Sophie: A lymphoma case study

SOPHIE CASE SUMMARY

+ Presented with generalized lymphadenopathy
+ Traditional lymph node cytology was nondiagnostic due to cell lysis
+ IDEXX Cancer Dx™ testing was ordered as an add-on test to complete blood count (CBC) and chemistry panel. Results were consistent with lymphoma, identifying a B-cell phenotype
+ A resubmission of lymph node specimens using the IDEXX Digital Cytology™ instrument further supported a diagnosis of large cell lymphoma
+ Sophie was referred to a veterinary oncology service, and 90 days later, she was doing well on her chemotherapy protocol

Patient and presenting reason

Sophie, a 5-year-old, spayed female golden retriever. Presenting with generalized lymphadenopathy involving mandibular, axillary, and popliteal lymph nodes.

History

Sophie's owners acquired her as a puppy. She had no prior history of significant health concerns and was up-to-date with annual wellness testing, including blood work and fecal antigen testing.

Over the past week, she experienced two episodes of vomiting, decreased appetite, and lethargy. Since her last visit, Sophie lost nearly 20 pounds (though she was also on a diet). No coughing was reported at home.

Physical examination

Sophie was quiet, alert, and responsive. Her temperature and pulse were normal, with a mildly elevated respiratory rate. Body condition score was ideal (5/9). Mild dental disease and generalized lymphadenopathy were noted; the remainder of her exam was unremarkable.

Diagnostic plan

Fine needle aspirates of the enlarged lymph nodes were collected and submitted to IDEXX Reference Laboratories for cytologic evaluation. Additional diagnostics included a complete blood count (CBC), comprehensive chemistry panel with electrolytes and IDEXX SDMA™ Test, total T_4, free T_4, complete urinalysis with reflex UPC, and an IDEXX 4Dx™ Plus Test.

Diagnostic review

+ CBC: Mildly decreased mean corpuscular hemoglobin concentration (MCHC) and slightly decreased platelet count. The MCHC change was not clinically significant. The thrombocytopenia was attributed to platelet clumping, with adequate numbers confirmed on manual slide review.
+ Chemistry: Moderate elevation of SDMA suggested decreased glomerular filtration rate (GFR), indicating possible kidney impairment secondary to nonrenal causes, including lymphoma.
+ Urinalysis: Normal specific gravity, mild proteinuria (1+), inactive sediment, and UPC ratio consistent with a nonproteinuric state.
+ IDEXX 4Dx™ Plus Test: Negative for tick-borne diseases.
+ Thyroid panel: Total T_4 and free T_4 had low-normal values.
+ Cytology: The initial lymph node aspirate was inconclusive due to poor cellular preservation and rupture—challenges commonly encountered in cytologic evaluation of lymphoid tissue, particularly when cells are fragile or sampling technique affects cell integrity.

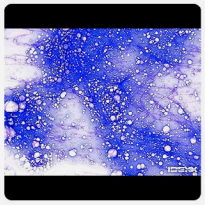
Shortly after Sophie's initial specimens were submitted, IDEXX Cancer Dx™ testing for lymphoma became available. IDEXX Cancer Dx testing was ordered as an add-on test. The laboratory performed this testing on the previously collected serum and whole blood specimens. Results were consistent with lymphoma, identifying a B-cell phenotype. A resubmission of lymph node specimens using the IDEXX Digital Cytology™ instrument further supported a diagnosis of large cell lymphoma.

Thoracic and abdominal radiographs were performed and were negative for evidence of other organ involvement.

