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Prevalence of *Paratanaisia* sp in local pigeon in Guwahati, Assam

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Abstract

A study was conducted to record the prevalence of *Paratanaisia* sp. in domestic pigeon in an around Guwahati for one calendar year. A prevalence percent of 9.63 was recorded upon examination of 250 faecal sample while a prevalence percent of 13.40 was noted from kidney tissues.

Keywords: *Paratanaisia* sp, pigeon, faecal sample and kidney

Introduction

Paratanaisia bragai is a digenean trematode which is found in the kidney of a wide variety birds including domestic and wild birds. So far the parasite has been reported from American continent and the Phillipines (Maldonado., 1941; Travassos *et al.*, 1969; Mena *et al.*, 1986; Fedynich *et al.*, 1996) [7, 11, 8, 4].

Pinto *et al.* (2004) [9] reported the occurrence of *Paratanaisia bragai* infection in a ruddy ground dove *Columbina talpacoti* from the sub-urban area of Rio de Janeiro, Brazil. They examined a total of 10 numbers of doves and found *P. bragai* infection in 1 dove (10%) only. The authors could recover 116 parasites from 1 kidney which showed that, the intensity of infection was high.

Gomes *et al.* (2005) [5] reported the occurrence of kidney trematode *P. bragai* for the first time in ring-necked pheasant (*Phasianus colchicus*, L. 1758) in Brazil. The prevalence of *P. bragai* was 22 percent. The mean intensity was 44.3 and mean abundance was 9.7 along with the range of infection was 3-153 in a total of 487 worms. The pathological alterations associated with the parasitism are referred on the basis of 50 specimens of this bird from backyard flocks in 11 counties of the state of Rio de Janeiro, Brazil.

Brener *et al.* (2006) [1] reported the presence of *Paratanaisia* sp. from the turkeys in Brazil. The prevalence percent was recorded 20 percent of the cases from May 2004 to October 2005. The range of infection was 1-209 worms (from 1 of the kidneys only) and a mean of 38 parasites in turkey was found in Brazil.

Bunbury *et al.* (2008) [2] reported *Paratanaisia bragai* in an adult male pink pigeon as incidental finding in Mauritius while evaluating the causes of mortality in free-living Mauritian pink pigeons *Columba mayeri*, for a period from 2002-2006.

Survey of literature revealed that, studies on *Paratanaisia* sp. is very scanty in India.

Borah *et al.* (2009) [3] recorded the occurrence of the parasite *Paratanaisia bragai* in domesticated pigeon of Assam. Out of 214 birds examined, (39.47%) were found positive for this parasite in the kidney of local pigeon.

The aim of the present study was to study and the record the prevalence data of *Paratanaisia bragai* in local pigeon in an around Guwahati.

Materials and Methods

Study area of materials collection

Materials for the present study were collected from different places of Guwahati city, i.e., Kamakhya temple premises, Uzaan bazaar, Ganeshguri and Khanapara areas.

Prevalence on the basis of faecal findings

To study the prevalence of *Paratanaisia* on the basis of faecal egg findings, faeces were collected from the study area and examined in the laboratory.

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Collection of faecal sample

Individual fresh faecal samples, naturally voided by local pigeons from the vicinity of Kamakhya temple, poultry markets located at Uzaan bazaar and Ganeshguri, Khanapara areas, were collected in clean plastic bags. Samples were immediately brought to the Department of Parasitology, College of Veterinary Science, Khanapara for detection of the presence of helminth ova.

Examination of faecal sample

Faecal samples were processed by conventional floatation technique using 33% Zinc sulphate solution as described by Soulsby (1982) [10]. Previously a number of adult *Parataniaisia* specimens were crushed and their eggs were obtained. The morphology and micrometry of the eggs were obtained and were photographed for record. The eggs found in the present faecal sample examination were compared with the known shape and size of the eggs of *Parataniaisia* and recorded.

Prevalence on the basis of parasite found in the carcass

In the present study local pigeon carcass irrespective of age and sex were collected from the study areas. They were brought to the Department of Pathology, C.V.Sc, Khanapara for post-mortem examination. During the post-mortem examination the kidneys and the ureters were carefully examined for the presence of *Parataniaisia* sp. and recorded accordingly.

Results

Prevalence of *Parataniaisia* infection based on faecal sample examination

A total of 250 faecal samples of pigeon were examined during the present study for the presence of *Parataniaisia* sp. ova, of which, 24 samples were found positive for infection. The per cent prevalence was 9.63. The eggs were colorless, gradually tapered at both the ends, had a miracidium inside with numerous refractile particles and an operculum at one end. The average length and breadth of the eggs measured were 35.61 X 15.05 µm (Fig.1).

