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A Case Report of Aplastic Anemia in a Dog

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Introduction

Aplastic anemia is defined as a failure of the bone marrow to produce erythrocytes. A milder form of anemia is hypoplastic, in which there is an insufficient number of erythrocytes being released from bone marrow. These types of anemias are normocytic and normochromic. Immature erythrocytes are absent in aplastic anemia and are rare in hypoplastic anemia. Reticulocytes are decreased or absent in number. Lymphopenia, granulocytopenia, thrombocytopenia, or pancytopenia may be evident depending on the etiology of the anemia. This is a case report of an aplastic anemia accompanied by granulocytopenia and thrombocytopenia.

Case Report

A four year old, 11 kg., spayed Miniature Schnauzer was presented to Stange Memorial Clinic on Feb. 16, 1971, with a history of rapid onset of pyrexia, anorexia, and leukopenia. The vaccination history was current. Physical examination revealed a temperature of 103.8° F, ecchymotic hemorrhages of the skin of the ventral abdomen, ecchymotic hemorrhages of the right tonsil, and abdominal tenseness in the anterior quadrant. The general condition of the animal was good and the owner could not add any additional history that would be pertinent to the case.

The dog was admitted and the following laboratory data were recorded:

	2/16/71	2/17/71
Hb	8.4	6.4
PCV	23	16.5
RBC	2,950,00	3,130,000
WBC	4,300	1,160
Diff-		
Eosin.	0	0
Baso.	0	0
Seg. Neutro.	0	0
Lympho.	few small lymphocytes	92
Mono.	0	8
Platelets	None	none
MCV	77.9	52.7
MCHC	36.5%	38.8%
Knott's	negative	
Heartworm	negative	
BUN	15 (normal)	
Serum Protein	7.0 (normal)	
SGPT	42 (normal)	
SGOT	44 (normal)	
Lipase	0.9 (normal)	
Van den Bergh		
direct	0.4	
indirect	0.3	
total	0.7 (normal)	
Alk. Phosphatase	66 I.U. (0–31 I.U. Normal)	
L.D.H.	95 (normal)	
Fibrinogen	900	
Coombs Test	negative	

A bone marrow aspiration was performed from the ischiatic tuberosity. No hematopoietic cells were seen on stained smears from this marrow sample. On the basis of the blood picture and a lack of hematopoietic cells from the marrow, a diagnosis of aplastic anemia was made.

The owner was notified of the diagnosis and agreed to supportive treatment. On the basis of the decrease in hemoglobin on successive days, whole blood was slowly

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administered by intravenous drip. Immediately following the transfusion, the dog developed respiratory embarrassment accompanied by prostration. This reaction was assumed to be the result of the blood administration. Diphenhydramine hydrochloride was administered for the blood reaction but the dog succumbed in six hours.

At necropsy cutaneous ecchymosis were present on the ventral abdomen. The tracheal lumen contained pink froth and the lungs were dark red and firm. The pleural cavity contained 200 ml of red fluid and multiple ecchymosis were present on the parietal pleura. A 3 cm hemorrhagic infarct was present at one pole of the spleen. Multiple hemorrhages were present in the gastric and intestinal mucosae. Scattered hemorrhagic infarcts were present in the renal cortex. Histologically, bacterial colonies surrounded by a few mononuclear cells were present in the center of the renal infarcts. There was very little cellular reaction around the bacterial colonies. Femoral bone marrow consisted mainly of adipose cells with only a few erythropoetic cells. There was a notable lack of granulocytic cell types and megakaryocytes in the marrow.

Discussion

Aplastic anemia is a clinical entity that is seldom diagnosed in veterinary medicine. With the use of more refined techniques in veterinary clinical pathology, the clinician is better able to confirm a diagnosis of aplastic anemia.

The clinical course of aplastic anemia may be acute and fulminating with rapid progression to death, or the disorder may have an insidious onset and a chronic course. The symptoms and signs are related to the degree of the deficiencies: bleeding may be caused by thrombocytopenia; susceptibility to infection may be increased as the result of neutropenia; also other signs and symptoms are those of anemia. As a rule, splenomegaly and lymphadenopathy are absent.[1]

Aplastic anemias may be due to several different types of etiological agents. Chemical substances, chronic blood loss, viral agents, overwhelming infections, and radiation have been implicated as possible causes of aplastic anemia.[1,2,4,5,6] In a number of cases no specific agent can be incriminated; therefore, the anemia is designated as idiopathic.

The treatment of aplastic anemia is rarely effective depending primarily on the elimination of the etiological agent. The approach to treatment is good general supportive care, judicious use of transfusions, and corticosteroid therapy. Hematinics such as B_{12}, folic acid, iron, and crude liver extract are probably not of great value in the treatment of aplastic anemia.[6] In man bone marrow transplants have been attempted with questionable results.[3]

We hope to gather more information on cases of aplastic anemia with the purpose of furthering our understanding of this disease and evaluating various therapeutic approaches.

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