Article 123

Haematobiochemical Changes in Canine Scabies

Aabeen Sakina[1] and R. K. Mandial[2]

Twenty eight dogs brought to Veterinary Clinical Complex CSKHPKV Palampur suffering from sarcoptic mange were included in the present study. Further 10 apparently healthy dogs irrespective of sex, breed and age were chosen to serve as control. Various haematobiochemical parameters like Hb, PCV, TLC, TEC,DLC, MCV, MCH, blood glucose, total protein, albumin, globulin, A: G ratio, total immunoglobulins and Vitamin A of affected dogs and control were studied. The mean values of Hb, PCV and TEC were significantly lower (P<0.01) and MCV and MCH were significantly higher (P<0.01) in dogs suffering from sarcoptic mange as compared to control group. Leucocytosis, neutrophilia, eosinophilia and lymphopenia was observed in dogs suffering from sarcoptic mange .The mean blood glucose levels, total protein and albumin was significantly lower (P<0.01) against a significant increase(P< 0.01) in mean plasma globulin and a significant decrease (P< 0.01) in albumin: globulin ratio in the affect animals when compared to control group.. There was non-significant difference in the mean serum immunoglobulins and plasma vitamin A levels between sarcoptic mange affected dogs and control group

KEYWORDS
Mange, sarcoptic, blood, glucose, albumin.

INTRODUCTION

Canine scabies referred to as sarcoptic mange is an intensely pruritic, contagious canine dermatosis, caused by epidermal mite *Sarcoptes scabiei*. These mites live within the skin for at least a part of their life cycle and produce severe cutaneous effects. Scabies upsets both dog and the owner due to the intense pruritus and the potential of spread to the owner. The present study was undertaken to find out haematobiochemical changes in canine scabies.

[1]Veterinary Assistant Surgeon Department of Sheep Husbandry, Srinagar, J&K.
[2]Prof. & Head, Department of Veterinary Medicine, College of Veterinary and Animal Science C.S.K.H.P.K.V. Palampur 170062

MATERIALS AND METHODS

Twenty eight dogs brought to Veterinary Clinical Complex CSKHPKV Palampur suffering from sarcoptic mange were included in the present study. These dogs were divided into four groups (Group A, B, C and D) for studying the efficacy of four types of acaricidal drugs. Further 10 apparently healthy dogs irrespective of sex, breed and age were chosen to serve as control. From each dog under study, approximately 6ml of blood was collected on day 0 through cephalic or recurrent tarsal vein puncture for haematobiochemical estimations. For haematological study approximately 1ml of blood was kept separately. For biochemical analysis, a portion of blood was centrifuged at 1500 rpm for 15 to 20 minutes and plasma was harvested. The plasma was kept in deep freezer (-20 0C) till further estimations. Haemato-biochemical parameters like Hb, PCV, TLC, TEC,DLC, MCV, MCH, blood glucose, total protein, albumin, globulin, A: G ratio, total immunoglobulins and vitamin A of affected dogs and control were studied. Haemogram and leukogram were studied as per the procedure described by Jain (1986). Blood biochemicals viz. blood glucose, total protein, albumin and globulin were estimated using specific diagnostic kits* on RA-50**. (* Manufactured by "Bayer Diagnostic India Ltd." 589, Sayajipura, Ajwa Road, Baroda- 390019, Gujarat, India. ** Chemistry analyzer, "Bayer Diagnostic India Ltd." Baroda, Gujarat, India.)

Total immunoglobulins were extracted and estimated as per the method described by Lowry et al. (1951) and Oswer (1965) and estimation of vitamin A was carried out as per the method given by Baker and Frank (1968).

RESULTS

The mean values of Hb (g/dl), PCV (%), TLC, TEC, DLC(%), MCV (fl), MCH(pg), blood glucose (mg/dl), total protein (g/dl), albumin (g/dl), globulin (g/dl), A:G ratio, total immunoglobulins (mg/dl) and Vit. A (µg/dl) are illustrated in Table 1.

DISCUSSION

The mean values of Hb, PCV and TEC were significantly lower ($P<0.01$) and MCV and MCH were significantly higher ($P<0.01$) in dogs suffering from sarcoptic mange as compared to control group indicating macrocytic anaemia in sarcoptic dogs. This anaemia might be due to the stress arising from the disease. Similar findings were reported by Gupta and Prasad (2001) and Biswas et al. (2002). The sarcoptic mange affected dogs had significantly higher ($P<0.01$) TLC, neutrophils and eosinophilic counts than control.

Leucocytosis along with neutrophilia and eosinophilia observed during present study concurred with the findings of Sharma et al.(2005). Lymphopenia was consistent finding in cases of sarcoptic mange which simulated the findings of Nair and Nauriyal (2007).It might be due to the reason that cell mediated immunity plays important role in fighting against sarcoptic mites.

The mean blood glucose levels in sarcoptic dogs was significantly lower ($P<0.01$) than in control indicating hypoglycaemia in them which might be due to increased need of skin, during inflammatory reactions for glucose as suggested by Sharma(2006). A significant decrease ($P< 0.01$) in mean total protein levels in sarcoptic dogs as compared to the healthy group indicated hypoproteinaemia which was in agreement with the observations of Biswas et al. (2002) and Solanki et al.(2007).The mean value of plasma albumin revealed a significant decrease ($P< 0.01$) as against a significant increase ($P< 0.01$) in mean plasma globulin indicating hypoalbuminemia and hyperglobinemia respectively. A significant decrease ($P< 0.01$) was also observed in albumin: globulin ratio in contrast to healthy control group due to decrease in plasma albumin and relative increase in plasma globulin concentration. This finding was in concurrence with the observations of Biswas et al. (2002) and Jyotsna and Gupta (2005).

