Prevalence of bovine fasciolosis based on faecal examination and abattoir survey in Karnataka

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Abstract The prevalence of fasciolosis was evaluated in bovines based on coprological examination and post-mortem liver examination of slaughtered cattle and buffaloes. The faecal examination of 130 cattle and 135 buffaloes revealed a prevalence of 9.9 % in cattle and 13.3 % in buffaloes respectively. The examination of livers from cattle and buffaloes (155 each) slaughtered at the KMPMCL abattoir revealed the prevalence of fasciolosis was 20.6 % in cattle and 22.5 % in buffaloes. The results were statistically significant in faecal examination and not significant in liver examination from cattle and buffaloes respectively.

Keywords Fasciolosis · Abattoir · Coprological · Cattle · Buffalo

Introduction

Fasciolosis in ruminants caused by *Fasciola gigantica* is known to be widely prevalent in the Indian subcontinent and is an economically important disease. In the tropical plain dry lands of Karnataka the infection is seasonal and is

primarily governed by climatic factors and is endemic in high rainfall and waterlogged areas (Muraleedharan 2005). Financial loss caused by fasciolosis is commonly estimated from the liver condemnation rates. Boray (1985) had reported that the economic losses due to fasciolosis in domestic animals amounted to 200 million US dollars per annum for rural agricultural communities and the commercial sector all over the globe. Under Indian conditions, this loss may be higher with the prevalence ranging from 30–80 % (Bhatia et al. 1989; Rai et al. 1996). The infection also results in poor carcass quality, liver condemnation, reduced milk yield and reproductive failures.

There has been no systematic study on the prevalence of fasciolosis in bovines in Karnataka State based on faecal and abattoir survey. Therefore a study was undertaken to note the prevalence of fasciolosis in cattle and buffaloes and compare the detectability with faecal examination and after slaughter.

Materials and methods

The cattle and buffaloes slaughtered in Karnataka Meat and Poultry Marketing Corporation limited (KMPMCL) belonged to Bangalore, Kolar, Tumkur, Mysore, Mandya, Gulbarga, Bagalkot and Raichur districts of Karnataka state. The slaughtered animals were all male, since the law prohibits the slaughter of female animals.

Faecal examination

The randomly suspected fresh faecal samples were collected per rectally from individual animals in dry, clean polythene bags and were brought to the laboratory after

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affixing a proper identification label. A total of 265 (130 cattle and 135 buffalo) faecal samples were collected and were processed in the laboratory by direct smear and sedimentation techniques by standard techniques (Soulsby 1982) for the detection of *Fasciola* eggs.

Liver examination

The livers of cattle and buffaloes (same suspected animals from which faecal samples were collected) slaughtered at KMPMCL Bangalore were examined and given 2–3 longitudinal incisions through the major bile ducts to determine the presence or absence of flukes in the bile duct of liver. A total of 310 (155 each from cattle and buffalo) bovine livers were examined and the data was recorded.

Results

Out of 130 cattle and 135 buffalo faecal samples examined 06 (4.6 %) and 08 (5.9 %) were positive by direct smear, 07 (5.3 %) and 10 (7.4 %) were found positive by sedimentation techniques from cattle and buffaloes respectively (Table 1).

An overall prevalence of *Fasciola* sp. Eggs were found in 9.9 % of cattle and 13.3 % of buffaloes out of 130 and 135 faecal samples examined in cattle and buffaloes, respectively. The results were found statistically significant between species and between techniques by Chi square test (Daniel 1987).

Similarly a total of 155 cattle and 155 buffalo's livers from slaughtered animals were examined, out of which 20.6 % cattle and 22.5 % buffaloes were naturally infected with adult *Fasciola* flukes in their liver (Table 1). The statistical analysis by Chi square test indicated that there was no significant difference between cattle and buffaloes which were found positive for fasciolosis by liver examination during slaughter.

Discussion

Yadav and Ahluwalia (1971) reported the prevalence of fasciolosis in buffaloes slightly lower than the present study about 15.0 % based on liver examination in buffaloes at Agra slaughterhouse during an abattoir study of food animals in different abattoirs of western Uttar Pradesh. Similarly Kumar et al. (1982) reported a lower prevalence of 13.9 % of fasciolosis based on liver examination during the clinico-pathological studies on naturally occurring bovine fasciolosis in Pant nagar.

