

Prevalence of parasitic infection in captive non human primates of Assam State Zoo, India

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Abstract

Aim: The study was conducted to know the parasitic infestation in captive non human primates of Assam State Zoo.

Materials and Methods: A total of twenty two faecal samples from non human primates of different species viz. Slow loris (*Nycticebus coucang*) (3), Pig tailed macaque (*Macaca nemestrina*) (3), Stump-tailed macaque (*Macaca arctoides*) (5), Assamese macaque (*Macaca assamensis*) (1), Bonnet macaque (*Macaca radiata*) (1), Golden langur (*Trachypithecus geei*) (6) and Hoolock gibbon (*Hylobates hoolock*) (3) were analysed from August, 2009 to December, 2009 by using routine sedimentation and floatation techniques as described by Georgi (1985). Identification of parasitic ova was carried out as described by Soulsby (1982) and Wallach and Boever (1983).

Results: Out of 22 faecal samples examined, 1 (20%) in stump-tailed macaque was found positive for *Oesophagostomum* spp. and 1 (16.67%) in golden langur and 1 (33.33%) in hoolock gibbon, were found positive for the presence of *Trichuris* spp.

Conclusion: Incidence of parasitic infection was 13.63% in captive non human primates of Assam State Zoo.

Key words: Assam State Zoo, non human primates, parasites

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Introduction

Whether living in the wild or in captivity, non-human primates are beset with a variety of diseases including an extensive list of parasite infections [1]. Parasitic diseases of wildlife are still in infancy in India and data are still on the base line [2]. These diseases constitute one of the major problems in management causing mortality and morbidity in wild animals in captivity [3]. Parasites of captive nonhuman primates generally are more limited than those reported for field studies and in wild-caught primates [4]. High levels of parasitism in captive animals can be attributed to abnormally high densities, cross-species transmission, and stress due to cold, fighting, caging, and confinement which exacerbate parasitic infections to the point of even causing death. The capture and quarantine of animals upon onset of captivity may result in high stress levels [5], and infection can be exacerbated by the confinement and stress primates experience in these captive environments [6]. Study of parasitic infection in captive non human primates is important to know the infection rate to prevent from morbidity and mortality of animals in the zoo.

The present study was conducted to provide the baseline data of fecal parasites in captive non human primates of Assam State Zoo.

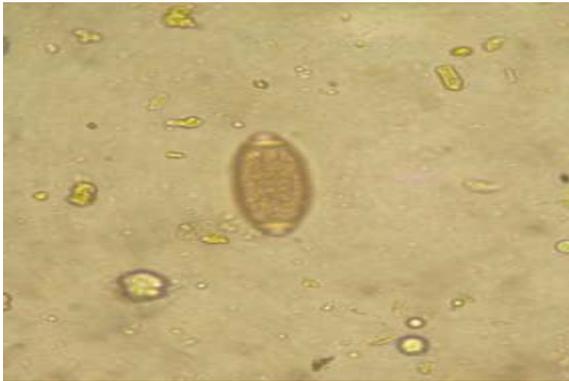
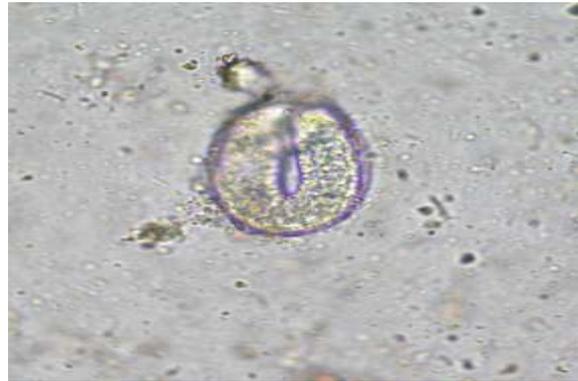
Materials and Methods

Fresh stool sample (10-15 gram) was collected from non human primates of different species viz. Slow loris (*Nycticebus coucang*) (3), Pig tailed macaque (*Macaca nemestrina*) (3), Stump-tailed macaque (*Macaca arctoides*) (5), Assamese macaque (*Macaca assamensis*) (1), Bonnet macaque (*Macaca radiata*) (1), Golden langur (*Trachypithecus geei*) (6) and Hoolock gibbon (*Hylobates hoolock*) (3) during the period from August, 2009 to December, 2009. The samples were properly labeled indicating name, age, sex, species and date of collection and were examined at Department of Parasitology, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati. Fecal samples were examined using concentration via sodium chloride floatation (for separating helminth eggs and protozoan cysts) and fecal sedimentation (for identification of trematodes) as described by Georgi [7]. Identification of parasitic

