A SURVEY OF GASTRO-INTESTINAL PARASITES OF CAPTIVE ANIMALS AT RAJKOT MUNICIPAL CORPORATION ZOO, RAJKOT, GUJARAT

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Abstract

A total of 28 faecal samples of different zoo mammals and seven group faecal sample of birds were examined at the Rajkot Municipal Corporation Zoo, Rajkot. Out of this, 16 (57.14%) and seven (100%) were found positive for parasitic infection in mammals and birds respectively. Among the infected mammals 11 (68.75%), three (18.75%) and three (18.75%) were positive for nematode, cestode and intestinal protozoa, respectively. In birds, nematodes and protozoans were recorded.

Keywords

Survey, captive birds, captive mammals, gastro-intestinal parasites, Rajkot

Introduction

Protection of wildlife has been adapted in many parts of the world through development of parks and establishment of zoological gardens. The main aim behind captive breeding is to preserve rare and endangered species. In zoological parks, animals are under constant stress due to captivity despite care and management and are prone to parasitic infections. Identification of these parasities is important for successful treatment and control of parasitic infection in captive animals. Although worm and parasitic infection studies in zoo animals have been done in different parts of the country (Chauhan *et al.,* 1973; Chakraborty *et al.,* 1994; Modi *et al.,* 1997), the present investigation was undertaken to know the prevalence of gastro-intestinal parasitic infection in some of the wild mammals and birds at Rajkot Municipal Corporation Zoo, Rajkot.

Materials and Method

Twenty-eight faecal samples of mammals were collected individually in clean sterile containers whereas in the case of birds seven samples were collected cage-wise. A part of each sample was fixed in 10% formalin and brought to the laboratory for direct examination. On concentration and centrifugation in saturated salt solution as per the technique of Thienpout (1979) and Georgi (1985), the sample was analysed for helminthic eggs. Another part of each sample was also homogenized with 2.5% potassium di-chromate solution and kept at room temperature for sporulation of coccidian oocyst, if any as per technique described by Pande *et al.* (1970) and Sprent *et al.* (1967).

Results and Discussion

Mammals: Out of the 28 samples 17 (60.71%) were positive for parasitic infection. Among them 11 (68.75%), three (18.75%) and three (18.75%) were positive for nematode, cestode and intestinal protozoan infections respectively. Similar study of faecal sample examination by Chauhan *et al.* (1973) in Zoological Gardens, Lucknow and Delhi Zoo revealed cent per cent parasitic infection while Modi *et al.* (1997) observed 48.1 per cent parasitic infection at Bihar Zoo. In the study of free ranging animals at Bannerghatta National Park, Bangalore, Reddy *et al.* (1992) observed 42.35 per cent parasitic infection and similar findings (40.35%) had also been recorded by Chakraborty and Islam (1996) in Kaziranga National Park. On post-mortem examination Patnaik and Acharjyo (1970) at Baranga Zoo, Orissa observed 77.92 per cent parasitic infection, of which 36.67 per cent, 50 per cent and 28.33 per cent animals had nematode, trematode and cestode infections, respectively. Chakraborty *et al.* (1994) made an extensive study of post-mortems in herbivores of Assam State Zoo and recorded nematodes, trematodes, cestodes, protozoans and ectoparasites.

In the present study among thecarnivores out of 20 samples 10 (50%) were positive for parasitic infection of which two (20%), six (60%), three (30%) and one (10%) were positive for *Ancylostoma*, *Toxocara*, *Spirometra* and coccidian infection respectively. Two (20%) samples of Lions and Tigers were positive for *Ancylostoma* and *Toxocara* mixed infection. One

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Table 1. Rajkot Municipal Corporation Zoo, Rajkot

