

Poisoning and Mycotic Infection in Golden Langur (*Trachypithecus geei*) of Chakrashilla Wildlife Sanctuary, Assam

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Abstract: The present study examined two carcasses of golden langur (*Trachypithecus geei*) of Chakrashilla Wildlife Sanctuary, Assam, received by the Department of Pathology, College of Veterinary Science, AAU, Khanapara. The diseases recorded in two animals were organochlorine insecticide poisoning and zygomycotic gastritis. In the poisoning case, organochlorine compounds were detected from liver, kidney and intestine by the State Forensic Science Laboratory, Guwahati, India. In zygomycotic gastritis, growth on the serosal surface of stomach was observed and broad, aseptated fungal hyphae could be seen in both H&E stain and PAS stain sections. The study revealed that the use of organochlorine insecticide and other pesticides on rubber plants cultivated nearer to the Sanctuary might be the cause of the diseases in those animals.

Key Words: Non-human primates, Manash National Park, Cynomolgus monkey necrosis, insecticide poisoning, zygomycotic gastritis

INTRODUCTION

Non-human primates are an important group of animals for their closeness to human beings. They form an integral part of biodiversity and a cognizable link between human and nature. Golden langur (*Trachypithecus geei*) is one of the endangered species of non-human primates of South Asia. The species is endemic to the border of northwestern Assam, India and south central Bhutan. In India, except for a part of Manash National Park and Chakrashilla Wildlife Sanctuary, majority of the population of the species live in reserved forests and other unclassified forests with less or no protection coverage.

Primates are susceptible to wide varieties of infectious diseases of which many are transmissible to man (Wallach and Boever 1983). Though mycotic infection in non human primates is not common, a few reports have been published (Brexnock *et al.* 1975; Migaki; Daniel *et al.* 1984; 1982 and Chakraborty and Goswami 1996). Torres-Urbano *et al.* (2010) recorded disseminated zygomycosis in a 4 year cynomolgus monkey. The poisoning cases like lead poisoning (Zook and Sauer 1973; Joel and Zdenek 1984; Zook *et al.* 2005) and organophosphorus poisoning (Goswami 1994) have been recorded in non-human primates.

MATERIALS AND METHODS

The study examined two carcasses of golden langur

of Chakrashilla Wildlife Sanctuary, Assam at the Department of Pathology, College of Veterinary Science, AAU, Khanapara. The gross lesions were recorded and tissue samples preserved in 10% formalin saline solution were processed and stained by routine haematoxyline and eosin (H&E). Special staining technique/methods such as Brown and Brenn, Zeihl-Neelsen's and modified Periodic Acid Schiff (PAS) were undertaken.

RESULTS

Poisoning

At post mortem examination of a golden langur, no significant gross lesion could be detected in any organ except that liver showed focal areas of necrosis. Organism could not be isolated from the heart blood culture. Microscopically, the lung showed severe congestion in the pulmonary capillaries and hemorrhage into the alveoli. Inflammatory cells were noted in the interstitial spaces. There was marked necrosis of the hepatic lobules and a few hepatocytes were present at the perilobular areas. Pieces of liver, kidney and intestinal loop were sent to the State Forensic Science Laboratory, Guwahati and laboratory results confirmed the case as organo-chlorine insecticide poisoning as the tissues of liver and kidney and intestinal content were positive for the insecticide.

Mycotic infection

At necropsy of another golden langur, a growth on the serosal surface of the stomach was recorded

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and mucosal surface showed suppurative lesions. No organism could be isolated from any organ. Histopathological examination of growth of the stomach showed central area of caseous necrosis with infiltration of mononuclear cell surrounded by thick connective tissue capsule. Focal necrotic areas were also seen in the mucosa and submucosa and within the necrotic tissue thin walled, broad, aseptated fungal hyphae (Fig. 1) could be noticed in H&E stained sections and upon staining by modified PAS the hyphae were clearly demonstrated. The fungus was identified as zygomycotic fungus.

DISCUSSION

Poisoning and mycotic cases in non-human primates are not very common. In the present study, the poisoning case reported in the present study was a free ranging animal whereas Goswami (1994) recorded in a captive animal and the source could not be confirmed. Fungal diseases such as mucormycosis in the alimentary tract of nonhuman primates have been reported, with candidiasis and mucormycosis observed most often. Torres-Urbano *et al.* (2010) reported disseminated zygomycosis in cynomolgous monkey and found nonseptated, branching hyphae in sections of the stomach and mediastinal lymph nodes consistent with a zygomycete. Similar fungal hyphae were also recorded in the present study.

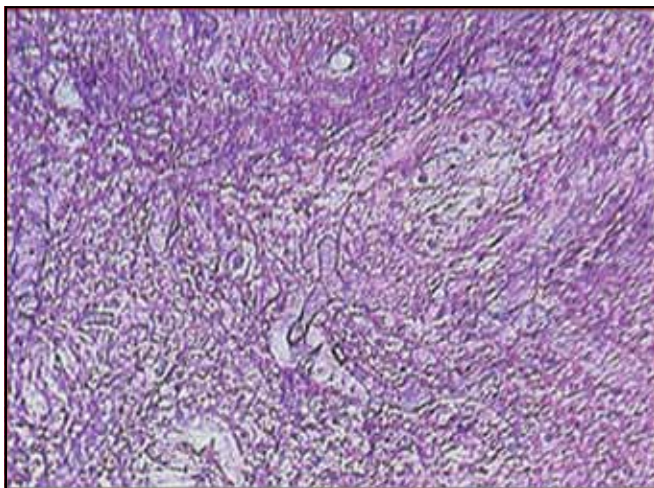


Fig. 1 Photomicrograph of stomach showing broad aseptated fungal hyphae embedded within the necrotic tissue. H&E X 400

Both the animals were from Chakrashilla Wildlife Sanctuary and the disease diagnosed gave an idea that the source of the diseases was same. It was known that nearer to the protected area extensive rubber cultivation was going on and organo-chlorine insecticide and other pesticides were routinely used in those plantations. The langur often eats the tender buds of the rubber plants and may consume these toxic materials in low doses. This could have resulted in chronic toxicity and as a result the immune system may be lowered down. As the

immune system lowers down, the opportunistic fungus gets the chance to infect and cause disease in animals. The hot and humid climatic condition of the region is congenial to rapid development of fungal growth; this may be a reason of high incidence of fungal infection in animals of this region. The need of the hour is to evolve a policy so that the golden langur can be conserved in its natural habitat and rubber plantation is also not affected or damaged.

ACKNOWLEDGEMENTS

The authors are grateful to the authority of Chakrashilla Wildlife Sanctuary for the materials and to the Head, Department of Pathology, College of Veterinary Science, Assam Agricultural University (AAU), Khanapara, India, for providing the facilities.

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