



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; SP-11(5): 659-6660
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www.thepharmajournal.com
Received: 01-03-2022
Accepted: 31-05-2022

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A case report on gastrointestinal Strongyle infection in a captive Asian elephant, Puducherry

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Abstract

Asian elephants (*Elephas maximus*) in India have been closely associated with humans and its role in country's culture, economy and religion is inseparable. Research on parasites of elephants is minimal and reports on internal parasitism in Puducherry region was not recorded earlier. A captive temple elephant was presented for routine checkup from Krishi Vigyan Kendra, Puducherry. Examination of fresh faecal samples by direct examination as well as concentration techniques revealed the presence of strongyle infections.

Keywords: Asian elephant, captive, strongyle, flotation, Puducherry

Introduction

Elephants are the largest living land animal and a migrating herbivore and thus exposed to different climates with different food habits and are more prone to gastro intestinal parasitic infections. Elephants in India are found captive in various places like zoos, sanctuaries, temples etc. and they are the well known species among animals kept captive.

Both Asian (*Elephas maximus*) and African (*Loxodonta* spp.) elephants are reported to be parasitized by different gastrointestinal nematodes especially Strongyles (Family: Strongylidae). Six genera of Strongyles are known to infect African elephants: *Choniangium* sp., *Decrusia* sp., *Equinurbia* sp., *Khalilia* sp., *Murshidia* sp., and *Quilonia* sp. (Kinsella *et al.*, 2004) ^[1]. Higher prevalence of strongyles in Wayanad, Elephant Reserve, Kerela, India revealed that feco-oral transmission is the probable source of infection to elephants (Abhijith *et al.*, 2018) ^[2]. Shahi and Gairhe (2019) ^[3] reported 41.46% (34), 43.90% (36) and 14.63% (12) samples had trematodes, nematode and cestodes infection respectively out of 38 positive fecal samples screened, from wild Asian elephants.

Puducherry a tropical semi-arid steppe region situated 11.94° N and 79.53° E, usually experiences north-east monsoon during September - October and humid harsh summer in mid March to August favours the growth of parasites especially the nematodes. The distribution of helminth parasite of animals is a result of combination of action and interaction of abiotic and biotic factors including behaviour and interaction with intermediate host. Studies on gastro intestinal parasitism in captive elephants is scanty and was never reported in the past from Puducherry, India.

Materials and Methods

An apparently healthy elephant (from a local temple) aged about 30 years was brought to Krishi Vigyan Kendra campus, Puducherry and was subjected for routine health check up under supervision of experts from RIVER including staff of department of Veterinary Parasitology. The fresh dung sample just after defecation was grossly examined for any helminthes and then about hundred gram of sample was collected in clean sterile container as a part of routine investigation of parasitic load.

The sample was subjected for direct and concentration technique (floatation and sedimentation) in the department. For direct faecal examination small quantum of debris free dung sample was mixed with distilled water and sieved through the strainer to remove the coarse materials, if any. A faecal smear was made from the drop of processed material on a clean glass slide and was examined under 10 X magnification. A part of the above processed faecal material was also subjected for sedimentation technique under centrifugation at 2000 rpm for two minutes. A small quantity of debris free dung sample was mixed with saturated salt solution (Sp.gr. 1.18-1.20) in a mortar and pestle and a clear suspension was subjected for

floatation technique by Willi's method. A flotation tube was filled with saturated fluid and a cover slip was kept at the brim avoiding trapping of any air bubble and left undisturbed for 12 to 15 minutes. The cover slip was transferred over a glass slide turning upside down and examined under 10X objective.

Result

The faecal sample subjected for faecal examination (direct and concentration) techniques for the examination of dung sample was done. The eggs were identified as strongyle egg under flotation technique (Fig. 1 & 2). According to Fowler and Mikota (2006) [4], elephant strongyles are similar to those of domestic livestock.

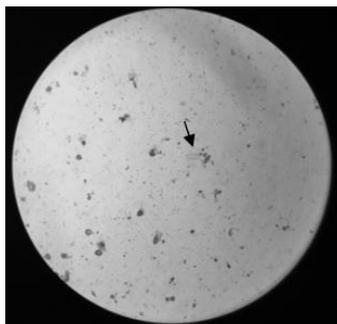


Fig 1: Strongyle ova (under 10x objective)

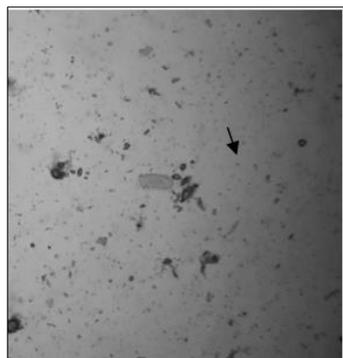


Fig 2: Under 40X objective

Discussion

A gastro intestinal helminthic infection cannot be attributed to a single reason but it is an output of other influencing factors like climate and atmospheric factors (temperature, humidity and winds), edaphic factors (soil), hydrological factors, geomorphological factors, orographical factors (landscape, altitude, biotic factors) as well as cultural, traditional, behaviour and rituals of local people.

Vimalraj and Jeyathangaraj (2015) [5] reported a high prevalence of Strongyles (64%), *Strongyloides* sp. (16%) and mixed infection of Strongyles and *Strongyloides* sp. (20%) in Mudumalai Wildlife Sanctuary (MWLS) as well as in Anamalai Wildlife Sanctuary (AWLS). Among the three elephant-specific strongyle nematodes under Genera: *Murshidia*, *Quilonia*, and *Khalilia* - *Murshidia* was the most common (McLean *et al.*, 2012) [6]. Abeyasinghe *et al.*, (2017) [7] found all samples from wild elephants to be positive for strongyles but high variation in parasite load among samples. Understanding patterns of strongyle infection in elephants is hampered by the fact that species of strongyles are difficult to distinguish using eggs and larvae in fecal samples (Bowman *et al.*, 2003) [8]. Strongyle eggs are often morphologically

indistinguishable, and successful morphologic identification of larvae generally requires considerable training.

Acknowledgement

The authors are hereby thankful to Dr.K. Rajkumar, Professor, Department of Veterinary Medicine for forwarding the sample and The Dean, Rajiv Gandhi Institute of Veterinary Education and Research for providing necessary laboratory facilities to carry out screening process.

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