Hematology

RBC		6.05	5.39 - 8.70 x10^12/L	
Hematocrit		0.445	0.383 - 0.565 L/L	
Hemoglobin		144	134 - 207 g/L	
MCV		74	59 - 76 fL	
MCH		23.8	21.9 - 26.1 pg	
MCHC		324	326 - 392 g/L	L
% Reticulocytes		0.8	%	
Reticulocytes		48	10 - 110 K/µL	
Reticulocyte Heomoglobin		26.1	24.5 - 31.8 pg	
WBC		5.7	4.9 - 17.6 x10^9/L	
% Neutrophils		73.5	%	
% Lymphocytes		21.9	%	
% Monocytes		2.6	%	
% Eosinophils		1.8	%	
% Basophils		0.2	%	
Neutrophils		4.19	2.94 - 12.67 x10^9/L	
Lymphocytes		1.248	1.06 - 4.95 x10^9/L	
Monocytes		0.148	0.13 - 1.15 x10^9/L	
Eosinophils		0.103	0.07 - 1.49 x10^9/L	
Basophils	a	0.011	0 - 0.1 x10^9/L	
Platelets	b	140	143 - 448 x10^9/L	L
Platelet observations		Platelets appear adequate; however, due to the presence of platelet clumps, the actual count cannot be accurately determined. Slide reviewed for platelet estimate. For a full slide review, including cell morphology, a slide evaluation add-on (code 3900) is available.		

Cytology

Images	
Cytology Source:	LYMPH_NODE
Clinical History:	Generalized Lymphadenopathy
Pathologist's Report	INTERPRETATION: Limited sample; inconclusive sample- see comments

Chemistry

Glucose		5.38	3.5 - 6.33 mmol/L	
IDEXX SDMA		25	0 - 14 µg/dL	H
Creatinine		88.4	44.2 - 132.6 µmol/L	
BUN		4.64	3.21 - 11.07 mmol/L	
BUN: Creatinine ratio		13.0		
Phosphorus		1.07	0.81 - 1.97 mmol/L	
Calcium		2.5	2.1 - 2.94 mmol/L	
Sodium		148	142 - 152 mmol/L	
Potassium		4.5	4.0 - 5.4 mmol/L	
Na: K Ratio		33	28 - 37	
Chloride		115	108 - 119 mmol/L	
TCO2 (Bicarbonate)		21	13 - 27 mmol/L	
Anion Gap		17	11 - 26 mmol/L	
Total Protein		57	55 - 75 g/L	
Albumin		28	27 - 39 g/L	
Globulin		29	24 - 40 g/L	
Albumin: Globulin Ratio		1.0	0.7 - 1.5	
ALT		25	18 - 121 U/L	
AST		31	16 - 55 U/L	

IDEXX Cancer Dx™ testing

Cancer Dx Lymphoma	a	Consistent with lymphoma
Phenotype:	b	B cell

a. In dogs with clinical signs concerning for lymphoma, a positive result is supportive of a diagnosis of lymphoma. For dogs under the age of two, confirmation of a positive Cancer Dx lymphoma result should be considered in the absence of strong clinical indications of lymphoma. In dogs without clinical signs being screened for lymphoma due to risk profiles, a positive result suggests an increased likelihood of developing clinical lymphoma. If not performed, a physical exam with lymph node palpation, full history, CBC and comprehensive chemistry testing are indicated. Follow-up in 4-8 weeks to repeat physical exam and lymph node palpation and evaluation for signs of lymphoma is recommended.
In rare cases, positive results may indicate other lymphoproliferative cancers, including leukemia and myeloma-related diseases due to shared origin of cells. Results should be interpreted in light of clinical presentation and other laboratory testing in patients with a suspicion of other lymphoproliferative diseases.
To learn more about the IDEXX Cancer Dx Test, including recommended next steps and resources, please visit www.idexx.com/CancerDx

b. A result consistent with B-cell lymphoma indicates a cancer of B-cell lineage, the most common type of lymphoma diagnosed in dogs. Most B-cell lymphomas carry an improved prognosis compared to T-cell lymphoma.

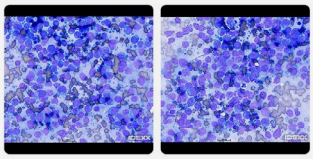
Diagnosis

Diffuse large B-cell lymphoma, based on IDEXX Cancer Dx™ testing and confirmatory digital cytology findings.

