Haryana Vet. (June, 2018) **57 (1)**, 70-72

Research Article

A PRELIMINARY STUDY OF GASTROINTESTINAL PARASITES IN WILD ANIMALS AT HISAR (HARYANA)

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ABSTRACT

During a preliminary study for exploration of parasitic fauna of wild animals at Hisar, a total of 91 faecal samples from black buck (*Antilope cervicapra*), cheetal/chital (*Axis axis*), sambar (*Rusa unicolor*); rhesus monkey (*Macaca mulatta)* and nilgai (*Boselaphus tragocamelus*) were collected from in and around Hisar city from July, 2016 to June, 2017. The faecal samples were examined with standard floatation and sedimentation techniques. Out of the 34 faecal samples of rhesus monkey, 14 (41.17%) were positive for *Balantidium coli* cyst. Out of the 40 deer samples, 21(52.50%) were positive for strongyle eggs, 2 (5.00%) for *Trichuris* spp., 1 (2.50%) each for *Strongyloides* spp., *Moniezia expansa* and 11 (27.50%) were positive for coccidian oocysts. Quantification of parasitic load was performed by modified McMaster technique and it was ranging between 100-200 for egg per gram (EPG) and 300-2100 for oocyst per gram (OPG) counts for deer samples. Amongst the 17 nilgai samples, 13 (76.47%) were positive for strongyle eggs, 2 (11.76%) for *Trichuris* eggs and 8 (47.05%) for amphistome eggs. It is the first report of occurrence of *Balantidium coli* in monkeys and amphistome eggs in nilgai of Haryana.

Key words: Amphistomes, *Balantidium coli*, gastrointestinal parasites, wildlife

Conservation of wildlife is an essential component of environment rejuvenation. Parasitic diseases constitute major health hazards for our vulnerable wildlife (Chhabra and Pathak, 2013). With the advances in modernization and urban life style, there is progressive decrease in forest covered area. Haryana state with the least forest covered area offers greater interaction of wild animals with the human and domestic animals, thereby, predisposing them for the exchange of infectious organisms. In order to curtail the transfer of zoonotic pathogens, it is indispensable to understand epidemiology of various pathogenic parasites in wild life. Wild animals show natural resistance against parasitic diseases maintaining a state of equilibrium unless stressed (Gaur *et al*., 1979). Many of the gastrointestinal parasites of the wild ruminants and non-human primates are shared with domestic ruminants and humans, respectively.

Study of parasitic diseases in wildlife in Haryana is still neglected and no systematic study has been undertaken so far. In the absence of an adequate surveillance and monitoring system, there had been sporadic cases of wild life parasites reported from Haryana (Sadana *et al*., 1980; Swain *et al*., 2016). The present study aims at understanding the gastrointestinal parasites prevailing in wildlife located in and around Hisar and utilising the information for wider scale exploration of gastrointestinal parasites in Haryana.

MATERIALS AND METHODS

Collection of faecal samples: The study was conducted in Hisar district of Haryana from July, 2016 to June, 2017. A total of 91 faecal samples were collected randomly from deer, nilgai and monkeys. Relatively fresh samples were collected non-invasively from both sexes and different age groups of animals. The samples were kept in labelled clean polythene covers and transported to the Veterinary Parasitology Department on the same day of collection and were preserved at 4^0C in a refrigerator until processing.

Site of sample collection: Deer faecal samples used in the present study were collected from deer park, Hisar. The park currently maintain around 80 deer of 3 varieties *viz*. black buck (*Antilope cervicapra*), cheetal/ chital (*Axis axis*) and sambar (*Rusa unicolor*). Nilgai (*Boselaphus tragocamelus*) and rhesus monkeys (*Macaca mulatta*) samples were collected from surroundings of Hisar city including the Deer park as well as LUVAS University campus.

Parasitological examination: Samples collected were subjected to both qualitative and quantitative examination. The samples were examined qualitatively by direct smear, floatation and sedimentation technique. The quantitative examination of faeces was done as per modified McMaster technique for nematode eggs and coccidian oocysts. Photomicrographs of different parasitic structures were taken and micrometry was done with the help of trinocular digital microscope for confirmation of some unexpected findings.

