SOME HAEMATOLOGICAL VALUES IN NORMAL DOGS

Rahman Kadhum Muhsen Saleem Amin Hasso*
Department of Veterinary Internal and Preventive Medicine ,University of Basrah
* Department of Veterinary Internal and Preventive Medicine ,College of Veterinary Medicine
University of Baghdad, Baghdad ,Iraq
(Received 13 February 2008, Accepted 15 April 2008)

Keywords: Fibrinogen, MCV, Leukocyte

ABSTRACT

Haematological values of sixty normal dogs aged from 2 months to 2 years of both sexes were estimated. Red blood cells count (RBCs), hemoglobin concentration (Hb), packed cell volume (PCV). Mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC), total and differential leukocyte count, total plasma protein, plasma albumin, fibrinogen and globulins were determined using several laboratory techniques and equations.

The results revealed that, all RBCs parameters decreased with age except Hb, MCH and MCHC. The latter two increased with age while Hb was unchanged. All other parameters increased significantly with age. There were no significant differences in all parameters between both sexes.

INTRODUCTION

The estimation of normal haematological values in different animal species are valuable tools in the diagnosis and prognosis of many diseases (1).

In Iraq, farm, pet and wild animals exisist. Farm animals were the main concern of the researches from many decades, out of which the researches documented the normal blood values of sheep (2), horses (3, 4). The normal values of cat's blood were studied by (5) .None have studied the normal blood values of dogs in Iraq. Many researchers on dogs need normal blood values to compare with and since such values are not available in normal dogs in Iraq; this study was done to estimate the normal haematological values in Iraqi doges.

MATERIAL AND METHODS

This study was preformed on 60 clinically normal dogs aged between two months to two years. These doges were divided in to two groups of 30 animals each as follow:

- Group 1: less than 6 months old.
- Group 2: 6 months to 2 years old.

Three ml of blood were collected from the jugular vein in anticoagulant tubes for haemotologic examination. RBCs count and packed cell volume (PCV) was estimated according to (6). Hemoglobin estimation was done using spectrophotometer and Drabkin's solution according to. (7). Total and differential leukocyte counts were done according to (8). Total plasma protein and albumin were estimated using kits from Randox Company. Plasma fibrinogen was estimated using referctometer according to (7). Globulin concentration was calculated according to this equation.

Globulin = Total plasma protein – (Albumin + fibrinogen).

The traditional values were converted to SI values according to (9).

RESULT

The results of RBCs parameters were summarized in table 1. There were significant differences (P<0.05) between age groups for the RBCs count , PCV, MCV, MCH and MCHC, All these parameters were higher in the first group compared with the second group except MCH and MCHC which were higher in the second groups. The results of total and absolute differential leukocyte count were summarized in table 2. The total and differential leukocyte count were significantly higher (P < 0.05) in the second group compared with first group.

The results of total plasma protein , albumin , globulin and fibrinogen were summarized in table 3. All these parameters were significantly higher in second compared with first group.

There was no statistical differences in all parameters between the both sex (Table 4).

DISCUSSION

The average values for haematological parameters observed in the present study were in agreement with accepted ranges for health dogs (8; 10; 11). In general our values of haematological parameters of puppies less than 6 month old were similar to those reported by (12) who use the puppies at zero time as a control group in his study.

There were significant differences in the RBCs PCV, MCV, MCH and MCHC between age groups, these results were in agreement with (13). Packed cell volume was significantly higher (P< 0.05) in the first group than those reported in the second group. This was probably due to the decline in both RBC count and MCV occurring with advanced age. The significant increase (P< 0.05) in MCH and MCHC in adult doges might to due to the reduction of RBCs and PCV values without similar fall in Hb. The total and differential leukocyte counts were higher significantly (P< 0.05) in the second group than those reported in the first group and these results were in agreement with (11).

The total plasma protein, albumin, globulins and fibrinogen concentration were significantly higher in second compared with first group this result was in agreement with (14). The absence of significant difference in all parameters in both sexes were in agreement with (5).

Table (1) RBCs parameters in normal dogs according to age groups

Group	RBCs $\times 10^9$ cells/L	Hb gr/L	PCV L/L	MCV fL	MCH Pg	MCHC gr/L
Group 1	6.2±0.392	148.6±9.62	0.48±0.024	70.2±2.55	22.2±3.22	348.6±10.2
Group 2	5.8±0.429	142.9±10.3	0.38±0.032	63.6±3.66	24.9±2.25	364.3±11.3
P Value	P< 0.05	P> 0.05	P< 0.05	P< 0.05	P< 0.05	P< 0.05

Table (2)Total and differential leukocyte count × 10^9 cells /L according to age

Groups	Total WBC count	Neutophils	Lymphocytes	Monocytes	eosonophils
Group 1	11.92±0.23	7.823±0.126	2.522±0.11	0.623±0.0031	0.225±0.0031
Group 2	14.22±0.36	10.62±0.212	3.56±0.121	1.23±0.0046	0.636±0.0022
P Value	P< 0.05	P< 0.05	P< 0.05	P< 0.05	P< 0.05

Table (3)Total plasma protein, albumin, fibrinogen and globulin concentration in gr/L according to age.

