Research Article

Prevalence of Eye Diseases of Cattle in Bihar, India

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ABSTRACT

The Bihar state of India is having 12.56 million of cattle population and about 15.73% crossbred animals. But, poor management and harsh weather condition make animals vulnerable to various eye diseases. The present investigation was carried out in different districts of Bihar to find the incidences of eye ailments of cattle irrespective of age, breed, sex, season and types of diseases that causes a great economic loss to the farmers. Out of 2832 surveyed animals 15.22% animals were found to be sufferer of various eye diseases. Among the eye ailments 8.93% were corneal opacity, 2.01% Infectious Bovine Keratoconjunctivitis, 1.91% corneal ulcers, 0.81% cataracts, 0.67% glaucoma, 0.46% staphyloma, 0.25% micro cornea and 0.18% were corneal dermoid. Statistical analyses revealed that there were significant (P<0.01) differences among breeds, sexes, age groups and seasons with respect to the occurrence of eye diseases. The crossbred animals (17.74%) were found to be more susceptible than the zebu cattle (13.45%). The male animals (20.96%) and younger age groups (19.00%) found to be more sufferers than the female (12.08%) and adult animals (13.33%). Seasonal variation with the highest incidences in pre–monsoon (4.66%), followed by monsoon (3.57%), post–monsoon (3.53%) and lowest in winter (3.46%) months were noticed. Unilateral eye infections (13.67%) were more than the bilateral (1.55%). The eye diseases could be prevented through better management practices like housing, feeding and timely health care of animals.

INTRODUCTION

The cattle population in Bihar state is 12.56 million, which is 6.31% of the total cattle population of India. Crossbred cattle counts 15.73% and annual growth rate of the total cattle population is 4.02%.The Bihar state is located between $25^0 11'$N Latitude and $85^0 32'$ E Longitude and above 51 msl. The average annual rainfall in Bihar is 1053 mm and average number of rainy days is 52.5 (Dey et al., 2007). Eye diseases of animals may occur due to unscientific management practices, particularly poor health management and also unhygienic condition prevailing in animal houses or due to environmental and nutritional factors. Eye diseases remain one of the most important problems which reduce the livestock productivity. Particularly in cattle the incidence of eye disease causes a great economic loss to the farmers and reduces the productive economic life of the animal. Chakrabarti (1996) reported eye disease in one of the major problems among the diseases of cattle in North– Eastern part of India. The farmers face difficulty in agricultural work, if any one or both eyes develop impaired vision or infected. A large number of animals suffer from various eye diseases every year and cause a significant loss to the poor farmers. The eye diseases of cattle in India were reported by Sharma et al. (1990) in Assam and Chakrabarti (1996) in Tripura state. But, so far there is no such information available from Bihar state. Moreover, the management and hygiene practices adopted by the rural farmers are not adequate enough to prevent such diseases. Therefore, the present study was undertaken to find out the incidences of various eye diseases of cattle in Bihar state which is located in the eastern region of India.

MATERIALS AND METHODS

The present investigation was carried out on clinically detectable eye diseases of cattle by thorough investigation of animals in different health camps conducted by the ICAR Research Complex for Eastern Region, Patna in different districts namely Ara, Patna, Samastipur, Katihar and Sheohar etc, institute livestock farm, animal fair, different villages and local markets in Bihar. The respective animals were examined for various eye diseases, according to the type of lesion, affected eyes, breed, sex, age and season. In total 2832 cattle were randomly examined during the 34 month study period from June 2011 to April, 2014. Ocular diseases were detected by examining each of these animals clinically. Fluorescein dye (1 percent) was used for detection of corneal ulcer (Angelo, 1971). Animals which did not co-operated for clinical examination were examined under the auriculopalpebral nerve block (Soma, 1971). Data were subjected into Chi–square analysis to test the homogeneity of the data collected from different breeds, sexes, age groups and seasons as per Snedecor and Cochran (1989).

