

HAEMATOLOGICAL PICTURES IN CLINICALLY AFFECTED DOGS

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ABSTRACT

Haematological examination was carried out on 23 clinically affected dogs with various diseases or conditions at Teaching Veterinary Hospital of Chittagong Government Veterinary College for a period of 5 months from July to November 2003. On haematological examination, total erythrocyte count, haemoglobin concentration and packed cell volume were recorded to be normal in dog irrespective of types of breed except anaemia. Decreased haematological values (TEC 2.1-2.5 million / cmm, Hb 3.4-5 g% and PCV 12-13%) were recorded in anaemic cases. The elevated erythrocyte sedimentation rate was recorded in maximum cases of dog. However, higher leukocyte count (19-26.7 thousand / cmm) was recorded in dermatitis, mammary tumor, abscess and leptospirosis of dogs. On differential leukocyte count, lymphocytes and eosinophils were counted higher while neutrophils were counted lower in dermatitis of German Shepherd and local breeds. Alarming lower percentage of lymphocytes (12-13%) and higher percentage of neutrophil (70-72%) and monocyte (9-10%) were registered in leptospirosis. On the other hand, lymphocytes count in fever (40-58%), conjunctivitis (54%) and fracture (46%) were higher while lower percentage of neutrophil was recorded as 35-54%, 36% and 52% respectively in Shamoyed breed.

Key words: Dog, haematological parameters, diseases

INTRODUCTION

Dogs are very popular companion animal for human being. Their cooperative behaviours with human beings are the reasons for choosing them as pet animal. Since the beginning of civilization, dogs have been selected and bred for different purposes like companionship, sports, protection against enemy and hunting. Although it is raising up as popular pet animal but suffers from a number of diseases and disease conditions, some of which have definite public health importance. Reports on the prevalence and incidence of diseases of dogs in Bangladesh are limited (Rahman, 1973). Blood sample from affected dogs may be collected either for haematological and biochemical tests at laboratory to support clinical diagnosis as reference data (Sharma and Singh, 2000). Haematological parameters examined at laboratory of clinically affected dogs give positive or negative correlation with recorded clinical signs for specific diseases or conditions of dogs. The present investigation was therefore carried out to determine haematological values of clinically affected dogs.

MATERIALS AND METHODS

This study was carried out on 23 clinically affected dogs (14 male and 9 female) of German Shepherd (n = 13), Shamoyed (n = 7) and Local (n = 3) breed aged between 5 months and 8 years which were brought for treatment at Teaching Veterinary Hospital (TVH) at Chittagong Government Veterinary College (CGVC), Chittagong, during 5 months period from July to November 2003.

Approximately 5 ml of blood for each case was drawn aseptically from the saphenous vein by disposable syringe and needle and transferred to a sterile vial containing anticoagulant (ethylene diamine tetra acetate, 5-10 mg for 5 ml of blood) to determine haematological parameters. All samples for haematological analysis were processed immediately after the collection of blood samples. Haemoglobin (Hb), packed cell volume (PCV), erythrocyte sedimentation rate (ESR), total erythrocyte count (TEC), total leukocyte count (TLC) and differential leukocyte count (DLC) were determined as per procedures set by Shastry (1983).

Recorded clinical signs for different diseases and conditions were registered as weakness, loss of appetite, off feed, vomiting, fever, blackish faeces, itching, alopecia, otitis, tumor, unable to stand, lameness, swollen extremity of the femur and ear and ocular discharge.

RESULTS AND DISCUSSION

The haematological values of German Shepherd related to diseases and conditions are presented in Table 1.