Dhar et al. (1988) reported higher prevalence of 18.7–55.6 % in animals by faecal examination with cattle showing highest prevalence from different areas of Kashmir valley and by necropsy examination they reported 100 % prevalence in cattle. Sharma et al. (1989) reported a similar study with higher prevalence 85.1 % of fasciolosis in cattle based on necropsy examination from the same area of Kashmir valley. The reason for overall higher prevalence of fasciolosis in animals in Kashmir was apparently due to the agro climatic conditions prevailing in the valley for most of the year is of a temperate nature. However a very small number of cattle livers (05) were examined accounting for 100 % prevalence in cattle.

Magona et al. (1999) reported relatively higher prevalence of 26.8 % by faecal examination and 36.0 % based on liver examination in cattle maintained under traditional management at Uganda. Accessibility of infection and non-implementation of control measures against *Fasciola* infection was the reason attributed for high prevalence of fasciolosis in cattle at Uganda.

Compared to present study slightly lower prevalence of 6.8 % fasciolosis based on faecal examination was reported by Upadhyay and Pachauri (2001) in Tarai region of Kumaon. Based on liver examination almost similar prevalence of 21.6 % in cattle but slightly higher prevalence of 27.2 % in buffaloes was recorded. Similarly Velusamy et al. (2004) reported almost similar prevalence of 20.8 % bubaline fasciolosis by liver examination at Bareilly. In

Table 1 Prevalence of fasciolosis in bovines based on coprological and liver examination from KMPMCL abattoir, Bangalore district, Karnataka

Species	Cattle			Buffalo		
	Faecal examination**		Liver examination*	Faecal examination**		Liver examination*
	Direct smear	Sedimentation method		Direct smear	Sedimentation method	
No. of samples tested	130	130	155	135	135	155
No. Positive	06	07	32	08	10	35
Percent positive	4.6	5.3	20.6	5.9	7.4	22.5
Total prevalence (%)	9.9		20.6	13.3		22.5

Chi square value = 0.89 * $P \leq 0.05$ No significance between cattle and buffalo

Chi square value = 45.14 ** $P \leq 0.05$ Significant between species and between methods

contrast to above findings Bharadwaj (2004) reported lower prevalence of 3.0 % in cattle and 1.0 % in buffaloes by faecal examination from villages of Delhi.

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References

- Bharadwaj V, Yadav CL, Rajeev RK, Banerjee PS, Rajat G, Sanjay K (2004) Prevalence of trematodal infections in large ruminants in and around Delhi. Abstracts of 15th National congress of IAAVP, Pantnagar, October 25–27, pp 57
- Bhatia BB, Upadaya DS, Juyal PD (1989) Epidemiology of *Fasciola gigantica* in buffaloes, goats and sheep in Tarai region of Uttar Pradesh. J Vet Parasitol 3:25–29
- Boray JC (1985) Flukes of domestic animals. In: Gafaar SM, Howard WE, Marsh RE (eds) Parasites, pests and predators. Elsevier, New York, pp 179–218
- Daniel WW (1987) Biostatistics: a foundation for analysis in the health sciences, 4th edn. John Wiley, New York
- Dhar DN, Sharma RL, Raina OK (1988) Fascioliasis in animals in Kashmir Valley. J Vet Parasitol 2(1):31–35
- Kumar M, Pathak KML, Pachauri P (1982) Clinico-pathological studies on naturally occurring bovine fasciolosis in India. Br Vet J 138:241–243
- Magona JW, Olaho-Mukani W, Musisi G, Walubengo J (1999) Bovine *Fasciola* infection survey in Uganda. Bull Anim Health Prod Afr 47(1):9–14
- Muraleedharan K (2005) Prevalence of gastrointestinal parasites of livestock in a central dry zone of Karnataka. J Vet Parasitol 19(1):31–33
- Rai RB, Senai S, Ahlawat SPS, Vijay kumar B (1996) Studies on the control of fasciolosis in Andaman and Nicobar islands. Indian Vet J 73:822–825
- Sharma RL, Dhar DN, Raina OK (1989) Studies on the prevalence and laboratory transmission of fasciolosis in animals in the Kashmir valley. Br Vet J 145(1): 57–61
- Soulsby EJJ (1982) Helminths, arthropods & protozoa of domesticated animals, 7thEdn. ELBS, Bailliere, Tindall, London
- Upadaya AK, Pachauri SP (2001) Prevalence of bovine and bubaline fasciolosis in Tarai region of Kumaon. Indian J Vet Med 21(2):82–86
- Velusamy R, Singh BP, Gupta SC, Chandra D (2004) Prevalence of *Fasciola gigantica* infection in buffaloes and its snail intermediate host at Bareilly. J Vet Parasitol 18(2):171–173
- Yadav RP, Ahluwalia SS (1971) Some morbidity among food animals slaughtered in western Uttar Pradesh. Indian Vet J 48:645–647