
SEASONAL PREVALENCE OF *Schistosoma spindale* IN RUMINANTS AT CHENNAI

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ABSTRACT

A systematic survey was conducted during 2003-2007 to study the prevalence of Schistosoma spindale in cattle, buffalo and goat slaughtered at Chennai. Examination of 114 cattle, 56 buffalo and 42 goat mesenteries collected from slaughter house revealed 30.7 percent cattle, 19.64 per cent buffalo and 9.52 per cent goats harbouring S. spindale. The prevalence of S. spindale was higher in cattle followed by buffalo and goats. The seasonal pattern of prevalence showed a moderate peak in monsoon seasons in cattle and winter season in buffalo and goat. Monthwise prevalence also showed peak in July and low in September in case of cattle and negligible variation during many months in buffalo and goat. The intensity of S. spindale infection in animals ranged from 1 – 148 flukes per animal.

Key words : Prevalence, *Schistosoma spindale*

INTRODUCTION

Visceral schistosomiasis caused by *S. spindale* is characterized by frequent diarrhoea with blood and mucous, colic, weight loss and weakness in animals. (Vaithyanathan, 1949 and Mohanty *et al.*, 1984). Egg granulomas were observed in liver and intestine of ruminants (Fransen *et al.*, 1990). This disease is generally chronic in nature and symptoms in majority of animals are insufficient to distinguish the illness from other debilitating infections (De Bont and Vercruysse, 1998). It is widely distributed in cattle, buffalo, sheep and goat in India (Agrawal and Southgate, 2000). The survey and outbreak reports from domestic animals are limited in Indian states such as Karnataka (Rao, 1934), Maharashtra (Kulkarni *et al.*, 1954), Andhra Pradesh (Christopher and

Sudarshan, 1975), Madhya Pradesh (Banerjee and Agrawal, 1992), Assam (Rajkova *et al.*, 1992). The prevalence of *S. spindale* with respect to Tamil Nadu has not been reported. Hence the current study was undertaken to survey the prevalence of *S. spindale* in domestic animals slaughtered at the Perambur slaughter house, Chennai.

MATERIALS AND METHODS

The study was carried out from April 2003 to March 2007. The mesentery from cattle, buffalo and goats slaughtered at the Perambur abattoir, Chennai was collected randomly and screened for the presence of *S. spindale* infection in the mesenteric veins. The collected Schistosomes were counted for intensity of infection in every animal. They were flattened and stained using acetic alum carmine (Soulsby, 1982).

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RESULTS AND DISCUSSION

The data obtained by examining a total of 114 cattle, 56 buffalo and 42 goat mesenteries during the four year period from April 2003 – March 2007 is presented in Table 1. The recovered Schistosome flukes were indentified as *S. spindale*. In cattle, the prevalence of *S. spindale* was 30.7%, while in buffalo the prevalence was 19.64 percent. The prevalence in goats was much lower at 9.2 percent. The difference in the prevalence of *S. spindale* in different species of animals is due to variation in the behaviour of domesticated animals (Agrawal and Sahastrabudhe, 1982). The prevalence of *S. spindale* is higher in cattle followed by buffalo and goats.

A similar trend was also reported in various states of India including Karnataka, (Rao, 1934), Maharashtra (Kulkarni *et al.*, 1954), Andhra Pradesh (Christoper and Sudarshan, 1975), Madhya Pradesh (Banerjee and Agrawal, 1992) and Assam (Rajkoa *et al.*, 1992). The prevalence of *S. spindale* in ruminants in Chennai is higher than that of Assam as Rajkoa *et al.*, (1992) reported 2.9% in cattle, 2.7% in goat and 16% in buffalo. However Banerjee and Agrawal (1992) reported higher prevalence of 41.2% in cattle and 38.5% in buffalo than the present study. This variation is dependent upon the climatic factors present in their state suitable for the development of snail intermediate host. The incidence of *S. spindale* also depends upon the method used for collection of flukes, because liver press method detects more flukes than examination of mesentery alone (Banerjee and Agrawal, 1989).

The intensity of *S. spindale* infection in cattle was 4 to 148 flukes per animal, 1-8 flukes per animal in buffaloes and 1-2 flukes per animal in goats. Male *Schistosoma spindale* population was more as compared to female in all animals. Paired Schistosomes were moderately present. This is in accordance with the report of De Bont *et al.*, (1991)

who reported less than 100 worm pairs in the mesenteric veins. However Rao (1934) collected more than 500 flukes with higher male fluke population.

Seasonwise incidence in ruminants has been shown in Fig.1. Monthwise prevalence showed peak in July (44%) and low in September (16%) in case of cattle and not much variation in peak and negligible in many months in buffalo and goat. This variation may depend upon the less number of mesenteries examined and the method of recovery of flukes from animals. It was not possible to study the mesenteries of all slaughtered animals from the abattoir due to refusal of workers for giving mesenteries and adjoining meat from animals, which fetch high value in the market. The seasonal prevalence of *S. spindale* in cattle was high in monsoon season (33%) and winter season in buffalo (30%) and goat (20%) and low in summer season in cattle (27.7%), buffalo (10%) and goat (0%). Bedarkar *et al.*, (2000) also observed that the prevalence of *Schistosoma* species was high during monsoon and lowest in summer season amongst ruminants. Further studies on the epizootiology of *S. spindale* in farm animals and cercarial bionomics in snail are required for better understanding of *S. spindale* and disease logistics in Tamil Nadu. Thus the present study and also those carried out in other parts of the country indicate that *S. spindale* is prevalent in ruminants and needs to be controlled with the use of effective anthelmintics and molluscicidals (Chaudhri *et al.*, 2007).

