 2014 May-Jun;28(3):878-86.
2. Canine small clear cell/T-zone lymphoma: clinical presentation and outcome in a retrospective case series. Martini V, Marconato L, Poggi A, Riondato F, Aresu L, Cozzi M, Comazzi S. *Vet Comp Oncol.* 2016 Aug;14 Suppl 1:117-26.