Table-1. Showing the prevalence of parasitic infection in captive non human primates at the Assam State Zoo

Non human primate species	No. of animal examined	No. of infected (%)	Ova of helminth	Intensity of infection*
Slow loris (<i>Nycticebus coucang</i>)	3	0	-ve	-
Pig tailed macaque (<i>Macaca nemestrina</i>)	3	0	-ve	-
Stump-tailed macaque (<i>Macaca arctoides</i>)	5	1 (20.00)	<i>Oesophagostomum</i> sps.	++
Assamese macaque (<i>Macaca assamensis</i>)	1	0	-ve	-
Bonnet macaque (<i>Macaca radiata</i>)	1	0	-ve	-
Golden langur (<i>Trachypithecus geei</i>)	6	1(16.67)	<i>Trichuris</i> sps.	+++
Hoolock gibbon (<i>Hylobates hoolock</i>)	3	1(33.33)	<i>Trichuris</i> sps.	+
Total	22	3 (13.63)		

* + : Light, ++ : Moderate, +++ : Heavy, - : Nil

Fig 1. Photograph showing ova of *Trichuris* spp. X400Fig 2. Photograph showing ova of *Oesophagostomum* spp. x400

ova was carried out as described by Soulsby [8] and Wallach and Boever [9].

Result

Out of 22, only 3 animals were found to be positive for parasitic infestation. The study recorded ova of *Trichuris* spp. (Fig.1) in golden langur (1) and hoolock gibbon (1) and *Oesophagostomum* spp. (Fig. 2) in stump-tailed macaque (1). The result of the investigation on the basis of faecal examination is presented in Table 1.

Discussion

The parasitic infection in non human primates were also recorded earlier by Lisa et al [10], Kalema-Zikusok et al. [11], Sanchez et al. [12], Ascaratte et al. [13]. Munene et al. [14] recorded *Strongyloids*, *Schistosoma mansonii*, *Streptopharagus* spp., *Entamoeba coli*, *Balantidium coli* and *Entamoeba histolytica* in non human primates whereas Parmar [15] recorded *Strongyloides* spp., *Trichuris* spp., *Entamoeba histolytica* spp., *Ascaris* spp. *Entamoeba coli*, *Spirometra* spp. in hanuman langur and rhesus macaques of Gujrat state. In addition to the parasites recorded in the present

study, Goswami [16] documented *Ascaris*, *Enterobius*, *Anchylostoma*, *Strongyloids*, *Entamoeba*, *Giardia* and *Balantidium* spp. in non human primates of Assam State Zoo.

The rate of infection seen in this study was lower than the rate of incidence recorded by the earlier workers. As the faecal samples examined were from the caged non human primates of the Assam State Zoo and due to periodical use of anthelmintics might be the reason of low incidence found in the study. The lower prevalence of parasitic infection in captive non human primates was similar with the findings of Legesse and Arko [17] and Lilly et al. [18]. As some parasites have indirect life cycle, the intermediate host have little chance to come in contact with captive animals and as such the incidence of cestode and trematode were found to be low [19].

Conclusion

Incidence of parasitic infection was 13.63% in captive non human primates of Assam State Zoo. The present study viewed that it is necessary to screening captive Non Human Primates of zoo for parasitic infection in a regular interval of time to control

morbidity and mortality of animals.

Author's contribution

Bichitra Gopal Nath and Apurba Chakraborty designed the study as this was a part of Bichitra Gopal Nath's MVSc thesis and Apurba Chakraborty was his major advisor. Bichitra Gopal Nath collected faecal samples. Bichitra Gopal Nath and Saidul Islam examined the faecal samples. All authors read and approve the final manuscript.

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Competing interests

Authors declares that they have no competing interests.