Name of Animal / Bird	No. of Sample	No. of Positive	Type of Parasitic infection Cestode ova	Nematode	Intestinal protozoa
Animals					
Lion (*Panthera leo*)	4	2	-	*Ancylostoma* sp. - 1	-
				Toxocara sp. - 2	-
Tiger (*Panthera tigris*)	4	3	-	*Toxocara* sp. - 3	-
				Ancylostoma sp. - 1	-
Himalayan Black Bear (*Ursus thibetanus*)	2	-	-	-	-
Panther (*Panthera pardus*)	3	3	*Spirometra* sp. -3	*Toxocara* sp. - 1	-
Hyena (*Hyena striata*)	2	-	-	-	-
Jackal (*Canis aureus*)	2	-	-	-	-
Indian Fox (*Vulpes bengalensis*)	2	1	-	-	Coccidia -1
Siamese Cat (*Felis catus*)	1	1	-	*Toxocara* sp. - 1	-
Bluebull (*Boselaphus tragocamelus*)	2	2	-	*Trichostrongylus* sp. - 1	
				Strongyloid sp. - 1	*B.coli*-1
Spotted Deer (*Axis axis*)	2	2	-	*Trichostrongylus* sp. - 2	Coccidia-1
Black Buck (*Antelope cervicapra*)	4	2	-	*Trichostrongylus* sp. - 2	-
Birds					
White Peacock (*Pavo cristatus*)	4	-	-	*Ascaridia* sp. - 3	
				Capillaria sp. - 2	Coccidia-4
Painted Stork (*Mycteria leucocephala*)	3	-	-	*Ascaridia* sp. - 3	Coccidia-3

sample (10%) of Panther showed mixed infection of *Toxocara* and *Spirometra*. In herbivorous animals out of eight samples, six (75%) were positive. Among positive samples five (83.33%) were positive for *Trichostrongylus* and one each for *Strongyloid*, *Coccidia* and *Balantidium coli* infection, respectively. Two samples of Bluebull and Spotted Deer showed mixed infection - *Trichostrongylus* and *Balantidium coli* infection, and *Trichostrongylus* and Coccidian infection. Prevalence of these parasites had been recorded by Chakraborty *et al.* (1994) in Assam State Zoo. Although earlier workers (Chauhan *et al.*, 1973; Chakraborty *et al.*, 1994) recorded trematode infection in captive herbivores, in the present study no such parasite has been recorded and probably fewer samples from herbivores may be the reason. From the study, nematode and coccidian infections were most common in captive animals may be due to their direct life cycle where as trematode and cestode infections might have been low due to their indirect life cycle. Cestode infection in Panther may be mainly due to its hunting of reptiles and amphibians which may act as intermediate host for the parasites. Among carnivorous and herbivorous animals Modi *et al.*, (1997) observed 50 per cent and 46.67 per cent infection respectively at Bihar Zoo. Various infections against each host are given in Table 1.

Birds: On examination of seven faecal samples cent per cent parasitic infection was observed and mainly the ova of nematodes *viz*., *Ascaridia* sp. (85.71%) and *Capillaria* sp. (28.97%) and oocyst of *Eimeria* sp. (100%) were noticed. All samples showed mixed infection.

A similar type of study by Patnaik and Acharjyo (1970), Pande *et al.* (1970), Chauhan *et al.* (1973), Muraleedharan *et al.* (1990), Reddy *et al.* (1992) and Patel *et al.* (1998) revealed that 25 per cent to 99 per cent parasitic infection prevailed in captive birds. Normally all the birds feed on the ground and have access to insects and other arthropods, which act as intermediate host for many parasitic infections.

Conclusion

Usually captive animals and birds do not show alarming signs of parasitism due to regular deworming practices carried out in the zoo. Parasitic infections produce certain ill effects such as weakness and emaciation and predisposes the animals or birds to other potential pathogens. Therefore, epidemiological study of parasitic infections can curb losses due to parasites by adopting effective control measures to prevent the possible recurrence of existing infections. Further, a long term study is

essential covering all seasons to understand the implications of parasitism in captive animals and birds.

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UNUSUAL VULVAR EDEMA IN A CHIMPANZEE

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Two captive born Chimpanzees one male (July) aged about five and-a-half years and one female (Pompeta) of about three and-a-half years were brought to Nandankanan Zoo from Singapore Zoo on 16th May 1995. During regular inspection it was observed that the vulval lips of Pompeta were abnormally edematous and ulcerated one and-a-half month prior to delivery and persisted until 15 days after delivery. The ulcerations may have been due to irritation, scratching and her sitting posture. The wound was treated by spraying betadine 5% (Povidone-Iodine) lotion repeatedly to prevent suppuration. The vulval lips were normal after 30 days of delivery. It was reported that, during first pregnancy also there was edematous swelling of vulva which did not persist until delivery, rather it was intermittent without any ulceration.

Roberts (1971) stated that edema of vulva normally occurs when the cows approach parturition due to the effect of increased oestrogen and relaxin. In this case also the condition may be attributed to the effect of gonadal hormones. Estimation of hormones was not possible since the male did not permit the separation of female.

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