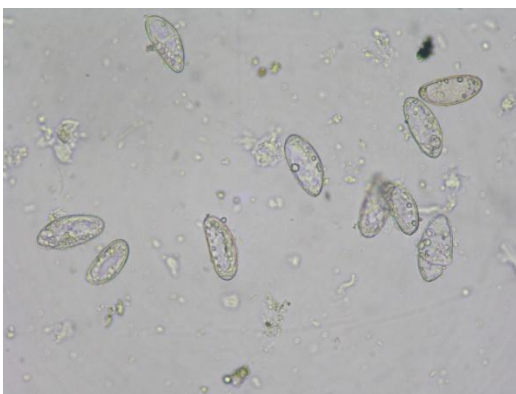


Fig 1: Eggs of *Parataniaisia bragai* in faecal floatation technique X 400

Prevalence of *Parataniaisia* infection based on parasite found in carcass

In the present study, a total of 194 pigeon carcass, were examined for the presence of *Parataniaisia* sp. infection in the kidney and ureter, of which, 26 carcasses were found positive. The per cent prevalence of *Parataniaisia* sp. in pigeon recorded in this study was 13.40. Upon post mortem of the carcass the parasite were found to fill the entire circumference

of the ureter in all the positive cases (Fig 2). In most of the carcasses, the whole parasite was found to be mixed with excreta at the cloaca. Many of the ureters containing *Parataniaisia* sp. was found to be distended with uric acid.

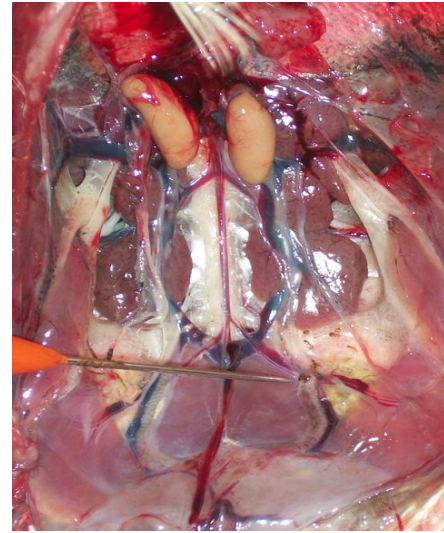


Fig 2: Ureter of a local pigeon showing presence of *Parataniaisia* sp. (Pin Head) parasite and congested blood vessels

Discussion

In the present study, both faecal sample and carcass of local pigeon were examined to record the prevalence of *Parataniaisia* infection for one calendar year i.e., Jan 2012 to Dec 2012.

A total of 250 fresh faecal samples were examined by salt floatation method for the presence of *Parataniaisia* sp. ova, of which, 24 samples were found positive for infection with this parasite. The per cent prevalence was 9.63. Survey of literature revealed no significant previous works pertaining to the detection of *Parataniaisia* infection from faecal sample of infected pigeon. Hence, the present finding of eggs of *Parataniaisia* sp. in faeces of pigeon could not be compared with any published literature. The length, breadth and shape of the eggs as mentioned elsewhere (Fig.4.1) is expected to provide clinical diagnostic help for parataniaisiasis in pigeon. The egg also contains a developed miracidia inside (Fig.4.1). An experimental study was conducted by Maldonado (1945) [6] in San Juan, Puerto Rico with *T. bragai*-domestic pigeon as parasite-host model. From the results obtained, he remarked that, eggs were usually found in great numbers in the fluid part of the droppings. He also opined that, in heavy infections the parasite irritates the site of habitation leading to increase in excretion, so that urine free from faeces is generally passed out. In such cases, eggs were found in heavy concentrations. He suggested that, examination of solid faeces constitutes a reliable diagnostic material because this is admixed with urine in the cloaca.

In the present study, a total of 194 local pigeon (*Columba livia*) carcass was examined for the presence of *Parataniaisia* sp. infection, of which, 26 carcasses was found positive for *Parataniaisia* sp. infection. The per cent prevalence of *Parataniaisia* sp. was 13.40. Earlier, Pinto *et al.* (2004) [9] reported the presence of *Parataniaisia* sp. in Ruddy ground dove in the suburban areas of Rio de Janeiro, Brazil, the percent prevalence being 10. From the state of Rio de Janeiro, Brazil, Gomes *et al.* (2005) [5] reported 22 percent prevalence of *P. bragai* in Ring necked pheasant. The infection was recorded from turkey (*Meleagris gallopavo*) in Brazil (Brener *et al.*, 2006) [11] with a prevalence per cent of 20. *Parataniaisia*

bragai infection has also been reported from free-living endangered Mauritian pink pigeons (*Columba mayeri*) of Mauritius (Banbury *et al.*, 2008) [2]. The prevalence rate recorded was 2. Borah *et al.* (2009) [3] reported a 39.47 percent prevalence rate of *P. bragai* in the kidney of domestic pigeon (*Columba livia*) from Assam, India. It has been observed that, infection with the species *Paratanaisia bragai* is not uncommon in pigeon of different species. However, the intensity of infection varies from place to place. While Borah *et al.* (2009) [3] recorded a comparatively higher prevalence (39.47%) from Guwahati area, the present prevalence was lower (13.40%) within a span of 5 years. This decrease prevalence rate might be due to the fact that, in the present study, the pigeon population studied was from different parts of the city. The vendors collected the birds from different neighboring villages and brought for sell in the city. The area of origin of the pigeon might have reduced infection, which reflected in the lower percent prevalence. The parasite requires a terrestrial snail intermediate host for the completion of its life cycle (Maldonado, 1945) [6]. However there is no information on the intermediate host involved for this parasite from this part of the country. The bionomics of intermediate host is also important for the maintenance of infection in final host. It is assumed that, as the infection occurs in turkey (Brenner *et al.*, 2006) [1], there is possibility of its existence in domestic fowl, too. However, this requires detailed field studies to understand the exact prevalence pattern of this parasite in local pigeon.

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