THERAPEUTIC MANAGEMENT OF HAEMOPROTOZOAN INFECTIONS WITH REFERENCE TO HAEMATOLOGICAL CHANGES IN CANINES AND BOVINES

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ABSTRACT

Of 260 cases of bovines and canines suspected for haemoprotozoan infection, reported at Teaching Veterinary Clinical Complex, Veterinary College, N.A.U., Navsari from March, 2011 to February, 2012, 60 animals were found positive for different haemoprotozoan infections *viz.*, babesiosis, anaplasmosis, trypanosomiasis, theileriosis and mixed infections. Haematological examination and smear examinations were carried out in all suspected animals. Confirmed cases were treated with three different treatment groups and recovery was analyzed on the basis of improvement in blood picture. Combination of Inj. Oxytetracycline and Inj. Diamenazine Aceturate was found effective among all three treatment groups.

KEY WORDS : Haemoprotozoa, Canine, Bovine

INTRODUCTION

In canines and bovines, haemoprotozoan infections are present almost worldwide (Criado-Fornelio *et al*., 2007) and can cause death, if not treated. The most common presentation of the infection in bovines and canines is a symptomatic to mild disease, which is usually associated with a low level of parasitemia, illness characterized by high rise of fever, anorexia, weight loss, anemia, ocular discharge, weakness of the hind limbs and signs of chronic debilitating diseases (Baneth *et al*., 2003). This paper reports haematologicaland therapeutic approach in suspected and confirmed cases of haemoprotozoan infection.

MATERIALS AND METHODS

Total 260 cases of bovines and canines were presented at Teaching Veterinary Clinical Complex, Veterinary College, N.A.U., Navsari from March, 2011 to February, 2012 with the history of anemia, high fever, pale mucous membrane, depression, anorexia and may presence of ticks on the skin. To ascertain the etiology, blood samples were collected. Haematological parameters *viz.* Hb, PCV, TEC, TLC and DLC were estimated as per standard method (Brar *et at.* 2000). Blood smears stained with Giemsa were examined for detection of blood parasite infection, if any.

On the bases of smear confirmation, infected animals were randomly distributed into three groups. Each group was consisting 20 animals including bovines and canines. Group I was treated with Inj. Oxytetracycline (Terramycin, Pfizer India Ltd) @ 5 mg/kg body weight in bovines and @ 20 mg/kg body weight in canines intravenously for three days with other supportive treatment. Group II was treated with Inj. Dimenazineaceturate @ 3.5 mg/kg body weight in bovines and canines deep intramuscularly on day one and then repeated on 3rd day. In group III, the affected animals were treated with Inj. Oxytetracycline @ 5 mg/kg body weight in bovines and @ 20 mg/kg body weight in canines intravenously for three days along with Inj. Dimenazineaceturate @ 3.5 mg/kg body weight intramuscularly only once in both species. In this study, criteria for evaluating the efficacy of

treatment were return to normal temperature, clinical remission, loss of parasitemia and improvement of haematological parameters on day 3 post treatments.

RESULTS AND DISCUSSION

The data reveals that out of 260 animals, 60 (23.07%) animals were found positive for haemoprotozoan infections in which mixed infections was highest followed by babesiosis trypanosomiasis, anaplasmosis and the theilariosis (Table 1). The overall incidence of protozoal infection observed in bovines and canines was 42 (70%) and 18 (30%) out of 60 respectively.

Senthilkumar *et al.* (2009) reported 11.6% haemoprotozoan's incidence in Chennai city comprised of *Babesia gibsoni* (84.9%),followed by *Ehrlichiacanis* (6%)*, Hepatazoancanis* (4.8%)*, Babesiacanis* (3.9%) *and Trypanasomaevansi* (0.4%). Samradhni *et al*. (2005) also reported 63.12% positive of haemoprotozoan infections in Nagpur.