There was non-significant difference in the mean serum immunoglobulin levels between affected and control group animals indicating that immune system is not much affected in sarcoptic mange. Further non-significant difference in plasma levels of vitamin A between affected dogs and control group was also observed.

REFERENCES

1. Baker H. and Frank O. (1968). Clinical Vitaminology: Methods and Interpretation. Interscience Publishers, London. p 295.
2. Biswas L., Mukhopadhyay S.K., Bhattacharya M.K. and Roy S. (2002). J. Interacademicia, 6: 734-736.
3. Gupta N. and Prasad B. (2001). Clinico-diagnosis and therapeutic management of acariasis in dogs. Indian. Vet. Med ., 21:73-75.
4. Jain N.C. (1986). Schalm's Veterinary Haematology. 4th edn., Lea and Febiger, Philadelphia.
5. Jyotsna S. and Gupta S.K. (2005). Serum protein profile in demodectic mange. Indian. Vet. Med. J., 28: 35-37.
6. Lowry O.H., Rosebrough N.J., Farr A.L. and Radall R.J. (1951). Protein measurement with the Folin Phenol Reagent. Journal of Biological Chemistry,193-265.
7. Nair S.S. and Nauriyal D.S. (2007). Diagnostic significance of haematological changes associated with various canine dermatoses. Intas-polivet, 8(1): 68-72.
8. Oswer B.L. (1965). Hock's physiological chemistry, 14th edn. MC Graw; Hill Company, London.
9. Sharma S.A., Ahmed N.M., Thankichalam M. and Sundararaj A. (2005). Haematobiochemical changes in canine demodicosis. Indian Vet. J., 82:396-401.
10. Sharma S.K. (2006). Etiology haematobiochemical and therapeutics of skin diseases in canine. M.V.Sc. thesis.

Sher-E- Kashmir University of Agril. Sciences and Techonology, Jammu (J&K), India.

11. Solanki J.B., Hasnani J.J., Patel D.M., Patel P.V. and Raval S.K. (2007). Canine demodicosis in Anand. J. Vet. Parasitol, 21(1): 79-80.

*Address for Correspondence:
Aabeen Sakina,
Department of Sheep Husbandry, Srinagar, J&K.
E mail : aabeensakina123@gmail.com

TABLES

Table1: Haematobiochemical changes in sarcoptic dogs and control group (Mean ±SE)

Parameters		**Control** (n= 10)	**Sarcoptic dogs**			
			GroupA (n= 7)	**Group B** (n= 7)	**Group C** (n= 7)	**Group D** (n= 7)
Hb(g/dl)		12.22 ±0.04	10.9 ± 0.07**	10.98 ± 0.12**	10.74 ± 0.17**	10.77±0.11**
PCV(%)		38.4 ±0.70	30.71 ± 0.52**	31.42 ± 0.72**	32.57 ± 0.64**	31.57±0.64**
TLC($x10^3$/µl)		9.27 ± 0.06	11.77 ± 0.09**	11.81 ± 0.09**	11.81± 0.11**	11.75±0.13**
TEC($x10^6$/µl)		6.03±0.07	4.51±0.17**	4.21 ± 0.10**	4.31 ± 0.13**	4.35 ±0.15**
DLC (%)	**N**	69.2 ± 0.61	80.71±0.74**	80.14 ± 0.59 **	80.14 ± 0.73**	80.71±0.67**
	L	27.10±0.31	11 ± 0.43**	11 ±0.61**	11.28 ± 0.52**	10.14±0.50**
	M	0.80 ±0.20	1.0 ±0.22	1.0 ±0.31	1.28 ±0.28	1.42 ±0.20*
	E	2.6 ±0.26	7.28 ± 0.68**	7.71± 0.52**	7.14 ± 0.51**	7.57±0.57**
	B	0.00±0.00	0.00±0.00	0.00±0.00	0.00±0.00	0.00±0.00
MCV(fl)		62 ±0.47	68 ± 0.74**	72 ±1.1**	75 ±1.8**	73 ±1.5**
MCH (pg)		21±0.69	24 ± 1.3*	26 ±1.2**	25 ±1.2**	25 ±0.62**
Blood Glucose (mg/dl)		94.4±0.64	88.94± 2.0**	86.42±2.1**	86.71±2.1**	87.68±2.0**
Total Protein (g/dl)		6.36±0.03	4.94±0.04**	4.97±0.08**	5.04±0.06**	5.0±0.08**
Albumin (g/dl)		3.03±0.04	1.25±0.04**	1.3±0.04**	1.22±0.04**	1.24±0.04**
Globulin (g/dl)		3.3 ±0.04	3.68±0.08**	3.61±0.09**	3.7±0.08**	3.71±0.05**
A : G Ratio		0.91±0.01	0.34 ±0.01**	0.35±0.01**	0.33±0.01**	0.33±0.01**
Total Immuno globulins (mg/dl)		3.21±0.08	3.2±0.11^{NS}	3.2±0.15^{NS}	3.1±0.14^{NS}	3.1±0.17^{NS}
Vitamin A (µg/dl)		51.4±0.83	50.24±0.76^{NS}	52.14±0.79^{NS}	51.55 ±0.65^{NS}	52.44±0.55^{NS}