Treatment and follow-up

Sophie was referred to a veterinary oncology service, and 90 days later, she was experiencing a favorable response to her treatment. Her owners expressed gratitude that their veterinary team, in partnership with IDEXX, had rapid access to a highly specific, noninvasive cancer diagnostic. The timely diagnosis allowed them to pursue appropriate therapy without the need for additional, potentially invasive procedures.

Cytology resubmission

Images	
Cytology Source:	LYMPH_NODE
Clinical History:	Generalized lympadenopathy-this is a resubmission (previous cytology was not digital). Tick neg. Normal Blood work
Pathologist's Report	INTERPRETATION: Large cell lymphoma

Discussion

Lymphoma is the most common hematopoietic malignancy in dogs, with various subtypes.[1] The most common type diagnosed in dogs is diffuse large cell lymphoma, and patients most frequently present with generalized lymphadenopathy.[1] While cytology is widely used as a first-line diagnostic tool, its utility may be compromised by poor specimen quality, cell fragility, or reactive lymphoid changes that can make definitive interpretation challenging. In Sophie's case, the initial cytology was inconclusive due to extensive cell rupture, creating diagnostic uncertainty at a crucial decision-making point.

IDEXX Cancer Dx™ testing provided a pivotal solution. As a blood-based assay, it avoids the limitations of specimen collection and tissue quality, detecting circulating biomarkers associated with lymphoma with strong diagnostic performance. With a specificity of 98.9% and sensitivity of 79.3%, IDEXX Cancer Dx testing delivers a high level of diagnostic confidence.[2] In the context of a cancer diagnosis—where decisions carry significant emotional and medical consequences—this level of accuracy offers reassurance to both clinicians and pet owners that a positive result truly reflects disease.

In Sophie's case, IDEXX Cancer Dx testing not only confirmed the presence of lymphoma but also identified a B-cell phenotype, enabling the clinical team to proceed with a targeted treatment plan. Phenotyping is one of the most important prognostic indicators in canine lymphoma, with B-cell lymphoma generally associated with longer median survival times and more favorable responses to chemotherapy protocols.[3] Having this prognostic information available at the time of diagnosis—without requiring additional sampling—allowed for more informed discussions with Sophie's family and expedited treatment planning. IDEXX Cancer Dx testing will provide phenotyping in about 56% of submitted specimens consistent with lymphoma.[2]

This case illustrates how IDEXX Cancer Dx testing, combined with clinical signs and suspicion, can aid in the diagnosis of canine lymphoma. Providing diagnostic confirmation and phenotype information from a single blood draw streamlines decision-making, reduces delays associated with indeterminate cytology, and enhances clinician confidence. Integrating IDEXX Cancer Dx testing into diagnostic workflows offers veterinarians a valuable tool to elevate the standard of care in lymphoma diagnosis and improve patient outcomes.

The clinical signs and diagnosis of the case presented here are specific to this patient. Diagnostic and treatment decisions are the responsibility of the attending veterinarian.

References

1. Vail DM, Pinkerton M, Young KM. Hematopoietic tumors. In: Vail DM, Thamm DH, Liptak JM, eds. *Withrow & MacEwen's Small Animal Clinical Oncology.* 6th ed. Saunders; 2020:688–772. doi:10.1016/B978-0-323-59496-7.00033-5
2. Data on file at IDEXX Laboratories, Inc. Westbrook, Maine USA: Data based on testing performed at IDEXX Reference Laboratories in North America between November 1, 2024, and December 6, 2024. *Analysis Report: IDEXX Cancer Dx Validation, 100282* [008_CancerDx-Validation-Report-2.Rmd].
3. Bailey DB. Hematopoietic tumors. In: Ettinger SJ, Feldman EC, Cote E, eds. *Ettinger's Textbook of Veterinary Internal Medicine*. 9th ed. Elsevier; 2024:2240–2254.