

CANINE LEUKEMIA: CONCERNING TO TWO CLINICAL CASES

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INTRODUCTION AND OBJECTIVE

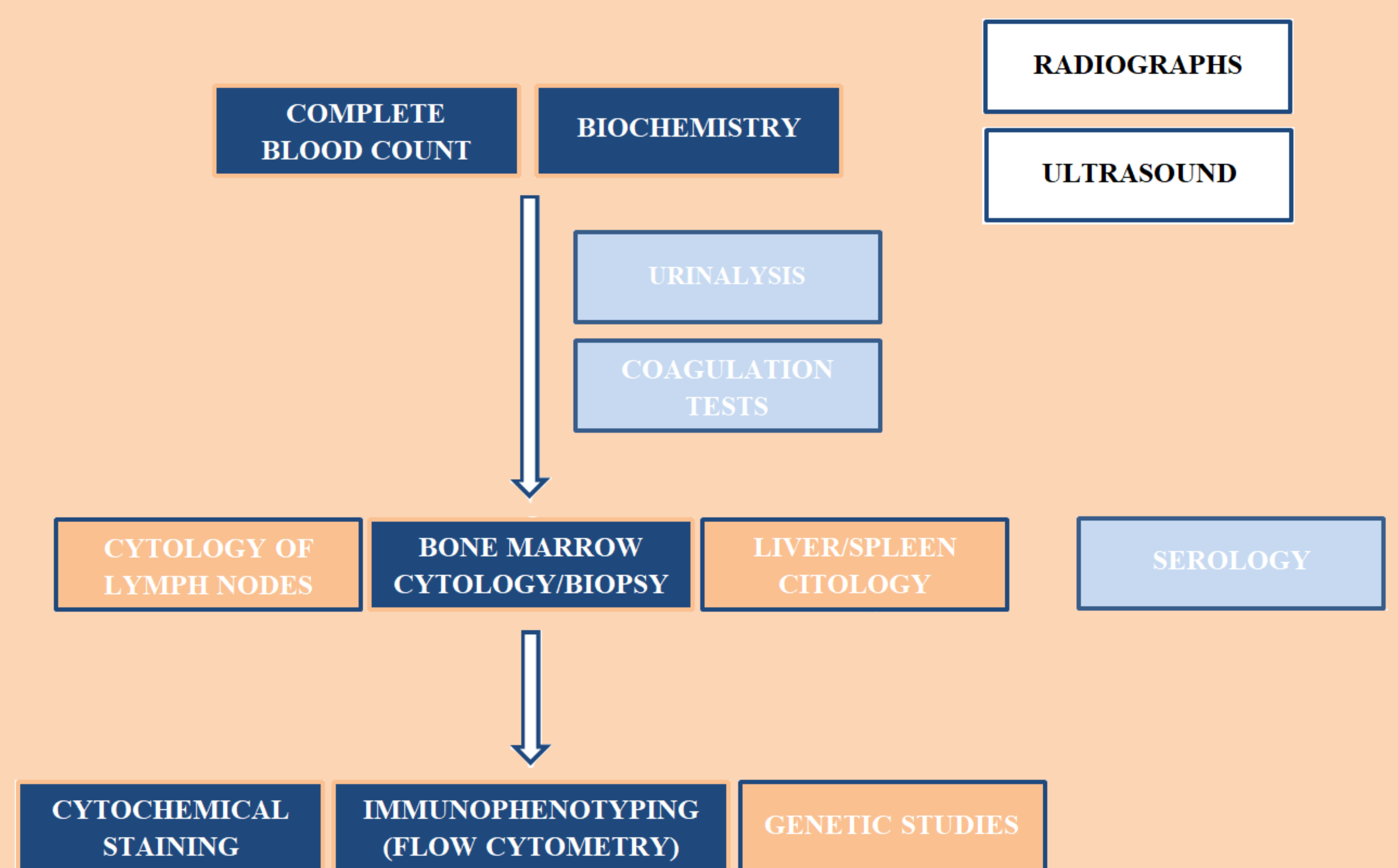
Canine leukemia is an infrequent malignant neoplastic proliferation of the hematopoietic precursor cells. Its incidence equals 10% of the hemolymphatic neoplasms.

The objective of this study is to do a review of the information about the canine leukemia and compare this information to two clinical cases corresponding with the two clinical presentations of this disease.

