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Original Research

Bovine paramphistomiasis – A Potential Cause of Bloat in Cattle

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Abstract

Prevalence of paramphistomiasis in cattle presented to TVCC, RIVER during the period from Jan 2019 to Dec 2019 was studied. This study was carried out to determine the prevalence and intensity of amphistomiasis as a potential cause of bloat in cattle in Puducherry in association with sex, age and season. A total of 248 cases with the history of dullness, inappetence, loss of body condition, jowl oedema, bloat and diarrhoea were selected for the study. Faecal samples were collected from the rectum and examined by direct microscopy as per standard procedure. The overall prevalence of paramphistomes was found to be 68.54% and present throughout the year. The highest rate of infection was found during the rainy season. The prevalence was higher in grazing animals than stall fed animals. The treatment of the infected animal was done with Bolus. Oxyclozanide @ 18.7 mg/Kg two doses PO on alternate days and with supportives including fluid therapy.

Keywords: Bloat, Prevalence, Paramphistomes, Oedema and Oxyclozanide

Introduction

Amphistomosis is a disease of both domestic and wild ruminants caused by digenetic trematodes. Lotfy *et al*. (2010) reported that the infection has a wide geographical distribution in subtropical and tropical areas and leads to economic losses in the dairy animals. Amphistomes has now emerged as an important cause of productivity loss in ruminants (Anuracpreeda *et al.*, 2008). The common clinical signs associated with paramphistomiasis are diarrhoea, loss of body condition, rough hair coat, dullness, weakness, loss of appetite and intermandibular swelling (Chandrasekharan *et al.*, 1982 and Blood *et al.*, 1983). Mavenyengwa *et al*. (2010) reported that the adult flukes are not associated with clinical amphistomosis and are caused by the immature flukes that lodge in the first 3 m of the small intestine. Immature flukes migrate to reach their predilection site in the rumen and reticulum proximally along the duodenum and through the abomasum (Radostatis *et al.,* 2000). The immature amphistomes adhere to the rumen mucosa and cardia portion of the oesophagus causes free gas bloat in cattle (Yogeshpriya *et al.,* 2017). The present study was carried out to determine the prevalence and intensity of amphistomiasis as a potential cause of bloat in cattle in Puducherry in association with sex, age and season.

Materials and Methods

The study was conducted in Department of Veterinary Medicine, TVCC, RIVER, Puducherry during the period from January, 2019 to December, 2019.

Collection and Microscopic Examination of Samples

Fresh dung samples were collected from the cattle presented to Department of Veterinary Medicine, Teaching Veterinary Clinical Complex, RIVER, Puducherry with the history of dullness, inappetence, loss of body condition, diarrhoea and bloat. On examination, soiled hind quarter, mild to moderate pot belly, jowl edema and distended paralumbar fossa were noticed (Table 1). A total of 248 dung samples were collected from cattle and are subjected to direct microscopic examination (Soulsby. 1982). Around 2g of dung sample was mixed with distilled water and examined under both low and high-power objective microscope for the presence of ova of Amphistomes. The age wise, sex wise and season wise prevalence were studied.

Also, rumen fluid was collected with the suction semi-automatic pump from the animals having bloat. The rumen tube with metallic head having 3mm diameter perforations is lubricated with liquid paraffin and introduced through the mouth into the rumen in animals with bloat. Rumen fluid extraction pump was introduced and a little resistance to the passage of the tube at the level of cardia was felt. A large quantity of gas was released and when the tube was removed a large number of flesh coloured amphistomes of different stages were found sticking on the suction strainer (Fig. 2).

Results and Discussion

The overall prevalence of paramphistomiasis in cattle presented to TVCC, RIVER, Puducherry was found to be 68.54% by direct microscopic examination. Out of 248 cattle suspected, 170 cattle (68.54%) were found positive for ova of Amphistomes by microscopic examination. Das *et al.* (2004) reported that Amphistomosis was 23.8 % and *Schistosoma* sp. was 0.37 % among the helminths infections of ruminants in Puducherry but now the incidence rate has increased. The increase in the prevalence of paramphistomes might be due to the change in the feeding pattern and climatic conditions. The prominent clinical signs observed in the study were inappetence to anorexia, diarrhoea, soiled hind quarters, mild to moderate pot belly, jowl oedema and bloat (Table 1).