RESULTS AND DISCUSSION

Out of 2832 to surveyed animals, 431 (15.22%) were suffered from various eye diseases. Among the eye ailments 253 (8.93%) were corneal opacity, 57 (2.01%) IBK (Infectious Bovine Keratoconjunctivitis), 54 (1.91%) corneal ulcers, 23 (0.81%) cataracts, 19 (0.67%) glaucoma, 13 (0.46%) staphyloma, 7 (0.25%) micro cornea and 5 (0.18%) were corneal dermoid (Table 1). Sharma et al. (1990) and Chakrabarti (1996) also reported the same trend of eye diseases in cattle. But, the present findings are little higher than the findings of Chakrabarti (1996) who reported

12.45% incidences in Tripura state. This may be due to negligence of farmers regarding proper scientific management and eye care with veterinary aids in time. The incidences of corneal opacity were found more in the present investigation. Chakrabarti (1996) also observed highest incidences of corneal opacity than the other eye ailments and opined that generally after healing of a corneal ulcer, the healed area remains opaque for a considerable period of time. On the other hand, un–attended cases of IBK lead to development of corneal opacity or further complications.

Sr. No.	Types of disorders	Animals affected		Percentage of affected out of total animals
		Number	Percentage	
1	Corneal opacity	253	58.70	8.93
2	Infectious Bovine Keratoconjunctivitis (IBK)	57	13.22	2.01
3	Corneal ulcer	54	12.53	1.91
4	Cataract	23	5.34	0.81
5	Glaucoma	19	4.41	0.67
6	Staphyloma	13	3.02	0.46
7	Microcornea	7	1.62	0.25
8	Corneal dermoid	5	1.16	0.18
	Total	431	100.00	15.22

Table 1: Incidence of different type of eye diseases of cattle

Table 2: Eye diseases of cattle in relation to breed, sex and age group

Variables	Animals	Number of animals observed	Number of animals affected	% of animals affected	χ^2 value
Breed	Crossbred (Holstein Friesian and Jersey)	1167	221	18.94	21.27**
	Non–descript (Zebu)	1665	210	12.61	
Sex	Male	1102	196	20.96	9.21**
	Female	1730	235	12.08	
Age group	Young (below 3 years)	942	179	19.00	15.66**
	Adult (above 3 years)	1890	252	13.33	

** $P<0.01$

Sr. No.	Season	Number of animals observed	Animal affected		% of affected out of total animals	χ^2 value
			Number	Percentage		
1	Pre–monsoon (March, April, May)	690	132	30.63	4.66	17.26**
2	Monsoon (June, July, August)	701	101	23.43	3.57	
3	Post–monsoon September, October, November)	605	100	23.20	3.53	17.26**
4	Winter (December, January, February)	836	98	22.74	3.46	17.26**
	Total	2832	431	100.00	15.22	

** $P<0.01$

Table 4: Eye diseases of cattle in relation to eyes affected

Sr. No.	Eyes affected	Animal affected		Percentage of affected out of total animals
		Number	Percentage	
1	Right eye	203	47.10	7.17
2	Left eye	184	42.69	6.50
3	Both eyes	44	10.21	1.55
	Total	431	100.00	15.22

The study also revealed that there were significant (P<0.01) differences between different breeds, sexes and various age groups on succumbing to eye diseases. The incidences of these disorders were recorded significantly (P<0.01) more in crossbred animals (18.94%) comprising Holstein Friesian

and Jersey than the non–descript (Zebu) cattle (12.61%) (Table 2). The male animals (20.96%) seem to be more susceptible than the female counterpart (12.08%). The young animals (19.00%) i.e. below 3 years of age group found to be more infected than adult animals (13.33%). The