RESULT AND DISCUSSION

The present study revealed the presence of protozoan cyst in monkeys; trematode and nematodes infection in nilgai and both nematodes and protozoan infection in deer. Out of the 34 faecal samples of rhesus monkey, 14 samples (41.17%) were found positive for *Balantidium coli* cyst. Similar finding in rhesus monkey has also been reported from Rangpur zoological garden in Bangladesh (Khatun *et al*., 2014). *Balantidium coli* had also been found in stool sample of non-human primates in Assam

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State Zoo, Asom (Chakraborty and Goswami, 2001).

Out of the 40 deer samples, 21 (52.50%) were positive for strongyle eggs, 2 (5.00%) for *Trichuris* spp., 1 (2.50%) each for *Strongyloides* spp., *Moniezia expansa* and 11 (27.50%) samples were positive for coccidian oocysts. The quantification of parasitic load revealed ranging between 100-200 for EPG and 300-2100 for OPG counts for deer samples. In 1980, *Haemonchus contortus* was reported to be associated with fatal gastritis in 8 month old black buck at Deer park, Hisar (Sadana *et al*., 1980). Recently, post mortem examination of a spotted deer revealed *Trichuris* infection as a predominant helminth parasite in Deer park, Hisar (Swain *et al*., 2016). Earlier studies carried out in Malaysia, Italy and Nigeria also revealed the presence of similar internal parasites in members of family Cervidae (Lim *et al.*, 2008; Fegiolini *et al.*, 2010 and Opara *et al.*, 2010). Mir *et al*. (2016) recorded eggs of strongyles, *Trichuris* spp., *Strongyloides* spp. and coccidian oocysts from spotted deer, black buck, sambar, hog deer and barking deer kept at Deer park, Patiala, Punjab. Trematodes and cestodes infection were not evident in deer samples in the present study, probably because of semi-arid status of Hisar city which is unsuitable for snail and snail borne diseases. Strongyles were most commonly observed (52.50%) followed by coccidian oocysts (27.50%) and 25% of the parasitic infection cases were of mixed infection consisting either two or more helminth or protozoan parasites. *Strongyloides* spp., *Moniezia* spp and coccidian oocysts in deer were previously recorded from zoological garden at Bangladesh (Khatun *et al*., 2014). Strongyle eggs and coccidian oocysts are frequently reported from various zoological gardens of Karnataka Ananda *et al*., 2012, 2016). Eggs of *Moniezia* sp. were also recovered from hog deer (*Axis porcinus*) kept in captivity at Mysore zoo of Karnataka (Muraleedharan *et al*., 1990). *H. contortus* was identified as predominant species followed by other strongyles in wild deer of Jim Corbett National Park and Kanpur zoo (Gaur *et al*., 1979). Feed and water provided from outside sources serve as major mode of transmission of eggs and larvae of helminth parasites.

Amongst the 17 nilgai samples, 13 (76.47%) were positive for strongyle, 02 (11.76%) for *Trichuris* and 08 (47.05%) samples for amphistome eggs. Mir *et al.* (2016) recorded strongyles, *Trichuris* spp., *Strongyloides* spp. eggs and coccidian oocysts from nilgai kept at Deer park, Patiala, Punjab. The occurrence of amphistome eggs has been previously recorded from nilgai kept at Mysore zoo of Karnataka (Muraleedharan *et al*., 1990) and Uttarakhand (Banerjee *et al*., 2005). *Trichuris* infection in nilgai is also reported from Bannerghatta biological park (BBP), Bangaluruand zoos of Delhi and Lucknow (Chauhan *et al*., 1973; Renukaprasad *et al*., 2011). *Oesophagostomum* sp. was encountered as a predominant species in nilgai at Maharajbagh zoo, Nagpur (Dhoot *et al*., 2002).

It is probably the first report of occurrence of *B.coli* in monkeys and amphistome eggs in nilgai of Haryana. The results are suggestive of subclinical infections which are quite often and justified in the wild life fauna maintained in the sub-tropical climate. The close inter-relationship between parasites of wildlife and domestic stock suggests that domestic animals should not be let out for grazing in the forest ranges. Proper disposal of excreta, hygienic practice and general measure of endoparasite management should be scrupulously practiced to prevent cross contamination of livestock parasites with animals in the wild. As the interfaces between human, wild life and domestic stocks are becoming more varied and complex, such preliminary survey would provide clue for strategic disease surveillance in near future.