Groups	TPP	Albumin	Globulin	Fibrinogen
Group 1	59.6±2.66	22.36±1.66	38.62±1.23	1.426±0.21
Group 2	37.2±3.26	32.25±2.66	43.25±1.26	1.926±0.192
P Value	P< 0.05	P< 0.05	P< 0.05	P< 0.05

Table (4)Haematological parameters according to sex

Parameters	Male	Female	P Value
RBCs × 10^9 cells /L	6.1±0.29	6.12±0.39	P>0.05
Hb gr/L	146.26±8.23	142±9.23	P>0.05
PCV L/L	0.426±0.0363	0.436±0.0292	P>0.05
MCV fL	70.1±2.63	70.26±3026	P>0.05
MCH pg	23.621±3.1	23.56±2.92	P>0.05
MCHC gr/L	342.6±10.2	341.7±11.3	P>0.05
WBCs × 10^6cells /L	21.82±0.32	12.63±0.29	P>0.05
Nutrophile× 10^6cells /L	9.23±0.221	9.35±0.19	P>0.05
Lymphocytes× 10^6cells /L	3.123±0.12	3.163±0.92	P>0.05
Monocytes× 10^6cells /L	0.9236±0.0021	0.9253±0.0019	P>0.05
Esonophils× 10^6cells /L	0.426±0.0023	0.424±0.0021	P>0.05
TPP gr/L	65.3±3.2	64.2±3.6	P>0.05
Albumin gr/L	27.2±3.7	27.7±3.1	P>0.05
Globulin gr/L	40.563±1.25	40.423±1.35	P>0.05
Fibrinogen gr/L	1.62±0.23	1.63±0.33	P>0.05

دراسة بعض القيم الدمية للكلاب الطبيعية

رحمن كاظم محسن* ، سليم أمين حسو**
*فرع الطب الباطني والوقائي البيطري – كلية الطب البيطري – جامعة البصرة
**فرع الطب الباطني والوقائي البيطري – كلية الطب البيطري – جامعة بغداد

الخلاصة

تم قياس الافيام الدمية لستين كلبا سليما من الناحية السريرية تراوحت أعمارها بين شهرين الى سنتين وشملت الفحوصات الدمية : حساب عدد كريات الدم الحمر ، تركيز الهيموكلوبين ، حجم الخلايا المرصوص ، معدل الحجم الكريي ، معدل خضاب الدم الكريي ، معدل تركيز خضاب الدم الكريي ، حساب العدد الكلي والتفريقي لكريات الدم البيض وحساب تركيز بروتينات بلازما الدم وذلك باستعمال عدة تقنيات مختبرية مع تطبيق بعض المعادلات الحسابية .

أظهرت النتائج إن معايير كريات الدم الحمر تتناقص معنويا مع تقدم العمر عدا تركيز الهيموكلوبين، معدل خضاب الدم الكريي و معدل تركيز خضاب الدم الكريي حيث ازداد المعياران الاخيران معنويا مع تقدم العمر بينما لم يطرأ اي تغيير على

تركيز الهيموكلوبين بتقدم العمر . اما المعايير الاخرى فقد ازدادت معنويا بتقدم العمر . ولم تظهر النتائج وجود أي فرقا معنويا في جميع المعايير بين كلا الجنسين

REFERENCES

1-Archer, R.K and Jeffcott , L.B (1977). Comparative clinical haematology 1st ed. London Balck Well.

2-Al. Izzi, S.A and Al. Jalili, Z.F (1985). Haemotological parameters in normal sheep. The Iraqi J. Vet. Med (9): 29-37.

3-Al. Delaimi , A.K and Ghazi, A.J(1987). Study on normal haematological values of Arabian race horses. The Iraqi J. Vet. Med. 11:100-109.

4-Sultan, A. Sh (2001). A study on some normal haematological value in foals and Arabian horses at different ages. The Iraqi J .Vet . Med. 25(1): 125-132.

5-Hassan, I . Q (2002). Some haematological values of stray cats in Baghdad. Al. Qadisiya J. Vet. Sci. 1.(1) :30-33.

6-Coles, E.H (1986). Veterinary Clinical Pathology . 4th ed W.B Sounders Co. USA.Pp: 486.

7-Haen , P.J (1995). Principle of haemotology . W.C. Brown London.

8-Schalm, O; Jain, N.C and Carroll, E.J (1975). Veterinary Haematology 3rd ed. Lea and Febigar. Philadelphia.

9-Lumsden ,J . H (1983). SI units in veterinary medicine. Can. Vet . J ; 24 :132-133.

10-Jacobs R.M and Lumsden. J.H (1995). Canine and feline references. In Bonagura, J.D and Kirk , R.W. Current veterinary therapy. WB sounders Pp: 1395-1417.

11-Show, D.H and Ihle, S.L. (1997). Small Animal Internal Medicine. Williams and Wilkins Co. Baltimore.

12-Muhsen , R.K (2007). The use of *Lactobacillus acidophilus* as a probiotic in prevention and treatment of *Salmonella typhimurium* infection in puppies, PhD thesis. College of Veterinary Medicine. University of Baghdad.

13-Willard, M.D; Tvedten, H and Turnwald, G.H (1994). Small animal clinical diagnoses by laboratory methods. 2nd ed. WB sounders Co. Philadelphia.

14- Kaneko, J.J (1980). Clinical Biochemistry of Domestic Animals. Academic press Pp: 787-795.