References

1. Kuntz, R.E. (1982). Significant Infections in primate parasitology. *Journal of Human Evolution*. 11:185-194.
2. Islam, S (2006). Parasites and parasitic diseases of wildlife. Proceedings of XVII National Congress of Veterinary Parasitology and National symposium on "Strengths, challenges and opportunities in Veterinary Parasitology (Nov. 15-17, 2006), 43-52pp.
3. Rao, A.T. and L.N. Acharjyo (1984). Diagnosis and classification of common diseases of captive animals at Nandankanan zoo in Orissa (India). *Indian Journal of Animal Health* 23(2): 148-152.
4. Cathy A Johnson-Delaney (2009). Parasites of captive nonhuman primates. *The veterinary clinics of North America Exotic animal practice*. 12(3): 563-581 PubMed: 19732709 www.ncbi.nlm.nih.gov.
5. Woodford, M.H. and Rossiter, P. (1994). Disease risks associated with wildlife translocation projects. In: Olney, P. J. S., Mace, G. M. and Feistner, A. T. C. (eds.) *Creative Conservation*. London: Chapman and Hall.
6. Toft, J.D.I. (1986). The pathoparasitology of nonhuman primates: A review. In: Benirschke, K. (ed.) *Primates: The Road to Self Sustaining Populations*. New York: Springer-Verlag.
7. Georgi, J.R. (1985). *Parasitology for Veterinarians*. 4th ed. W.B. Saunders, London, 344.
8. Soulsby, E.J.L. (1982). *Helminthes, Arthropodes and Protozoa of Domesticated animals*. 7th ed. ELBS, Bailliere Tindall.
9. Wallach, J.D. and Boever, W.J. (1983). *Diseases of Exotic Animals, Medical and Surgical Management*. 1st ed. W.B. Saunders Co. Philadelphia.
10. Lisa, J.E., Gregory, A.E., Michael, A.S., Jeffery, F., Umar, P. and Randall C.K. (2004). Prevalence of enteric parasites in pet macaques in Sulawesi, Indonesia. *Am. J. Prim.*, 62(2):71-82.
11. Kalema-Zikusoka, G., Rothman, J.M. and Fox, M.T. (2005). Intestinal parasites and bacteria of mountain gorillas (*Gorilla beringei beringei*) in Bwindi Impenetrable National Park, Uganda. *Primates*. 46(1): 59-63.
12. Sanchez, V.V.V., Patino, A.S., Segundo, V.J.P., Sandoval, J.A.C., Esquivel, C.V.C and Sanchez, T.A.C. (2009). Prevalence of Gastrointestinal Parasites among Captive Primates in Panama, *J. Anim. Vet. Adv.* 8(12):2644-2649.
13. Ascaratte, J.C., Hervier, B., Carrillo, S.V., Sarabia, D.O., Luna, D.O. and Veal, J.J. (2010). Parasitic infections of three Mexican howler monkey groups (*Alouatta palliata mexicana*) living in forest fragments in Mexico. *Prim.*, 51:231-239.
14. Munene, E., Otsyul, M., Mbaabu, D.A.N., Mutahi, W.T., Muriuki, S.M.K. and Muchemi, G.M. (1998). Helminth and protozoan gastrointestinal tract parasites in captive and wild-trapped African non human primates. *Vet. Parasitol.* 78(3): 195-201.
15. Parmar, S.M., Jani, R.G. and Mathakiya, R.A. (2012). Study of parasitic infections in non-human primates of Gujarat state, India. *Vet. World*, 5(6): 362-364.
16. Goswami, P.K. (1994). Studies on prevalence of pathological conditions of captive non human primate. M.V.Sc. thesis. Assam Agricultural University.
17. Legesse, M. and Erko, B. (2004). Zoonotic intestinal parasites in *Papio anubis* (baboon) and *Cercopithecus aethiops* (vervet) from four localities in Ethiopia. *Acta Trop.*, 90:(3) 231-236.
18. Lilly, A.A., Mehlman, P.T. and Doran, D. (2002). Intestinal parasites in gorillas, chimpanzees and humans at Mondika Research Site, Dzanga-Ndoki National Park, Central African Republic. *Ind. J. Prim.*, 23(3):555-557.
19. Chakraborty, A. (1991). Incidence and etiopathology on the mortality of captive wild herbivores in Assam. Ph.D. thesis, Assam Agricultural University.

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