	ACUTE LEUKEMIA		CHRONIC LEUKEMIA	
	LYMPHOID	MYELOID	LYMPHOID	MYELOID
ETIOLOGY	Many spontaneous or unknown Viral particles, radiation and alkylating agents		(Raleigh chromosome)	
INCIDENCE	Young-middle age		Adult	
CLINICAL SIGNS	Lethargy Anorexia Vomiting Fever Diarrhea Polyuria/Polydipsia Respiratory Lameness Epistaxis		Initially asymptomatic/unspecific Neurological	
PHYSICAL EXAMINATION	Splénomegaly, hepatomegaly, mild generalized lymphadenopathy, pallor, fever			
HEMATOLOGY	Thrombocytopenia Anemia ↑ Alkaline phosphatase Neutropenia Hypercalcemia		Thrombocytopenia Anemia Leucocytosis Lymphocytosis Monoclonal gammopathy Thrombocytosis	
TREATMENT	CHOP-like protocols	Hydroxyurea Busulfan	Chlorambucil + Prednisone COP protocol	Cytarabine + Anthracycline
PROGNOSIS	Poor/Fatal		Reserved	

Table 1. Most frequent parameters of the 4 major types of leukemia.

DIAGNOSIS



CASE 1

ACUTE LYMPHOBLASTIC LEUKEMIA

History: 15 months-old neutered male German Shepherd has had diarrhea for 5 days (diet?)

Physical examination:

OK, no pain, no lymphadenopathy

Medical procedures:

- Abdominal US → **splenomegaly**
- Complete Blood Count → **thrombocytopenia**
- Biochemistry → ↑ creatinine, ↑ urea } Renal azotemia
- Urinalysis → isosthenuric urine }
- Bone marrow cytology → lymphoproliferative process (lymphoma?)
- Flow cytometry** → **lymphoblastic leukemia lineage B**

Treatment: UW-25 (Cyclophosphamide, Doxorubicin and Vincristine)

Outcome: initial good response and improvement. Euthanized 5 months later due to nervous system involvement

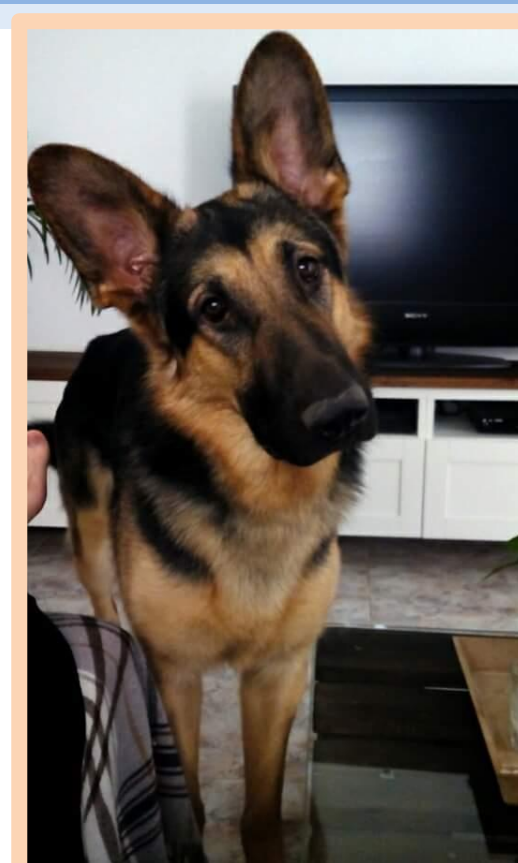


Figure 1. Young German shepherd



Figure 2. Peripheral blood from a dog with acute lymphoblastic leukemia (Withrow SJ, Vail DM, Page RL. 2013. Small Animal Clinical Oncology. 5a ed. Elsevier. p. 629.)

CASE 2

CHRONIC LYMPHOCYTIC LEUKEMIA

History: 8 years-old female Chihuahua presented with generalized tremors and weakness (epilepsy?)