Table 1. Haematological changes in clinically affected different breeds of dogs

Breeds	Diseases/ Conditions	Age (Month)	Sex	Dura- tion of illness (days)	TEC (10 ⁶ / mm ³)	Hb (g%)	PCV (%)	ESR (mm in 1st hour)	TLC (10 ³ / mm ³)	DLC (%)				
										L	M	N	E	B
German Shepherd (n = 13)	Hipdysplasia	5	M	14	8.5	9.4	51	5	12.2	35	1	60	3	1
		5	F	3	6.7	11.2	40	4	10.2	35	4	57	3	0
		24	M	30	6.9	10	42	13	16.6	15	1	76	7	1
	Dermatitis	5	F	90	6.9	15	40	30	26.7	38	1	27	14	0
		5	M	42	5.1	8	31	24	19	40	1	34	22	3
	Leptospirosis	36	M	28	6.9	11	43	22	22	13	10	70	6	1
		42	M	14	8.5	11.2	49	25	20	12	9	72	6	1
	Mammary tumour	20	F	90	7.4	13	44	18	23	47	2	48	2	1
		22	F	30	6.7	10	40	21	20.2	47	2	41	10	0
	Anaemia	24	M	30	2.1	5	13	37	11.8	25	3	60	10	2
Absecess	12	M	10	5.2	8.4	31	35	24	33	0	59	8	0	
Elbow hygroma	24	F	20	6.3	10	37	12	12.5	26	0	64	9	1	
Abortion	84	F	-	5.2	8	31	19	11	22	1	68	8	1	
Shamoyed (n = 7)	Fever	18	M	10	7.16	11.4	44	20	10.8	58	2	35	4	1
		30	M	8	8.1	11.2	50	23	9.6	53	3	39	3	2
		96	F	15	5.0	9.4	37	21	14	41	2	54	3	0
		96	M	7	7.11	10	42	45	13.5	40	4	46	9	1
	Anaemia	12	M	30	2.5	3.4	12	28	18	25	3	60	10	2
Conjunctivitis	72	F	12	7.23	11.2	47	6	15.2	54	2	36	7	1	
Fracture	18	M	15	6.9	9	42	6	12.5	46	5	52	1	0	
Local (n = 3)	Aural hematoma	84	F	10	6.9	10.6	41	15	16.1	19	0	68	13	0
	Sprain	12	M	7	6.8	9.4	40	6	15.2	25	2	60	11	2
	Dermatitis	36	M	30	7.2	10	44	26	21	47	1	39	12	1

n = No. of dogs, M = Male, F = Female, L = Lymphocytes, M = Monocyte, N = Neutrophil, E = Eosinophil, B = Basophil.

Irrespective of cases except anaemia, total erythrocyte count (5.1-8.5 million / cmm), haemoglobin concentration (8-11.2 g%) and packed cell volume (31-51%) were measured to be normal in German Shepherd. Clinically diagnosed to be anaemia in the same breed of dog was evidenced with the decreasing trend of different haematological values (TEC - 2.1 million / cmm, Hb - 5 g% and PCV- 13%) and increasing trend of ESR (37 mm in 1st hr) on haematological evaluation. In most of the cases other than hipdysplasia and elbow hygroma the erythrocyte sedimentation rate was relatively higher. The present finding of erythrocyte sedimentation rate is in close agreement with the finding of Jain (1986), Shastry (1983) and Kirk and Bistner (1975). On the other hand, higher leukocyte count

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(20-26.7 thousand / cmm) was recorded in dermatitis, mammary tumor, abscess and leptospirosis than those of other cases where leukocyte counts ranged from 10.2-16.6 thousand / cmm (hipdysplasia, anaemia, elbow hygroma and abortion). Higher leukocyte counts were registered in dogs affected by leptospirosis which coincide the findings of Jain (1986). The higher percentage of lymphocytes and eosinophils were recorded as 38-40% and 14-22% respectively while neutrophil was recorded as 27-34% in dermatitis which are consistent with the previous findings of Jones *et al.* (1996) and Ettinger and Feldman (2000). The results obtained might be due to more infiltration of lymphocytes into dermatitis affected epidermis and lesser infiltration of neutrophils. In this study, the percentage of lymphocyte was counted as lower (12-13%) in leptospirosis affected dogs while neutrophil (70-72%) and monocyte (9-10%) were counted as higher which are supported by Jain (1986).

Similar to German Shepherd, total erythrocyte count, haemoglobin content and packed cell volume were decreased in anaemia, 2.5 million / cmm, 3.4 g% and 12% respectively while in other cases (fever, conjunctivitis and fracture) recorded values remained within normal range (TEC - 5-8.1 million / cmm, Hb - 9-11.4 g% and PCV- 37-50 %). Elevated level of erythrocyte sedimentation rate was recorded in anaemia (28 mm in 1st hr) and fever (20-45 mm in 1st hr) which is supported by Jain (1986). Higher percentage of lymphocytes was counted in fever (40-58%), conjunctivitis (54%) and fracture (46%) while lower percentage of neutrophil was recorded as 35-54%, 36% and 52% respectively.

Total erythrocyte count, haemoglobin content and packed cell volume in all cases were remained in between normal range (6.8-7.2 million / cmm, 9.4-10.6 g% and 40-44% respectively) in local breed. However, in case of dermatitis the erythrocyte sedimentation rate, total leukocytes and percentage of lymphocyte, neutrophil and eosinophil were almost similar like German Shepherd.

It may be concluded that certain haematological values are greatly influenced by clinical diseases or disease conditions of dog which can assist in the diagnosis of diseases as reference data.

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