Table 1: Types of blood protozoan infections observed in bovines and canines

Sr. No.	Type of infection	Animal			Total	Percentage
		Buffaloes	Cattle	Dogs		
1	Anaplasma spp.	04	01	04	09	15.00
2	Babesia spp.	02	01	13	16	26.67
3	Trypanozoa spp.	05	08	-	13	21.66
4	Theilaria spp.	01	03	-	04	6.67
5	Mixed infections (Anaplasma spp. and Babesia spp.)	05	12	01	18	30.00
Total		17	25	18	60	**100**

All positive cases showed high rise of temperature (>103^{o}F), pale mucous membrane, depression, anorexia, weakness of the posterior legs, staggering gait, dehydration, ocular and nasal discharge. Similar findings like high fever, anorexia, debility, dehydration were reported by Tayo *et al*. (2011) in bovines and in canines (Senthilkumar *et al*., 2009) and Sarma *et al.* (2012). Miyama *et al.* (2005) reported that blood protozoon infections cause severe anemia and multiple organ failure in canines.

Positive cases for blood protozoa infection showed low to moderate anaemia and neutrophilic leukocytosis during haematological examination and presence of haemoprotozoan in Giemsa stained peripheral blood smears. Similar laboratory abnormalities in the canines and bovines were reported by Elias and Homans (2008) and Palanivel *et al.* (2010). The neutrophilia and anaemia are presumably secondary to necrosis and inflammation in the spleen, lymph nodes, liver and lungs (Gaunt, 2000). Blood smear study is very reliable confirmation for haemoprotozoan infection. Haematological findings of this study revealed presence of neutrophilic leukocytosis which is a characteristic feature of blood protozoal infection, which is in agreement with the results of Barton *et al*. (1985) and Gossett *et al.* (1985).

Animal wise results of group distribution revealed that 5 out of 5 cattle, 2 out of 2 buffaloes and 11 out of 13 canines were recovered with treatment in group III. Among three treatment groups, 18 (90%) out of 20 animals showed complete absence of clinical signs along with absence of infective agents in the blood smears on 3rd post-treatment day besides considerable increase in Hb (g%) levels in group III. Whereas, in the animals of Group-I& II (20% and 30% respectively)

were not recovered on third post-treatment day, while the Hb (g %) concentration remained stable in Group-II and it was found to be decreased in Group-I (Table 2,3).Sarma *et al.* (2012) also reported highest improvement in haematological values like increased haemoglobin (%) and leucocyte count after treatment with Inj. Oxytetracycline and Inj. Dimenazineaceturate in prescribed dose in canines. Palanivel *et al.* (2010) and Adeyanju and Aliu (1982) stated Oxytetracycline and Diminazeneaceturate combination as a choice of treatment to remove haemoprotozoan infections and for improvement in haematological indices with quick recovery in canines and bovines. Silva *et al*. (2008) also recommended use of Dimenazineaceturate as a potent anti-piroplasmic drug in affected cases.

Table 2 : Results showing details of treatment and recovery in animals/cases

Sr. No.	Treatment protocol	Cattle		Buffaloes		Dog		Total	
		Treated	Recovered	Treated	Recovered	Treated	Recovered	Treated	Recovered
1.	Group I	07	01	09	02	04	01	20	04
2.	Group II	13	04	06	02	01	00	20	06
3.	Group III	**05**	**05**	**02**	**02**	**13**	**11**	**20**	**18**

Table 3 : Group wise particulars about haematological findings

Sr. No	Particulars	**Group I**		**Group II**		**Group III**	
		Treated	Recovered	Treated	Recovered	Treated	Recovered
1.	Hb (g%)	6.64	5.59	8.22	8.56	9.36	10.32
2.	TLC (cmm)	10257	8564	9567	7558	12563	10058
3.	Neutrophil **%**	32	33	38	35	79	72
4.	Lymphocyte %	58	57	53	58	12	20
5.	Monocyte %	04	03	04	04	04	02
6.	Eosinophil %	06	07	05	03	**05**	**06**
7.	Basophil %	00	00	0	0	00	00

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