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Research Article

COMPARATIVE STUDY ON PREVALENCE OF HAEMOPROTOZOAN DISEASES IN CATTLE

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Abstract: Objective- To study the comparative prevalence of haemoprotozoan disease (*Theileriosis, Babesiosis and Trypanosomiasis*) in cattle in Udaipur district of Rajasthan. Materials and Methods- A total of 195 cattle was screened in this study during April 2022 to November 2022 out of which 50 animals were diagnosed with haemoprotozoan infection. The most common haemoprotozoan infections diagnosed in the study area were theileriosis, babesiosis and trypanosomiasis. All these diseases were diagnosed on the bases of history of affected cattle, clinical signs and blood smear examination. Prevalence was recorded on the basis of age, sex, breed and season. Results- Cattle are most affected bovine animal by haemoprotozoan infection and the highest prevalence of theileriosis and babesiosis was found in the group above the age of 3 years *i.e.*, .20 % and 7.77%, respectively and in case of trypanosomiasis it was group between 6 months to 2 years. Sex wise prevalence was higher in females affected by theileriosis and babesiosis than in male. In research area descript cattle (56.41%) have more haemo-protozoan infection than non-descript (43.58%) cattle. Higher prevalence was observed during the rainy season in theileriosis (16.84%) and trypanosomiasis (5.26%) and in case of Babesiosis it was summer season (12.72%).

Keywords: *Prevalence, Cattle, Theileriosis, Babesiosis and Trypanosomiasis*

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Introduction

Blood protozoan disease like theileriosis, babesiosis and trypanosomiasis are a serious problem in dairy cattle in Rajasthan and control of such diseases are not easy. Haemoprotozoan diseases occur throughout the year but certain seasons are favourable for these infections. Due to haemoprotozoan infection, animals are neither able to use proper nutrients from the diet for health nor produce good quality milk. Blood sucking parasites (ticks, mites and lice) suck the blood from the body of cattle and leave the infection in blood. Finally, animal suffers from an anaemic condition. If this disease is not treated properly at the right time, then the disease can be fatal. The cattle that recover from acute infection of haemoprotozoan infection become carriers and creating a potential source of infection for healthy animal population and this is a serious challenge for animal husbandry [1,2].

Materials and Methods

Ethical approval

All Cases were reported at Veterinary Clinical complex, and surrounding area of College of Veterinary and Animal Science, Navania, Udaipur, Rajasthan, India and follow standard examination and diagnostic procedure.

Selection of animals

The study was conducted on one hundred ninety-five cattle, out of which fifty cattle were daignosed positive for haemo-protozoan disease and referred for treatment at Veterinary Clinical Complex, College of Veterinary and Animal Science, Navania, Udaipur, Rajasthan, India.

Study Design

The period of this study was April 2022 to November 2022. Both male and female cattle were examined. All the ticks, mite and lice affected cattle were subject to examination. All age group of animals included. A total of 195 clinical cases of cattle affected by parasitic infestations were screened and out of these screened cases, 50 cattle were found positive for haemoprotozoan infection. Complete history, clinical symptoms and blood collection were taken for proper diagnosis and Confirmative diagnosis of haemoprotozoan infection was made by blood smear examined under microscope 100x. the examined cattle were divided into three types of diseases *i.e.*, theileriosis, babesiosis and trypanosomiasis and prevalence were recorded on the base of age, sex, breed and season.

Statistical analysis

The obtained data in the research work undertaken was statistically analysis as per the procedures explain by Snedecor and Cochran (2004) [3].

Result and Discussion

Most of the cattle in this study were kept at home and reared in semi-intensive system. Prevalence was recorded on different age groups, sex, breed, and season.

Age wise prevalence

Screened cattle were divided into three age group *viz*., 6 months to 2 years, 2 to 3 years and above 3 years, the results are presented in [Table-1].

The highest prevalence of theileriosis and babesiosis was found above the age of 3 years *i.e*., 20 % and 7.77%, respectively and in the case of trypanosomiasis, the prevalence was higher (11.11%) in those aged 6 months to less than 2 years. Similar findings have been reported by Ananda and Adeppa (2016) [4] in the case of theileriosis and babesiosis and similar findings by Muraleedharan (2015) [5] in the case of Trypanosomiasis. Variation in age-wise prevalence may be due to less number of case studied, small number of sample collection, environmental and geographical conditions.