Table 1: Clinical signs recorded in paramphistomiasis in cattle

S. No.	Clinical signs	No. of cases	Percentage (%)
1	Diarrhoea	132	94.28
2	Inappetence to anorexia	126	90
3	Bloat	28	20
4	Jowl oedema	32	22.85
5	Mild to moderate pot belly	68	48.57
6	Soiled hind quarters	132	94.28

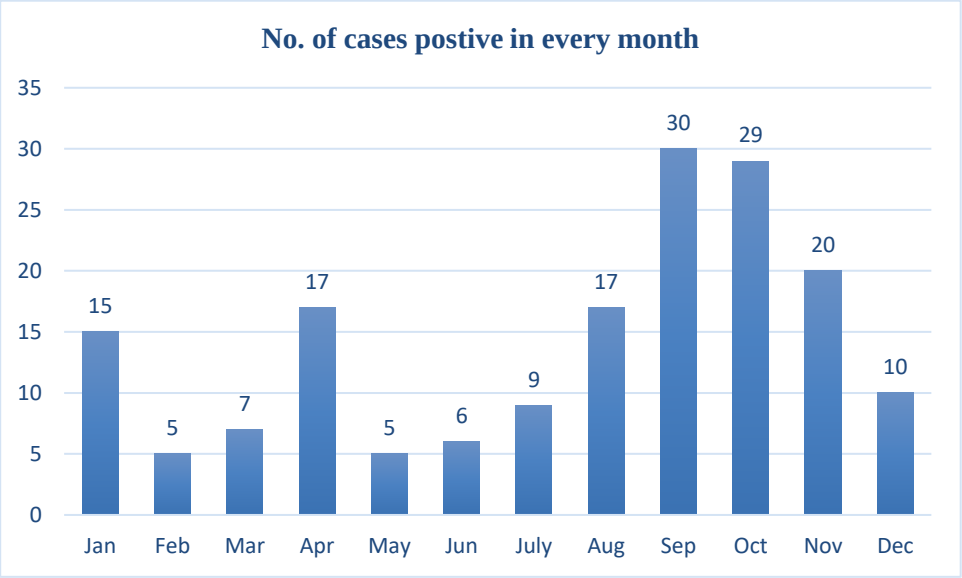
The cattle cases presented with history of bloat were found positive by passing the rumen pump and rumen flukes of various stage attached to the suction strainer (Fig. 1). Yogeshpriya *et al*. (2017) reported that occlusion of immature stages of amphistomes around the cardia region of oesophagus causes secondary bloat in cattle. Eructation or belching occurs normally once in every minute. The volume of gas produced by rumen fermentation increases after feeding. To accommodate increased rate of gas production, belching occurs more often, up to three or four times per minute. When the immature flukes adhere to the cardia portion of oesophagus, gas accumulate in the rumen and cause bloat. Thus, the paramphistomes are of potential cause for bloat in cattle and has to be differentially diagnosed.

Figure 1: Immature flukes attached to the suction strainer of the rumen pump

Table 2: Prevalence of paramphistomiasis in association with age, sex, season and grazing pattern

Parameter	No. of samples examined	No. of positive cases	Prevalence %
Age			
Adult (age 1 year and above)	202	152	89.41
Young (age less than 1 year)	46	18	10.58
Sex			
Female	210	142	83.53
Male	38	28	16.46
Season			
Summer (March to May)	52	29	17.06
Monsoon (June to October)	107	91	53.52
Winter (November to February)	89	50	29.42
Grazing pattern			
Semi intensive	196	148	87.05
Stall fed	52	22	12.95

The prevalence was higher in adult animals than the young animals. It was observed that a higher infection rate was recorded in adult (89.41%) i.e., above one year of age than younger cattle (10.58%) i.e., below one year of age. Cows (83.53%) were more commonly affected than bulls (16.46%). The season wise prevalence of Amphistomes indicated prevalence throughout the year (graph 1). It was also observed that the highest infection was reported in monsoon (June to October) and the lowest infection in summer (March to May). This finding was in association with Phiri *et al*. (2007) where they reported amphistomes are more commonly reported in rainy and post rainy season.



