

Vet Cl path for MSc	Leukemia	Mohammed AYAl-Amery
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Leukemia is a term used to describe the presence of neoplastic hematopoietic cells in peripheral blood or bone marrow which originate from bone marrow or, in some cases, the spleen. It originates from the Greek “leukos” (white) plus “haima” (blood), which refers to the increased buffy coat layer seen in some cases of leukemia.

Leukemic cell:

1. Immature cell are dark staining cytoplasm (prolymphocyte or lymphoblast).
2. Are more fragile than mature type (smudged or smeared in routine film).
3. The nucleus contain nucleoli
4. Abnormal shape; biconcave, mitotic figure, vaculated cytoplasm.....

Classification: criteria for the classification of leukemia include the presence of neoplastic cells in blood, the clinical course and cell differentiation and lineage:

1- Clinical Types of leukemia:

- **A leukemic leukemia:** it is difficult to characterized by means peripheral examination. Its occur without increase in total leukocytes and no abnormal immature neutrophils .
- **Subleukemic leukemia:** characterized by normal or slight increase total leukocytes and present of a few number of abnormal cell types.
- **Leukemic leukemia :** characterized by marked increase total leukocytes , with present of many abnormal cell types and immature cells .

2- Pathological Classification of leukemia in animals

1-Lymphoproliferative disorders

- Acute lymphoblastic (lymphocytic) leukemia – ALL
- Chronic lymphocytic leukemia - CLL

2-Myeloid neoplasms

A -Acute myeloid leukemias

- Acute myeloblastic leukemia with minimal differentiation - LMA-M0
- Acute myeloblastic leukemia without differentiation - LMA-M1
- Acute myeloblastic leukemia with maturation - LMA-M2
- Acute promyelocytic leukemia - LMA-M3 (not recognized in animals)
- Acute myelomonocytic leukemia - LMA-M4
- Acute monocytic leukemia - LMA-M5
- Acute erythroleukemia - LMA-M6
- Acute erythroleukemia with erythroid predominance - LMA-M6Er

- Megakaryoblastic leukemia – LMA-M7

B -Chronic myeloproliferative disorders

- Chronic myeloid leukemia
- Chronic myelomonocytic leukemia
- Chronic monocytic leukemia
- Eosinophilic leukemia
- Basophilic leukemia
- Polycythemia vera
- Essential thrombocythemia

Note: Acute leukemias are usually associated with a more aggressive behavior, a short survival time in untreated cases and the involvement of blast cells. Chronic leukemias have a slower progression and the neoplastic cells are more differentiated and usually have a normal appearance.

C -Myelodysplastic syndromes - MDS

Myelodysplastic syndromes (MDS) are a group of disorders characterized by an ineffective hematopoiesis and dysplastic alterations in single to multiple cell lineages. Besides the increase in the number of blast cells in marrow, MDS does not fulfill the >30% blasts criteria for AML. However it has been considered a preleukemic disorder, since domestic animals with MDS may develop AML. It must be differentiated from other benign forms of dysplasia secondary to some drugs, toxins, inflammatory, infectious and immune-mediated processes, which should resolve with the correction of the primary disease.

Diagnosis of leukemia:

1. Lymph nodes enlargement
2. Splenomegally
3. Examination of peripheral blood
4. Examination of bone marrow

Treatment:

- Therapy for acute leukemias must be aggressive in order to restore hematopoiesis by the remnant normal hematopoietic cells previously suppressed by the infiltration of bone marrow by malignant cells.
- Supportive therapy with broad-spectrum antibiotics, fluid therapy, blood components, and nutritional support are sometimes as important as the chemotherapy itself.