crossbred animals were more affected may be due to lesser immunity than the zebu cattle. The less incidence of adult animal infection may be due to acquired immunity developed by the adults than the younger groups. Wilcox (1968), Khot and Ajinka (1980), Sharma et al. (1990) also observed same trend. Chakrabarti (1996) opined that the poor management systems and more susceptible to diseases was one of the reasons for more infections in young one. Male animals found to be suffering more in this study may be due to more involvement of male animals in field work than the females and become vulnerable to more chances of trauma, accident, eye injury etc. than the counterpart. Moreover, most of the female animals remain confined to shed only and more veterinary care might be provided to females due to more economic value. Chakrabarti (1996) also observed more than double incidences in male animals (19.41%) than the females (9.19%) and opined that more occurrences in males may be due to the different management techniques adopted by the farmers. Thrift and Overfield (1974) and Sharma et al. (1990) also reported same trend.

Highly significant (P<0.01) seasonal variation in eye infection was also observed in cattle. The maximum incidences were observed in pre–monsoon months (4.66%), followed by monsoon (3.57%), post–monsoon (3.53%) and lowest incidences were recorded in the winter months (3.46%) (Table 3). Seasonal variation of eye diseases was reported by Chakrabarti (1996) and found higher incidences in summer season that the winter months. Present findings also corroborate the previous findings. Maximum occurrences in pre–monsoon in the present investigation may be due to the harsh weather condition in pre–monsoon period like exposure to direct sunlight with higher intensity, sand and dust storm prevailing in the region and animals come across the situation due to poor feeding, housing and health care management during the period. Wilcox (1968), Bryan et al. (1973), Sharma et al. (1990) and Chakrabarti (1996) also found more or less the same reasons.

The results in relations to eyes effected shown that the incidences of eye affections were more in right eye (7.17%), followed by left eye (6.50%) and lower in both eyes (1.55%) (Table 4). More unilateral than bilateral eye diseases in this study also corroborate the previous findings of Slatter et al. (1982), Sharma et al. (1990) and Chakrabarti (1996). This may be due to chance factor which generally occur accidentally or may be due to more care or management provided after the first incident by the farmers.

CONCLUSION

The eye diseases cause a substantial economic loss to the farmers. The lifetime performance of cattle irrespective of sex, breed and age group drastically affected. The loss could be minimized if proper management in terms of housing, feeding and health care was provided in time. The awareness of farmers for eye care is urgently necessary in the eastern region of India particularly in Bihar state.

REFERENCES

Angelo SJ (1971). Therapy and management of some ocular diseases in bovine. Indian Vet. J. 48: 311–315.

Bryan HS, Helper LG, Killinger AH, Rhoads HE, Mansfield ME (1973). Some bacteriologic and ophthalmic observation on IBK in an Illinois beef herd. J Am. Vet. Med. Assn. 163:739–741.

Chakrabarti A (1996). A survey of eye diseases of cattle in Tripura state (India). Sri Lanka Vet. J. 41(2):

Dey A, Barari SK, Yadav BPS (2007). Goat production scenario in Bihar, India. Livestock Res. for Rural Develop. Volume 19, *Article #123.* Retrieved April 22, 2014, from http://www.lrrd.org/lrrd19/9/dey19123.htm

Khot JB, Ajinkya SM (1980). A study on IBK in young calves on the organized farms in and around Bombay.Indian Vet. J. 57:879–881.

Sharma B, Pathak SC, Saikia J (1990). Incidence of eye diseases of bovine in assam. Indian Vet. Med. J. 14:98–101.

Slatter DH, Edward ME, Hawkins CD, Wilcox GE (1982). A national survey on occurrence of IBK. Aust. Vet. J. 59:65–72.

Snedecor GW, Cochran WG (1989). Statistical Methods.8thEdn.Iowa State University.Press.

Soma LR (1971). Text book of veterinary anaesthesia.!st Ed. Williams and Williams Co. Baltimore.Pp.493–495., 1971).

Thrift FA, Overfield JR (1974). Impact of pink eye on weaning and post weaning performance of Hereford calves. J. Anim. Sci. 38:1179–1184.

Wilcox GE (1968).Infectious bovine keratoconjunctivitis. Vet Bull. 38:349–360.