Prevalence of endoparasitic infections in wild cervids of Army Golf Course, Mathura

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Abstract The objective of this study was to investigate, through cross-sectional survey, the distribution, types and prevalence of gastro-intestinal parasites affecting wild cervids of Army Golf Course, Mathura. The copro samples were collected from animals of either sex and of different age groups and examined for copro examination by flotation and sedimentation techniques followed by copro culture and Bearmans technique for the identification of helminth species using standard keys. A total of 46 samples were screened. Single parasite infections (30 %) were more common than two or more infections (12 %). The data on the distribution of the various worm species in the positive animals indicate that *Haemonchus* spp. eggs (32 %) was more predominant followed by Hookworms (21 %); *Strongyloides* spp. (13 %) and *Oesophagostomum* spp. (5 %). Coccidian infections with eimerian species was found in (28 %) while *Isospora* spp. was found in (8 %) cases. The present study has generated an important data regarding parasitism of these wild animals which is of

immense significance from epidemiological point of view. Further, more detailed parasitological studies are needed and future research on wild animal population dynamics should not neglect parasitic infections, which are of great importance for species conservation.

Keywords Army Golf Course · Endoparasitic prevalence · Mathura · Wild cervids

Introduction

Wild animals usually suffer from a wide range of various infectious agents like bacteria, viruses and parasites from time to time. In spite of being the proven fact that the wild animals are usually infected with many species of parasites, yet massive death or epizootics because of them are rarely seen (Banerjee et al. 2005). The role of wildlife as important sources, reservoirs and amplifiers of emerging human and domestic livestock pathogens particularly parasites, in addition to well recognized zoonoses of public health significance, has gained considerable attention in recent years (Thompson et al. 2009). The present paper reports the distribution, types and prevalence of gastro-intestinal parasites affecting deer, kept at Army Golf Course, Mathura.

Materials and methods

The Department of Clinical medicine, DVUASU was approached by the army personals of Army Golf Course, and it was informed that there were more than hundred deer kept in the confined area of golf course and 4 deer died during the last few days. However, the post mortem

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examination of those dead was not done. History revealed that those animals stopped feeding for a few days prior to death and passed dark coloured faeces. The deer were allowed to browsing biomass naturally growing in open land in and around golf course and water was provided through an open water reservoir made in the golf course. There was no history of deworming of these wild animals. A team of clinicians approached the area where animals were reared and detailed system wise physical examination of few of the affected animals was made. The affected animals revealed depression, raid and shallow breathing along with dull and lusterless hair coat. The body was thoroughly searched for presence of ectoparasites. Few of the affected animals were having soiling of hind quarters suggestive of diarrhea. Faecal samples from 46 animals were taken and put into faecal plastic bags, labeled and kept at refrigerated temperature (4 °C) during transportation to the laboratory of Department of Parasitology, DUVASU, Mathura for coprological examination. The sedimentation and floatation techniques were used to detect the presence of helminth eggs and coccidia oocysts in the samples (Soulsby 1982). Later on the lefts over samples were pooled together and coproculture was done to identify larvae using standard Bearman's technique (Soulsby 1982). The larvae were identified using standard keys (Bowman et al. 2003; Hendrix and Robinson 2006; Taylor et al. 2007). Based on the identified parasites, mass treatment of all the animals was undertaken consisting of Albomar (Albendazole) and oral antibiotic therapy. All the drugs were administered along with drinking water. The random faecal samples were again taken day 21 post treatment and were again examined for parasitic eggs.

Results and discussion

Out of 46 samples screened, 31 samples were found to be positive for one or more type of helminthic eggs along with coccidian oocysts in either floatation or sedimentation technique. Coproculture revealed *Haemonchus* spp. (32 %) to be more predominant followed by Hookworms (21 %); *Strongyloides* spp. (13 %) and *Oesophagostomum* spp. (5 %). Coccidian infections with eimerian species was found in (28 %) while *Isospora* spp. was found in (8 %) cases. However, the eimerian oocysts could not be further identified because the oocysts failed to sporulate in 2.5 % potassium dichromate solution in the laboratory.

Parasitic infections are quite common in wild ruminants across India (Banerjee et al. 2005). These animals may acquire a large quantum of infection while grazing and are mostly subclinical. However, sometimes the infections turn fatal for the infected animal. High prevalence of parasites in faecal samples of herbivorous zoo animals including

elephants, nilgai, and spotted deer was reported from Patna by Modi G et al. (1995) and from Thrissur by Varndharajan et al. (2002). *Amphistomes*, Strongyles and *Fasciola* were reported in deer, from various parts of the world including India (Modi et al. 1995; Drozd et al. 1997; Mason and Barrell 1997; Dhoor et al. 2002). However trematodes were not recorded in the present study. It could be attributed to the absence of snail intermediate hosts in the study area.

Wild animals may act as reservoir hosts for disease causing agents, which may be transmitted to domestic animals and man in the fringe villages of protected areas. Hence, it is of utmost significance to know the parasitism of these wild animals and may spread some of these parasitic infections to domestic animals due to infiltration of wild life habitat by domestic animals. Knowledge of parasites and parasitic diseases of marginal livestock as exemplified by deer in the instant case is still in its infancy and only baseline data are available so far. Diagnosis of parasitic diseases in wild ruminants needs to be upgraded across the host species with enhanced use of modern molecular techniques such as PCR-based diagnosis. Future research applying the use of molecular tools will surely enhance our understanding of the ecology of parasitic diseases including parasite flow among domestic, wild, and human hosts and will uplift our limited understanding of host specificity, particularly with respect to the potential host range of novel/introduced pathogens, and will provide information on life history characteristics, such as environmental persistence and vectorial capacity. Our knowledge of the evolutionary biology of parasites will also benefit and as such allow predictions to be made on virulence characteristics and the likely impact of control strategies. More detailed parasitological studies are needed and future research on wild animal population dynamics should not neglect parasitic infections, which are of great importance for species conservation. Hence, there is a utmost need to fill up these gaps and to generate a base line data regarding parasitism of wild life in general and deer in particular so that true picture may come into place. The present study has generated an important baseline data regarding parasitism of these wild animals which is of immense significance from epidemiological point of view.

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