

Chronic Granulocytic Leukemia in a Dog, in Turkey

Cenker Çağrı CINGI * 

Ali Evren HAYDARDEDEOGLU ***

Kerem URAL **

Turan CİVELEK*

Hayati YÜKSEL ****

* Department of Internal Medicine, Faculty of Veterinary Medicine, Afyon Kocatepe University, Afyonkarahisar, TURKEY

** Turkish Republic, The Ministry of Agriculture and Rural Affairs, Board of High Stewards, Ankara, TURKEY

*** Department of Internal Medicine, Faculty of Veterinary Medicine, Ankara University, Ankara, TURKEY

**** Department of Pathology, Faculty of Veterinary Medicine, Afyon Kocatepe University, Afyonkarahisar, TURKEY

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Dear Editor,

We would like to report a rare case of Chronic Granulocytic Leukemia in a dog, in Turkey.

Myeloproliferative disease involves both acute and chronic leukaemias of the granulocytic and monocytic cell lines ¹. Chronic granulocytic leukemia (CGL), an uncommon myeloproliferative disorder resulting in substantial proliferation of mature granulocytes, may be characterised by the production of large numbers of mature differentiated neutrophil polymorphonuclear leucocytes ^{1,2}. The most common physical findings of the disease are lethargy, pyrexia, hepatosplenomegaly and mild to moderate lymphadenopathy ². The haematological abnormalities may be indicative of potential myeloproliferative disease, within the presence of morphologically abnormal white blood cells. As a common entity there may be giant neutrophils, abnormal nuclear morphology, abnormal neutrophil granulation or evidence of neutrophil dysfunction despite adequate or increased neutrophil counts ¹. When these abnormalities are observed, bone marrow aspiration and tissue biopsy should be performed in an attempt to make tentative diagnosis and intensive laboratory investigations may be required.

A four year old female German Shepherd Dog was referred to Animal Hospital, Faculty of Veterinary Medicine, Department of Internal Medicine with anorexia, chronic weakness and lost of sight. At the history; as being informed by the owner, the present case was referred to a private veterinary practice with the same features and although the supportive therapy was

continued for a week, the case became worsen. At the physical examination; enlarged lymph nodes were detected. The body temperature, respiratory and heart rates were in physiological levels. Ultrasonographic examination of the abdomen revealed hepatosplenomegaly and clearly diffuse areas on liver were detected. Complete blood count examination revealed leukocytosis (*Table 1*) and with accompanying granulocytosis. Besides dysplastic, hypersegmented neutrophils and neutrophilic metamyelocytes were also observed in blood smear (*Figure 1*). A tentative diagnosis of chronic granulocytic leukemia was made on the basis of physical and haematological examinations and blood smear evaluation and on persistent leukocytosis (*Table 1*), composed of a left shift to progranulocytes with no evidence of underlying inflammation. Serum biochemistry panel analyses revealed elevated ALP and ALT levels and decreased total protein levels (*Table 2*) on days 0, 14 and 21. In an attempt to perform advanced diagnosis including bone marrow, liver and spleen biopsy were discussed with the owner, who denied further analysis. Because of dog's deteriorating critical status and owner's rejection of therapy, the dog was euthanased.

Here we report a case of CGL in a dog, which progressed in time and misdiagnosed at initial examination by the referring veterinarian. The present authors did not record and recognize this condition previously. Cytologic assessment of cellular features for confirming a diagnosis of CGL was established in this case. The splenomegaly in this case was attributable to infiltration within granulocytic cells and anemia and thrombocyto-



İletişim (Correspondence)



+90 532 283 78 52



cagricingi@gmail.com

penia were consistent with a myeloproliferative disorder, CML as in this case. Differential diagnoses included pyogenic infection, sepsis, and immune-mediated hemolytic anemia, resulting in a leukemoid reaction with toxicity. These causes of leukemoid reaction were excluded by lack of morphologic evidence of toxicity, macrocytic anemia, or granulocytic perivascular infiltrate in other organs. An intensive laboratory work up and therapeutic plan was excluded as the owner declined further analysis and therapy. Chronic leukemia of the myelogenous type, is usually associated with a specific chromosomal abnormality and occurring in adulthood in humanbeing³. The case was referred to the present authors clinic on late onset of the disease, and at the age of four years, suggesting that in dogs with a history of complicated and undifferentiated history, these type of myeloproliferative disease must be evaluated in detailed hematological analysis and therefore a reliable diagnosis must be considered.