Graph 1: Season wise prevalence of paramphstomes

Out of 170 positive cases, 148 animals (87.05%) are let for grazing and 22 animals (12.95%) are stall fed. Thus, grazing animals are more prone for infection than the stall-fed animals. Phiri *et al.* (2007) reported that the animal grazing area and habitat is significantly associated with prevalence and intensity of amphistomes in domestic ruminants.

The affected animals are treated with oxyclozanide (Distodin) @ 18.7mg/Kg two doses on alternate days along with supportives including fluid therapy. Blood *et al.* (1983) reported treatment with oxyclozanide at the dose rate of 18.7 mg/kg orally and same dose repeated after two days is effective against amphistomiasis. Animals with bloat are treated with liquid paraffin orally and Bolus. Distodin. All the animals with bloat were recovered from bloat after deworming. Since, amphistome infections have been found to occur throughout the year in Puducherry, strategic anthelmintic treatment scheme must be targeted to control the infection.

Conflict of Interests

There is no conflict of interest.

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References

1. Anuracpreeda, P., Wanichanon, C., & Sobhon, P. (2008). *Paramphistomum cervi* antigenic profile adults as recognized by infected cattle sera. *Experimental Parasitology.* 118: 203-207.
2. Blood, D. C., Radostits, O. M., & Henderson, J. A. (1983). *Veterinary medicine.* 6th edition, Bailliere and Tindall Ltd, London.
3. Chandrasekharan, K., Radhakrishnan, K., & Jacob, V.C. (1982). Efficacy of Distodin in the treatment of amphistomiasis in Indian elephants. *Kerala Journal of Veterinary Science* 13: 55-58.
4. Chauhan, V. D., Patel, P. V., Hasnani, J. J., Pandya, S. S., Pandey, S., Pansuriya, D. V., & Choudhary, V. (2015). Study on hematological alterations induced by amphistomosis in buffaloes. *Veterinary world*, *8*(3), 417–420.
5. Das S, S., Kumar, D., & Sreekrishnan, R. (2004). Prevalence of helminth parasites in ruminants in and around Pondicherry. *RAGACOVAS - Parasitology Project report to Department of Science, Technology and Environment.* RAGACOVAS, Pondicherry.

6. Lotfy, W.M., Brant, S.V., Ashmawy, K.I., Devkota, R., Mkoji, G.M. & Loker, E.S., (2010). A molecular approach for identification of paramphistomes from Africa and Asia, *Veterinary Parasitology*. Pp; 174, 234–240.
7. Mavenyengwa, M., Mukaratirwa, S., & Monrad, J. (2010). Influence of *Calicophoron microbothrium* amphistomosis on the biochemical and blood cell counts of cattle, *Journal of Helminthology*. Pp; 84, 355–361.
8. Phiri, A. M., Chota, A., & Phiri, I. K. (2007). Seasonal pattern of bovine amphistomosis in traditionally reared cattle in the Kafue and Zambezi catchment areas of Zambia. *Tropical Animal Health and Production,* 39(2), 97–102.
9. Radostitis, O.M., Gay C.C., Blood D.C. and Hinchcliff. (2000). *Veterinary Medicine*, 9th ed. WB Saunders, Harcourt Publishers Ltd., London.
10. Soulsby EJL., (1982) *Helminths, arthropods and protozoa of domesticated animals*, 7th edn. Bailliere Tindall Ltd, London.
11. Yogeshpriya. S., Saravanan. M., Krishnakumar S., Veeraselvam. M., & Selvaraj. P. (2017) Clinico-Therapeutic Management of Amphistomiasis in Cattle. *Bulletin of environment, pharmacology and life sciences.* Vol 6[6]: 92-94.

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