REFERENCES

Ananda, K.J., Chandrashekar, S., Naravi, Y., Ramesha, K. and Devaraj, M. (2012). Prevalence of gastrointestinal parasites of wild animals maintained under captive state.In: 22nd NCVPheld at Mathura, DUVASU, 15-17 March, p. 28.

Ananda, K.J., Vinay, S., Malatesh, D.S. and Dhanalakshmi, S. (2016). Incidence of endoparasitic infection in wild animals maintained at Shivamogga, Karnataka. In: 25th NCVP held at TANVASU, Chennai during 17-19 February, p. 212-213.

Banerjee, P.S., Garg, R., Yadav, C.L. and Ram, H. (2005).Parasitic infections in some wild animals of Uttranchal. *Indian. J. Anim. Sci*. **75:** 206-208.

Chakraborty, A. and Goswami, P.K. (2001).Parasites of non-human primates of Assam State Zoo. *J. Vet. Parasitol*. **15:** 121-124.

Chauhan, P.P.S., Bhatia, B.B., Arora, G.S., Agrawal, R.D. and Ahluwalia, S.S. (1973).A preliminary survey of parasitic infections among mammals and birds at Lucknow and Delhi zoo. *Indian. J. Anim.Sci.* **43:** 163-168.

Chhabra, M.B. and Pathak, K.M.L. (2013).An overview of parasites of wildlife in India. I. Herbivores, primates and reptiles. *Indian. J. Anim. Sci.* **83 (5):** 463-473.

Dhoot, V.M., Upadhye, V.S. and Kolte, S.W. (2002).Prevalence of parasitism in wild animals and birds of Maharajbagh zoo, Nagpur. *Indian.Vet. J.* **79:** 225-227.

Fagiolini, M., Riccardo, P.L., Piero, L., Paolo, C., Riccardo, M. and Stefania, P. (2010) Gastrointestinal parasites in mammals of two Italian zoological gardens. *J. Zoo.Wild. Med.* **41** (4): 662-670.

Gaur, S.N.S., Sethi, M.S., Tiwari, H.C. and Prakash, O. (1979).Prevalence of helminthic parasites in zoo and wild animals in Uttar Pradesh. *Indian. J. Anim. Sci.* **49:** 159-161.

Khatun, M.M., N. Begum, M.A.A. Mamun, M.M.H. Mondal and M.

Shakif-Ul-Azam (2014).Coprological study of gastrointestinal parasites of captive animals at Rangpur Recreational Garden and Zoo in Bangladesh. *J. Threat.Taxa*. **6** (8): 6142–6147.

Lim, Y.A.L., Ngui, R., Shukri, J., Rohela, M. and Naim, H.R.M. (2008) Intestinal parasites in various animals at a zoo in Malaysia.*Vet. Parasitol.* **157:** 154-159.

Mir, Q., Dua, K., Singla, L.D., Sharma, S. and Singh, M.P. (2016).Prevalence of parasitic infection in captive wild animals in Bir Moti Bagh mini zoo (Deer Park), Patiala, Punjab.*Vet.World.* **9** (6): 540-543.

Muraleedharan K, Vasanthi I, Ziauddin KS and Srinivasan K (1990).A survey of gastro-intestinal parasites of animals of Zoological Gardens at Mysore. *Mys. J. Agri. Sci.* **24:** 250-256.

Opara, M.N., Osuji, C.T. and Opara, J.A. (2010) Gastrointestinal parasitism in captive animals at the zoological garden, NekedeOwerri, Southeast Nigeria. *Rep. Opin.* **2** (5): 21-28.

Sadana, J.R., Mahajan, S.K. and Paul Gupta, R.K. (1980).On the occurrence of *Haemonchuscontortus* in a black buck (*Antilope cervicapra*). *Haryana Vet*. **19:** 142-43.

Swain, K., Sangwan, A.K., Vohra, S., Gupta, S., Routray, A. and Rath A.P. (2016). *Trichuris* infection in spotted deer (*Axis axis*) in Hissar: a rare case report. In: Proceedings of XXIII Annual Conference of IAVVR and National Symposium on "Strengthening of governance in animal health and production activities for benefit of farmers and livestock owners" held at Orissa, Bhubaneshwar on February 27-28.