Physical examination: OK

Medical procedures:

- Complete Blood Count → **lymphocytosis**
- Biochemistry → hyperproteinemia, ↑ ALT
- Serum protein electrophoresis → ↑ beta globulins
- Blood smear → immune-mediated response (?) / lymphatic neoplasia
- Bone marrow cytology** → **chronic lymphocytic leukemia**

Treatment: Chlorambucil + Prednisone (when >50,000 lymphocytes/ μ L)

Outcome: satisfactory response to treatment – still alive

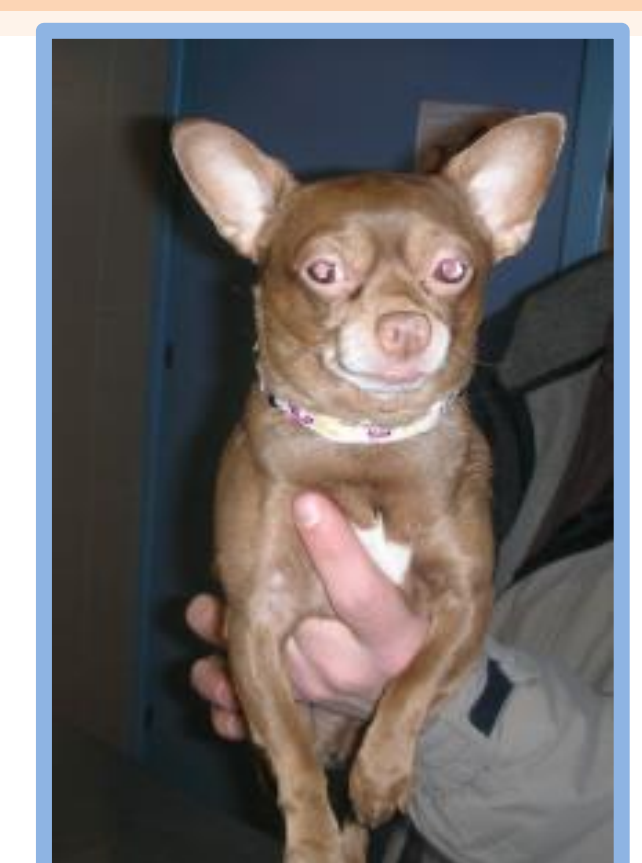


Figure 3. Chihuahua

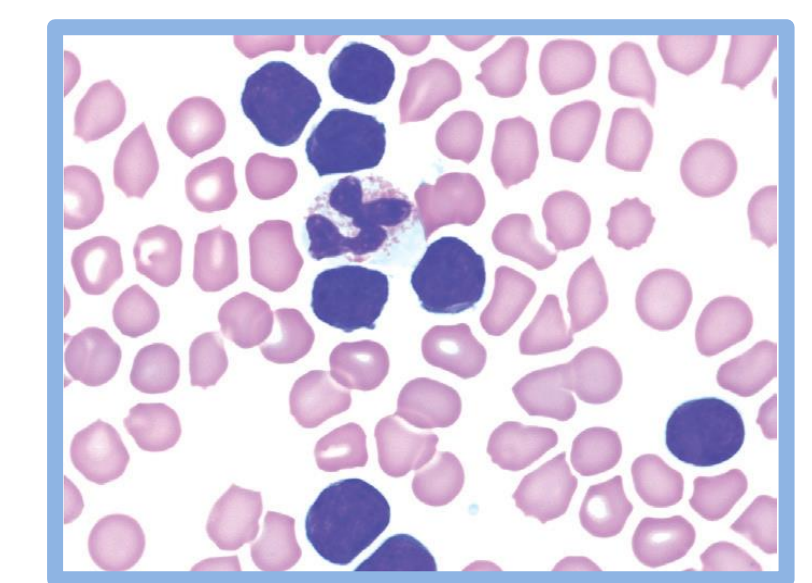


Figure 4. Peripheral blood from a dog with chronic lymphocytic leukemia (Withrow SJ, Vail DM, Page RL. 2013. Small Animal Clinical Oncology. 5a ed. Elsevier. p. 629.)

CONCLUSIONS

- Leukemia shows variable unspecific signs; the presence of relevant signs does not demonstrate an acute lymphocytic form.
- The presence of relevant neurologic signs does not exclude reliably a chronic lymphocytic form.
- In case of suspicion, the first step will be to perform hematologic tests; Complete Blood Count and biochemistry will be necessary but not enough to emit a final diagnosis because its results may be poorly indicative.
- A good technique to get a more specific diagnosis is bone marrow cytology, but sometimes it only allows to detect a general process and it is not enough to choose a treatment and issue a prognosis.
- Staining by cytochemical procedures or/and immunophenotyping is necessary in the presence of undifferentiated cells. These techniques allow for a definitive diagnosis; that is crucial for establishing treatment and prognosis.
- In addition to the correct selection of the treatment, support therapy and periodic follow-ups are essential in this disease.