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Table 1. Haematological analysis in a dog with chronic granulocytic leukemia

Tablo1. Kronik granulositik lökemili bir köpekte hematolojik analizler

Variable	Day			Reference range
	0	14	21	
WBC (m/mm ³)	54.73 ↑	18.52 ↑	18.90 ↑	6.0–17.0
Lym (%)	6.5 ↓	14.1	15.6	10.0–40.0
Mon (%)	2.1	3.5	2.0	2.0–10.0
Gra (%)	91.4 ↑	82.4 ↑	82.4 ↑	50.0–80.0
Lym (m/mm ³)	3.55	2.61	2.94	0.6–6.8
Mon (m/mm ³)	1.14	0.64	0.37	0.1–1.7
Gra (m/mm ³)	50.04	15.27	15.59	3.0–13.6
RBC (m/mm ³)	6.25	3.65 ↓	4.56 ↓	5.5–8.5
MCV (fl)	73.6 ↑	72.9	71.3	58.0–73.0
Hct (%)	46.0	26.6 ↓	32.5 ↓	35.0–55.0
MCH (pg)	19.8	20.5	18.4 ↓	19.5–24.5
MCHC (g/dl)	26.9 ↓	28.1	25.8 ↓	28.0–40.0
RDW	8.6	10.4	11.1	8.0–12.0
Hb (g/dl)	12.4	7.5 ↓	8.4 ↓	10.0–18.0
THR (m/mm ³)	148	164	395	120–600
MPV (fl)	8.8	10.2	8.9	5.0–12.0
Pct (%)	0.13	0.17	0.35	-
PDW	8.8	10.0	8.2	6.0–10.0

Table 2. Serum biochemical analysis in a dog with chronic granulocytic leukemia.

Tablo 2. Kronik granulositik lökemili bir köpekte serum biyokimyasal analizler

Variable	Day			Reference range
	0	14	21	
Urea (mg/dl)	28.3	44	9.4 ↓	26.4–55
Creatinine (mg/dl)	0.5	0.6	0.9	0.5–1.5
Glycose (mg/dl)	109	110	142 ↑	60–110
AST (IU/L)	50	57	65	10–88
ALT (IU/L)	244 ↑	216 ↑	257 ↑	10–88
Total Protein (g/dl)	4.7 ↓	4.2 ↓	3.0 ↓	5.4–8.2
Albumin (g/dl)	3.9	3.3	2.5	2.5–4.4
ALP (IU/L)	797 ↑	778 ↑	1629 ↑	20–150

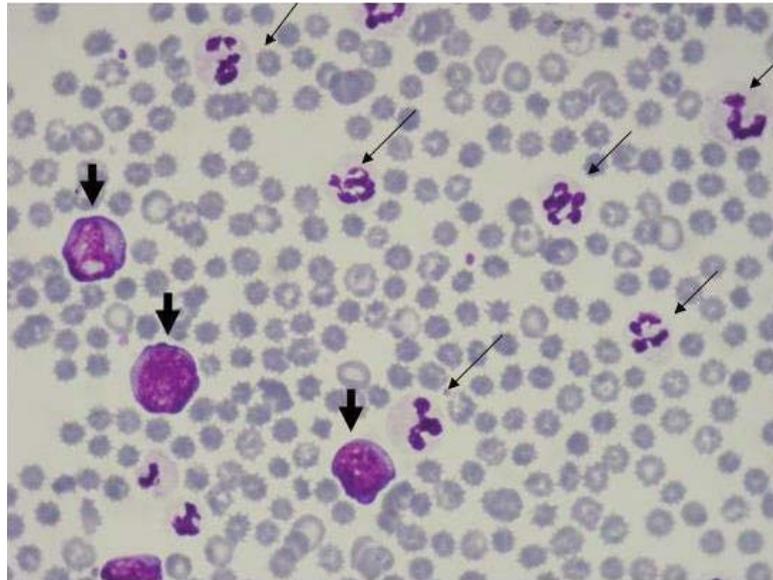


Fig 1. Displastic and hyper segmented neutrophils (thin arrows) with neutrophilic metamyelocytes (thick arrows) x2000

Şekil 1. Nötrofilik metamiyelositler (kalın oklar) ile displastik ve hipersegmente nötrofiller (ince oklar) x2000