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Prevalence of fasciolosis in ruminants in National Capital Region, Delhi

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Fasciolosis, caused by *Fasciola gigantica*, is an important trematodal infection of ruminant in the tropics and sub-tropics causing losses accounting to more than 3.0 billion per annum (FAO report 1994). Several reports on the epidemiology of fasciolosis in ruminants are available from various parts of India (Gupta and Singh 2002, Dhand *et al.* 2004, Ghosh and Dutta 2005, Yadav *et al.* 2007). However, perusal of literature suggests that no information is available on the prevalence of this infection in ruminants in and around Delhi. Keeping this in mind, the present study was undertaken to generate adequate epidemiological data on fasciolosis in and around Delhi during the period from January 2002 to December 2004.

Faecal samples (3795) comprising 1091 from cattle, 1170 from buffaloes, 609 from sheep and 925 from goats were collected from various places of National Capital Region, Delhi during January 2002 to December 2004. These faecal samples were brought to the laboratory in poly bags and examined for presence of eggs of *Fasciola* sp. by sedimentation techniques (Soulsby 1982). The entire 3 years data thus obtained was separated on seasonal basis, viz. summer (March to June), rains (July to October) recorded and winter (November to February). The data were also recorded on monthly basis. Besides, this buffaloes, sheep and goats slaughtered at slaughter house, Naya Bazar, Paharganj, Delhi were also included in the study. A total of 1221 liver and bile samples (513 from buffaloes, 370 from sheep and 338 from goats) were also collected from slaughtered animals during January 2002 to December 2004. These samples were examined for presence of flukes in the liver samples and for presence of eggs of *Fasciola* sp. in the bile sediment. The data thus obtained were recorded and analysed annually.

Based on faecal examination, the prevalence of *F. gigantica* in ruminants of Delhi was 2.77% (3.12% cattle, 4.27% buffaloes, 0.82% sheep and 1.73% goats) with highest prevalence (3.67%) during the year 2004 (Table 1). Annual prevalence of *F. gigantica* infection in animals slaughtered at slaughterhouse, Delhi is presented in Table 3. The results of slaughterhouse studies correlated with those of coprological examination as indicated by the fact that the buffaloes were the most infected host species (12.09%) and highest prevalence (12.76%) of *F. gigantica* in slaughtered animals was during year 2004. High prevalence of *F. gigantica* infection in buffaloes than in other animals may be due to dwelling behaviour of buffaloes in water-bodies which are infested with the snail intermediate host, and thus they pick more infection as compared to cattle, sheep and goats (Gupta and Singh 2002, Yadav *et al.* 2007). In present

Table 1. Year-wise prevalence of fasciolosis in and around Delhi

Species	Year											
	2002			2003			2004			Total		
	NE	NP	(%)	NE	NP	(%)	NE	NP	(%)	NE	NP	(%)
Cattle	397	4	(1.01)	454	23	(5.07)	240	7	(2.92)	1091	34	(3.12)
Buffalo	346	6	(1.73)	566	14	(2.47)	258	30	(11.63)	1170	50	(4.27)
Sheep	50	0	(0.00)	284	1	(0.35)	275	4	(1.45)	609	5	(0.82)
Goats	139	5	(3.60)	333	7	(2.10)	453	4	(0.88)	925	16	(1.73)
Total	932	15	(1.61)	1637	45	(2.75)	1226	45	(3.67)	3795	105	(2.77)

* NE, No. examined; NP, No. positive.

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Table 2. Seasonal prevalence of fasciolosis in and around Delhi

Host	Seasons								
	Summer (March- June)			Rains (July- Oct)			Winter (Nov-Feb)		
	NE	NP	(%)	NE	NP	(%)	NE	NP	(%)
Cattle	250	12	(4.80)	381	03	(0.79)	460	19	(4.13)
Buffalo	383	31	(8.09)	317	04	(1.26)	470	15	(3.19)
Sheep	127	0	(0.00)	258	03	(1.16)	224	02	(0.89)
Goats	307	0	(0.00)	230	02	(0.87)	388	14	(3.61)
Total	1067	43	(4.03)	1186	12	(1.01)	1542	50	(3.24)

* NE, No. examined; NP, No. positive.

study, it was noticed that prevalence of infection was more in goats (1.73%) than that in sheep (0.82%) (Table 1). This might be due to fact most of the sheep flocks screened during study period had migrated from Rajasthan in search of green fodder where from a very low prevalence of infection (0.57%) in sheep has been reported (NATP Report 2004).

