

SCABIES IN DOGS AND ITS HAEMATOBIOCHEMICAL CHANGES

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Introduction

The skin disease accounts about 25% morbidities in small animal practice (Grant and Thoday, 1994) besides, different dermatological disorders accompanying, ectoparasitic infestations “ tick, lice, fleas mites etc. are not uncommon. (Lyiod, 1989). Canine scabies is extremely pruritic and contagious skin condition caused by *Sarcoptes scabiei*. The mites live within the skin for a considerable period producing severe cutaneous lesions. The secretions cause itching and burning sensation (Scott *et.al.*, 1995). Canine scabies upset both the dog and the owner due to potential spread, intense pruritus and when the problem cannot be either cured easily or controlled. The present study was undertaken to understand the clinico haematological and biochemical alterations in dogs suffering from scabies.

Materials and Methods

The clinical cases of dogs brought to the small animal clinics of Belgachia of West Bengal University of Animal and Fishery Sciences were included for the study.

The dogs were subjected to dermatological examination (Smith, 1998) and 48 dogs those were diagnosed as scabies used for detailed evaluation of various haemato biochemical parameters. Six apparently healthy dogs were kept as control. Different haematological parameters like Hb, PCV, TEC,

distribution of lesions have also been recorded by Gupta *et al.* (2000) and Gaur *et al.* (2003). TLC & DLC was estimated following the methods describes by Schalm *et al.* (1986) and different biochemical parameters like Total Serum Protein (TSP) Serum Albumin (A) and Serum Globulin (G) was estimated following the methods described by Doumas (1975). Zinc, Copper and Iron concentration were also estimated as per standard procedure using Atomic Absorption Spectrophotometer (AAS).

Result and Discussion

All the positive clinical case of scabies showed clinical signs like itching, scaling, partial alopecia, moderate, erythema, constant progressive lesion with acidic odour. Thickening of skin and scab formation were observed in the later stage. Similar type of elemental signs in Scabies were also reported (Folze *et al.* 1984; Chakrabarti, 2002) Sreedevi *et al.* (2002) and Vizio *et al.* (2004) also observed Intense pruritus in scabies. These might be due to the development of hypersensitivity to the secretion and excretions of the mites. Distribution pattern and preferential localization of signs, lesions in scabietic dogs are presented in table-I. In the present study most commonly scabietic lesions were found at elbow (20.83%) margin of pinna (20.83%) and muzzle (16.66%). The other areas involved were neck, back, ventral thorax and abdomen and root of tail. Similar pattern of

Table – 1. Distribution pattern and preferential localization of skin lesions in scabietic dogs.

Areas involved	Number of dogs	Percentage
Elbow	10	20.83
Hock	4	08.33
Muzzle	8	16.66
Margin of pinna	10	20.83
Vetental thorax and abdomen	2	04.16
Root of the tail	2	04.16
Back	4	08.33
Generalized	8	16.66
	48	100

Table – 2 Haematological and Biochemical values in control dogs and Dog suffering from scabies.

Parameters	Control	Scabies	't' value
Hb(g/dl)	14.490 ± 0.2054	11.870 ± 0.0876	12.339
PCV(%)	47.58 ± 1.0769	43.27 ± 0.7004	3.2566
TEC (X10 ⁶ /μl)	5.93 ± 0.0741	5.7535 ± 0.0799	1.6266
TLC (X10 ³ /μl)	10.60 ± 0.30	18.87 ± 0.03	4.45
DLC (X10 ³ /μl)			
Neutrophil	68.01 ± 0.707	69.626 ± 0.373	2.0397
Lymphocyte	19.4 ± 0.5098	15.51 ± 0.5668	4.3443
Monocyte	7.2 ± 0.5832	7.373 ± 0.375	0.2433
Eosinophil	5.21 ± 0.21	7.124 ± 0.2952	4.3700
Basophil	0.21 ± 0.19	0.375 ± 0.1828	0.5742
Total protein (g/dl)	7.31 ± 0.32	5.58 ± 0.03	2.67
Albumin (g/dl)	3.68 ± 0.33	1.48 ± 0.02	3.81
Globulin (g/dl)	3.63 ± 0.17	3.68 ± 0.33	0.51
Zinc(Mg/ml)	0.512 ± 0.12	0.527 ± 0.08	0.09 ns
Copper(Mg/ml)	0.189 ± 0.005	0.175 ± 0.005	0.084 ns
Iron(Mg/ml)	1.441 ± 0.41	1.181 ± 0.15	0.78 ns

Ns = Non-Significant, * P<0.05, ** P<0.01

The Hb, PCV level significantly declined in scabietic dog compare to healthy control group where as the TEC level, of the control group and scabies groups were within the normal range. The lower level of haemoglobin in the present study might be attributed to anaemia due to loss of protein from the skin (Muller et al., 1989). Decrease level of PCV % was also recorded by Arlian *et al.* (1995). Decreased level of PCV and non significant changes of TEC have also been reported (Arlian *et al.*, 1995).

The TLC of control group was within the normal range similar to Jain (1986). The scabies affected dogs had significantly (P<0.01) higher TLC than that of control group. Similar observation was also made by Alian *et al.*(1995). Ahmed *et al.* (1995) attributed leukocytosis to cellular and humoral immune response but earlier Smith (1969) stated that leukocytosis is usually in response to tissue damage or necrosis produced by inflammation.

The mean neutrophil, lymphocyte, monocyte, eosinophil and basophil values of the control group in this study was within the normal range. (Jain 1986). Scabies infected dogs had significantly (P<0.05) higher neutrophil level and significantly (P<0.01) lower level of lymphocyte value than the control group. The mean eosinophil level of scabietic dog was significantly higher (P<0.01) in comparison to control group. There was no significant alteration of monocyte and basophil percentage between the scabietic and control dogs. This finding corroborated with the

observation of Arlian *et al.* (1995) and Paterson *et al.* (1995).

The mean total protein, albumin and globulin values of control group was within the normal range (Mayer *et al.*, 1992). The mean total serum protein and albumin of scabies infected dogs were significantly (P<0.05) and (P<0.01) respectively lower than that of the control group. In the present study, lower albumin level of scabietic dogs might be due to decreased of total protein. The mean value of serum globulin in scabies infected dog was within the normal range and no significant difference was observed between control and scabies infected dogs. These findings were in close agreement with Hirudkar *et al.* (1997) and Meyer *et al.* (1992).

The mean value of serum zinc, copper and iron was within the normal range. Similar was the observation of Arlian *et al.* (1995) who also observed no significant change in zinc, copper and iron level in dogs suffering from scabies.

Summary

Scabies affected dogs showed severe pruritus, erythema, scaling, excoriation, thickening of skin and partial to moderate alopecia. The most affected sites of scabies were the elbow, margin of pinna and muzzle. Haematological studies of scabietic dogs revealed low level of haemoglobin (Hb) and packed cell volume (PCV).

The level of total erythrocyte count (TEC) was within normal range but affected

dogs showed leucocytosis, neutrophilia and eosinophilia. Total serum protein and albumin level declined significantly in scabietic dog. No significant alteration occurred in serum zinc, copper and Iron values.

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