Table-1 Age wise prevalence of theileriosis, babesiosis and trypanosomiasis infected cattle

SN	Age group of affected cattle	Screened cattle (195)	Name of Diseases	Affected case (50)	Prevalence (%)
1	6 months to 2 years	45	Theileriosis	4	8.88
			Babesiosis	2	4.44
			Trypanosomiasis	5	11.11
2	2year to 3 years	60	Theileriosis	8	13.33
			Babesiosis	3	5.00
			Trypanosomiasis	2	3.33
3	Above 3 years	90	Theileriosis	18	20.00
			Babesiosis	7	7.77
			Trypanosomiasis	1	1.11

Table-2 Sex wise prevalence of Babesiosis, theileriosis and Trypanosomiasis infected cattle

SN	Sex of cattle	Screened cattle (195)	Name of Diseases	Affected case (50)	Prevalence (%)
1	Male	80	Theileriosis	6	7.50
			Babesiosis	3	3.75
			Trypanosomiasis	6	7.50
2	Female	115	Theileriosis	24	20.86
			Babesiosis	9	7.82
			Trypanosomiasis	2	1.73

Table-3 Breed wise prevalence of Babesiosis, Theileriosis and Trypanosomiasis infected cattle in Udaipur

SN	Type of cattle	Screened cattle (195)	Name of Diseases	Affected case (50)	Prevalence (%)
1	Descript	110	Theileriosis	18	16.36
			Babesiosis	7	6.36
			Trypanosomiasis	5	4.54
2	Non-Descript	85	Theileriosis	12	14.11
			Babesiosis	5	5.88
			Trypanosomiasis	3	3.52

Table-4 Season wise prevalence of Babesiosis, Theileriosis and Trypanosomiasis infected cattle in Udaipur

SN	Season	Screened cattle (195)	Name of Diseases	Affected case (50)	Prevalence (%)
1	Summer	55	Theileriosis	8	14.54
			Babesiosis	7	12.72
			Trypanosomiasis	2	3.63
2	Rainy	95	Theileriosis	16	16.84
			Babesiosis	3	3.15
			Trypanosomiasis	5	5.26
3	Winter	45	Theileriosis	6	13.33
			Babesiosis	2	4.44
			Trypanosomiasis	1	2.22

Sex-wise prevalence

Out of 195 screened cases, the number of affected male cattle was 80 and female cattle were 115, the results are presented in [Table-2]. In case of theileriosis and babesiosis higher prevalence was observed in female than in male, similar observations were reported by Haque, *et al.,* (2022) [6] and by Kumar, *et al.,* (2018) [7] respectively but in case of trypanosomiasis a higher prevalence was recorded in males than in females and similar findings were observed by Biyazen, *et al*., (2014) [8] The higher prevalence in female cattle could possibly be due to the fact that they were kept for longer periods for the purpose of breeding and milk production, with insufficient feed against their high demand [9]

Breed wise prevalence

The number of descript cattle was 110 and non-descript cattle were 85 out of 195, the results are presented in [Table-3]. Higher prevalence was observed in case of theileriosis (16.36), babesiosis (6.36%) and trypanosomiasis (4.54%) in descript cattle. Similar findings were observed by Khan *et al*., (2011) [9] *i.e*., 19.40% in descript cattle with cases of theileriosis. The Lower prevalence reported by Haque, *et al*., (2022) [6] *i.e*., 6.15 % and 7.05 % (non-descript and descript) in theileriosis. Exotic breeds are more susceptible to tick borne disease, possibly due to higher infestation of ticks Glass, *et al*., (2003) [10], Rather, *et al.,* (2015) [11] and genetic variation makes the zebu cattle more than crossbred cattle [12].

Season wise prevalence

A total of 55 cases of haemoprotozoan diseases were observed in summer season, 95 case in rainy season and 45 case in winter season. Results are presented in [Table-4]. The prevalence of theileriosis in cattle in summer season was 14.54 %, Babesiosis 12.72 % and trypanosomiasis 3.63 %. The prevalence of theileriosis was 16.84 %, babesiosis 3.15 % and 5.26% of trypanosomiasis in rainy season. The prevalence in winter was 13.33%, theileriosis, babesiosis 4.44% and trypanosomiasis 2.22%. Similar findings were reported by Krishnappa, *et al.,* (2002a) [12], Mahmud, *et al*., (2015).

Higher prevalence was observed in theileriosis (16.84%) and trypanosomiasis (5.26%) during rainy season but higher prevalence of babesiosis was in summer season (12.72%) similar findings observed by Parmar and Chandra (2019) [13]. This may be due to higher abundance of vector populations during the monsoon season as compared to other seasons of the year [14-17].

Conclusion

It is concluded that theileriosis and babesiosis were more prevalent in cattle older than 3 years and trypanosomiasis was most prevalent below 2 years of age. Female cattle were more affected by theileriosis and babesiosis while males were more affected with trypanosomiasis. The indigenous breed was comparative resistant than exotic breeds to haemoprotozoan diseases. The Maximum prevalence of Theileriosis and Trypanosomiasis was recorded in rainy season and that of babesiosis in summer season.

Application of research: Study of haemoprotozoan diseases in cattle

Research Category: Veterinary Science

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Study area / Sample Collection: Udaipur district, Rajasthan

Cultivar / Variety / Breed name: Indigenous & Exotic breed

Conflict of Interest: None declared

Ethical approval: All Cases were reported at Veterinary Clinical complex, and surrounding area of College of Veterinary and Animal Science, Navania, Udaipur, Rajasthan, India and follow standard examination and diagnostic procedure.
Ethical Committee Approval Number: Nil

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