Seasonal prevalence of fasciolosis in ruminants of Delhi is presented in Table 2. Highest prevalence of *Fasciola gigantica* infection in large ruminants i.e., cattle and buffaloes, was recorded during summers (4.80% in cattle and 8.09% in buffaloes), while in sheep it was during rains (1.16%) and in goats during winters (3.61%). However, monthly prevalence of infection (Fig.1) indicated that peak prevalence of infection in cattle (15.79%) and goats (6.32%) was in February, in buffaloes (12.60%) during April and in sheep during January (4.0%). It was also noticed that during September and October, none of animals screened were found positive for fasciolosis. Higher prevalence of infection in ruminants during late winters (January-February) and early summers (March-April) may be due to build up of a patent infection picked up by the ruminants in this region during late rainy (October) and early winter (November) months, since after picking up of infection, the flukes mature in about 14–15 weeks (Verma 1981).

Table 3. Slaughterhouse prevalence of fasciolosis in and around Delhi

Host	Years									Total		
	2002			2003			2004					
	NE	NP	(%)	NE	NP	(%)	NE	NP	(%)	NE	NP	(%)
Buffalo	272	27	(9.93)	130	14	(10.77)	111	21	(18.92)	513	62	(12.09)
Sheep	238	01	(0.42)	92	06	(6.52)	40	04	(10.00)	370	11	(2.97)
Goats	180	0	(0.00)	66	01	(1.52)	92	06	(6.52)	338	07	(2.07)
Total	690	28	(4.06)	288	21	(7.29)	243	31	(12.76)	1221	80	(6.55)

* NE, No. examined; NP, No. positive.

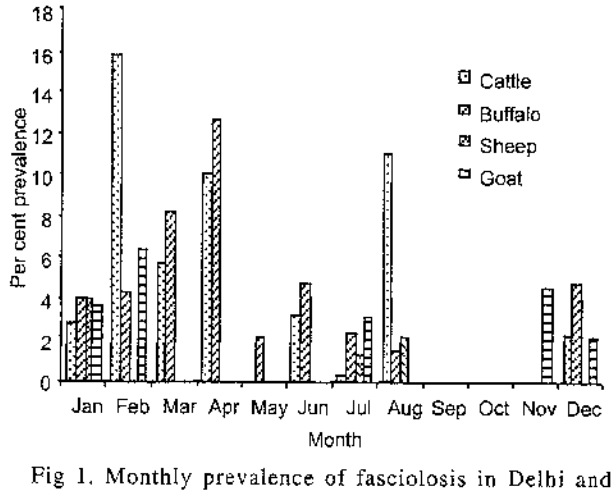

Fig 1. Monthly prevalence of fasciolosis in Delhi and surrounding areas

The finding of present study may be of help in formulating an effective strategy for control of fasciolosis in and around Delhi. Based on findings, it is suggested that animals should not be allowed to graze near water-bodies during rainy season and winter (July-October). If, in case, this is unavoidable, water-bodies must be treated with potent molluscicides during rainy and post-rainy season. It is also advised that the animals must be dewormed with an effective flukicide atleast twice in a year, once during June-July before onset of rains and again in December-January when incidence of fasciolosis in ruminants is on the rise.

SUMMARY

Seasonal prevalence of *Fasciola gigantica* infection in

ruminants viz. cattle, buffaloes, sheep and goats were carried out in National Capital Region, Delhi, during January 2002 to December 2004. Coprological examination of 1 091 cattle, 1 170 buffaloes, 609 sheep and 925 goats revealed an overall prevalence of 3.12, 4.27, 0.82 and 1.73% infection, respectively. Seasonal prevalence of infection in ruminants revealed 4.03% infection in summer followed by 3.24% in winter and 1.01% infection in rainy season. Year-wise prevalence of infection of was recorded as 3.67, 2.75 and 1.61% during the year 2004, 2003 and 2002, respectively. Besides this, prevalence of *Fasciola gigantica* infection in slaughtered buffaloes, sheep and goats was 12.09, 2.97 and 2.07%, respectively. Based on the findings, it is suggested that the animals in and around Delhi should be dewormed with an effective flukicide at least twice in a year, once during June-July and again in December-January.

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