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RESEARCH ARTICLE

SEASONAL INCIDENCE OF HAEMOPROTOZOAL DISEASES IN CATTLE AND BUFFALO

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ABSTRACT

Seasonal incidence of haemoprotozoal diseases in cattle and buffalo was studied by examining 697 and 197 blood smears respectively, received from field to Regional Disease Diagnostic Centre during April 2013 to March 2014. The present study has recorded higher incidence of haemoprotozoal diseases in cattle and buffalo from May to October and April to October, respectively. In cattle, 302 (43.33%) out of 697 blood smears were positive for haemoprotozoal infection while in buffalo, 73 (37.05%) out of 197 blood smears were positive for haemoprotozoal infection. In both the species, higher incidence of Anaplasmosis was recorded as compared to other protozoan diseases.

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INTRODUCTION

Hemoprotozoan diseases are considered as the major impediments in the health and productive performance of livestock (Rajput *et al.*, 2005). These diseases are widely distributed throughout the world, particularly in tropical and subtropical countries (Ghosh *et al.*, 2007). The hot and humid climate is very conducive for the development and survival of potential vectors. (Chowdhury *et al.*, 2006). Theileriosis, babesiosis and anaplasmosis are the three major tick borne haemoprotozoan diseases in tropical and sub-tropical regions. (Parthiban *et al.*, 2010, Lurthu *et al.*, 2012 and Arunkumar and Nagarajan, 2013). These diseases cause major losses to the livestock industry, (Ananda *et al.*, 2009; Kakarsulemankhel, 2011). It has been estimated that losses due to these diseases was US \$ 13.9- 18.7 billion per annum leading world's 80% cattle population at risk (de Castro, 1997). Losses include morbidity, mortality, production losses together with the cost of diagnosis and treatment. In India, haemoprotozoan diseases have been reported from different geographical regions. The incidence of theileriosis was 27.2 to 45.4% in Dehradun (Kohli *et al.*, 2014). Vahora *et al.* (2012) in Gujarat reported the overall incidences of theileriosis (83.62%), babesiosis (7.04%)

respectively while Nair *et al.* (2011) in Kerala, reported the incidence of theileriosis and babesiosis was 16% and 0.6%, respectively. The present study has recorded the month wise infection of Theileriosis, Babesiosis, Anaplasmosis and Trypanosomiasis in cattle and buffaloes.

MATERIALS AND METHODS

During the period from April 2013 to March 2014, a total of 697 blood samples of cattle and 197 blood samples of buffaloes were received from field to Parasitology laboratory, RDDL, Jalandhar. Blood smears were prepared immediately after receiving the blood samples as described by Afridi *et al.* (2005). The stained slides were examined under oil immersion at 100x magnification. Thereafter, the blood parasites were identified as described by various OIE publications (OIE, 2004, 2008a, b).

RESULTS AND DISCUSSION

Among the haemoprotozoan diseases higher incidences were reported during May to October in cattle and April to October in buffalo respectively which is in accordance with the Roy *et al.* (2004) and Ananda *et al.* (2009) they found the highest prevalence of haemoprotozoal infection in these months.

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Incidence of haemoprotozoal diseases in cattle and buffalo during April 2013- March 2014 (Month wise)

Species	Month	Anaplasmosis	Theileriosis	Babesiosis	Trypanosomiasis	Total Positive Cases	Total Samples	% of positive cases
Cattle	April	8	3	0	0	11	58	18.96
	May	22	3	0	0	25	69	36.23
	June	19	5	1	0	25	26	96.15
	July	50	17	0	0	67	92	72.82
	Aug.	51	16	0	0	67	126	53.17
	Sep.	29	9	0	0	38	107	35.51
	Oct.	24	2	1	0	27	41	65.85
	Nov.	2	1	1	0	4	30	13.33
	Dec.	1	1	0	6	8	38	21.05
	Jan.	2	7	0	0	9	61	14.75
	Feb.	3	0	0	0	3	16	18.75
	Mar.	17	1	0	0	18	33	54.54
	Total	228	65	3	6	302	697	43.33
	%	75.49	21.52	0.99	1.98			
Buffalo	April	3	0	0	0	3	5	60
	May	0	2	2	0	4	5	80
	June	3	2	0	2	7	10	70
	July	7	0	1	1	9	22	40.91
	Aug.	17	1	0	2	20	40	50
	Sep.	3	6	0	2	11	11	100
	Oct.	5	1	0	0	6	11	54.54
	Nov.	1	0	0	0	1	31	3.23
	Dec.	3	0	0	0	3	24	12.5
	Jan.	3	0	0	0	3	11	27.27
	Feb.	2	0	0	0	2	17	11.76
	Mar.	3	1	0	0	4	10	40
	Total	50	13	3	7	73	197	37.05
	%	68.49	17.80	4.10	9.58			

Blood smears examination revealed that of 302 (43.33%) and 73 (37.05%) cattle and buffalo were positive for haemoprotozoan diseases. Incidences were higher in cattle than the buffalo. This result of cattle (43.33%) was in line with the result observed by Ananda *et al.* (2009) the prevalence in cattle was 43.1%. Among Haemoprotozoan diseases, the incidence of Anaplasmosis was higher during monsoon in cattle and buffalo reported 75.49% and 68.49% respectively as compared to other haemo protozoan diseases. This result supports the earlier study of Anaplasmosis infection Khan *et al.* (2004) that recorded cases of Anaplasmosis are generally observed during summer or rainy season when the ticks have higher activity. Results on prevalence of Anaplasmosis in cattle (75.49%) was in accordance with Rajput *et al.* (2005) and Al-Khalifa *et al.* (2009) who recorded 4 to 75.5% prevalence of Anaplasmosis in crossbred cattle. The overall incidence of Theileriosis, Babesiosis and Trypanosomiasis in cattle were 21.52%, 0.99% and 1.98% respectively while in buffalo the overall incidences 17.80%, 4.10% and 9.58% respectively. Our results on Theileriosis and Babesiosis infection was in accordance with Zahid *et al.* (2005) and Afridi *et al.* (2005) has reported prevalence of (24% and 1.75%). Buffaloes showed higher prevalence of trypanosomiasis than cattle (Juyal, 2011).

Conclusion

The present study suggests that cattle and buffalo of Punjab are highly endemic for anaplasmosis and occurrence of the disease was high during summer.

Recommendation

The present study would help to forecast disease outbreak not only in this region but also applicable to other parts of country.

There is a need for further investigations using molecular techniques for the accurate identification of the carrier status of haemoprotozoan parasites.

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