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Table-1
Schistosoma spindale infection in ruminants slaughtered at Chennai (from April 2003 to March 2007)

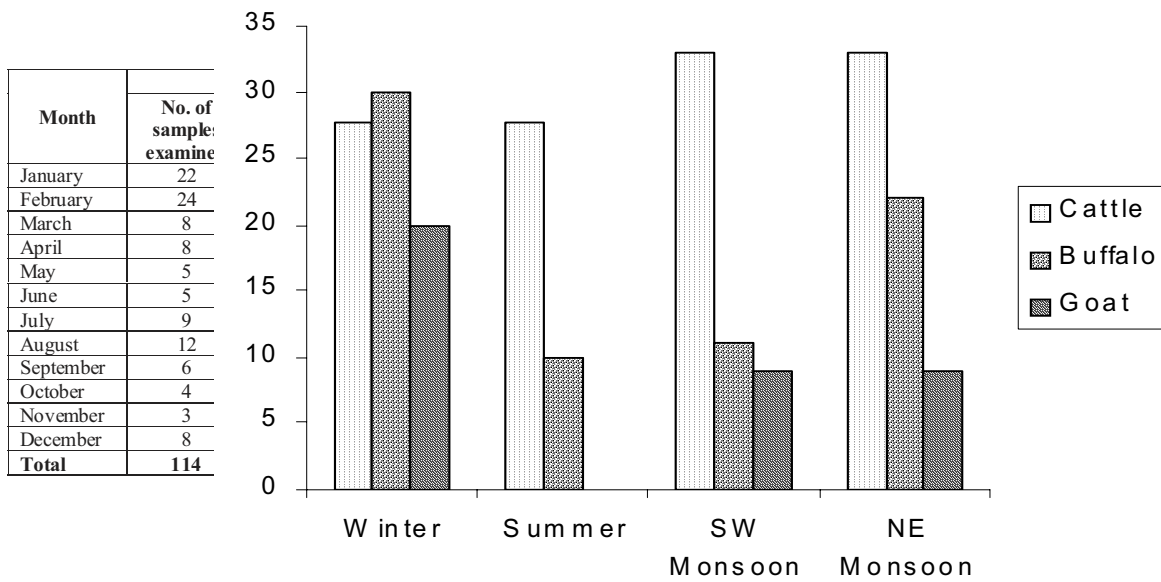


Fig. 1

Seasonwise prevalence of *Schistosoma spindale* in ruminants in Chennai

REFERENCES

- Agrawal, M.C. and Sahasrubudhe, V.K. (1982). A note on natural heterologous schistome infection in domestic animals. *Livestock Adviser*, 7 : 58-59.
- Agrawal, M.C. and Southgate, V.R. (2000). *Schistosoma spindale* and bovine schistosomiasis. *Journal of Veterinary Parasitology*, 14 : 95-107.
- Banerjee, P.S. and Agrawal, M.C. (1989). Comparative efficacy of faecal and liver examination in determining prevalence of bovine schistosomiasis. *Journal of Veterinary Parasitology*, 3 : 157-158.
- Banerjee, P.S. and Agrawal, M.C. 1992. Epizootiological studies in bovines on flukes infection with special reference to schistosomiasis. *Indian Veterinary Journal*, 69 : 215-220.
- Bedarkar, S.N., Narladkar, B.W. and Despande, P.D. (2000). Seasonal prevalence of snail borne fluke infections in ruminants of Maratwada region. *Journal of Veterinary Parasitology*, 14 : 51-54.
- Chaudhri, S.S., Singh, S. and Singh, A. (2007). Epidemiology of hepato intestinal schistosomiasis in ruminants of some northern states of India. *Indian Journal of Animal Sciences*, 77 : 288-292.
- Christoper, J. and Sudharshan, J. (1975). Nasal schistosomiasis in animals. *Food, Farm Agriculture*, 7 : 27-28.
- De Bont, J. and Vercruysee, J. (1998). Schistosomiasis in cattle. *Advances in Parasitology*, 41 : 285-363.
- De Bont, J. Vercruysee, J., Van Aken, D., Southgate, V.R., Rollinson, D. and Moncrieft, C. (1991). The epidemiology of *Schistosoma spindale* montgomery 1906 in cattle in Sri Lanka. *Parasitology*, 102 : 237-241.
- Fransen, J., De Bont, J., Vercruysee, J., Van Aken, D., Southgate, V.R. and Rollinson, D. (1990). Pathology of natural infections of *Schistosoma spindale* Montgomery, 1906, in cattle. *Journal of comparative pathology*, 103 : 447-455.
- Kulkarni, H. Rao, S.R. and Chaudhari, P.G. (1954). Unusual outbreaks of schistosomiasis in bovines due to *S. spindale* associated with heavy mortality in Bombay state. *Bombay Veterinary College Magazine*, 4 : 3-15.
- Mohanty, D.N., Mohanty, R.K., Ray, S.K. and Mohanty, K.M. (1984). A note on *Schistosoma spindale* infection in cattle and its successful treatment. *Livestock Advisor*, 9 : 37-39.
- Rajkhowa, C., Gogoi, A.R., Borkakoty, M.R. and Das, M (1992). Incidence of Schistosomes in cattle, buffalo and goats in Assam. *Indian Veterinary Journal*, 69:273-275
- Rao, M.A.N. (1934). A comparative study of *Schistosoma spindalis*, Montgomery, 1906 and *Schistosoma nasalis* new species. *Indian Journal of Veterinary Science*. 4 : 1-28.
- Soulsby, E.J.L. (1982). Helminths, arthropods and protozoa of domesticated animals. 7th ed. Bailliere Tindall. London, pp 1-778.
- Vaidyanathan, S.N. (1949). *Schistosoma spindalis* in a cow. Treatment with Anthiomaline. *Indian Veterinary Journal*. 26 : 225-228.