Prevalence of helminthic and protozoan infections in pigeons- in and around Hyderabad of Telangana state.

Sudhakar Kommu, Rajeshwari G, Sreenivasamurthy GS*

Department of Veterinary Parasitology, College of Veterinary Science, Rajendranagar, Hyderabad-500030, Telangana

Abstract

The present study was undertaken to observe the overall helminthic and protozoan infection of pigeons in and around Hyderabad city. Out of 370 fecal samples screened 90 samples were found positive for helminthic infection (24.3%), among these cestode infections has highest percent 15.1 (56/370) followed by nematode infection 9.1% (34/370) and protozoan infection is 32.7% (121/370). The percent infection, species wise are *Raillietina* sp. is 7.0% (26/370), *Davainea* sp. is 8.1% (30/370) *Capillaria* sp. is 4.32% (16/370) and *Ascardia* sp. is 4.86% (18/370). The percent of protozoan i.e., *Eimeria* infection (unsporulated oocyst) is 32.7% (121/370) and 12.59% of *Haemoproteus columbae* gamonts infection in stained blood smear (17/135). This concludes that the overall incidence of helminthic infection in pigeons is high because of migratory behavior and it is alarming the epidemiologists that scenario of migratory birds contributing significantly to the spread of parasitic diseases, a better understanding of their role in the disease epidemiology has to be gained by implementing surveillance and tracking strategies.

Keywords: Helminthic and protozoan infections, Gastro-intestinal parasites, Microbes, Columbiformes.

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Introduction

Pigeons of the order Columbiformes are ubiquitous species of birds and can be found in virtually every town and city around the world [1]. Like other microbes and it also harbors various parasitic diseases, among these, gastrointestinal helminths are the most deleterious parasites responsible for occurrence of clinical and subclinical parasitic conditions [2]. Similar to helminthes, coccidiosis is one of the important protozoan diseases of bird's exhibit fluffy feathers, anorexia and watery diarrhea with mucus and results in mortality and morbidity [3-5]. Similar to plasmodium species, *Haemoproteus columbae* produces peak parasitemia in peripheral blood responsible for death of the birds [6,7]. The present study was performed to determine the prevalence of parasites in the faecal and blood samples of the pigeons in and around Hyderabad which will ultimately assist the veterinarians regarding epidemiological forecasting to take appropriate measures against to parasitic diseases.

Materials and Methods

Study area

The study was conducted for a period of six months starting from December 2013 to May 2014 in and around Hyderabad.

Sample collection and examination

During this investigation, a total of 370 fresh faecal samples were collected and preserved individually in 10% formalin. Later, all the samples were brought to the Parasitology laboratory at College of Veterinary Science, Rajendranagar, Hyderabad for further examinations by using three different types of qualitative tests (direct smear, flotation and sedimentation techniques) were used to examine the faecal samples to identify the morphological features of eggs, cysts, oocysts [8,9]. Around 135 blood samples were collected directly from the wing vein and blood smears were prepared and stained with Leishman's stain (Tables 1 and 2).

Results

Six different types of gastro-intestinal parasites were detected in faecal samples viz *Eimeria* sp. (32.7%), *Davainea* sp. (8.10%), *Raillietina* sp. (7.0%) were commonly found *Balantidium coli* cysts constitute 5.7%, *Ascaridia* ova (4.86%) and *Capillaria* ova (4.32%) were moderately found in the sediment fecal samples.

A total of 135 blood smears were examined for haematozoan parasites out of which 12.5% were positive for *Haemoproteus columbae* gamonts (Figure 1).

***Table 1**. Prevalence of Gastro-intestinal helminth and protozoan parasites in pigeons.*

	Number of faecal samples examined	Number of positive samples	Prevalence (%)
Raillietina sp.	370	26	7.0
Davainea sp.	370	30	8.10
Eimeria oocyst	370	121	32.7
Capillaria sp.	370	16	4.32
Ascaridia sp.	370	18	4.86
Balantidium coli cyst	370	21	5.70

***Table 2.** Prevalence of protozoan parasite in pigeons.*

Protozoan parasite	Number of blood samples examined	Number of positive samples	Prevalence (%)
Haemoproteus columbae	135	17	12.59

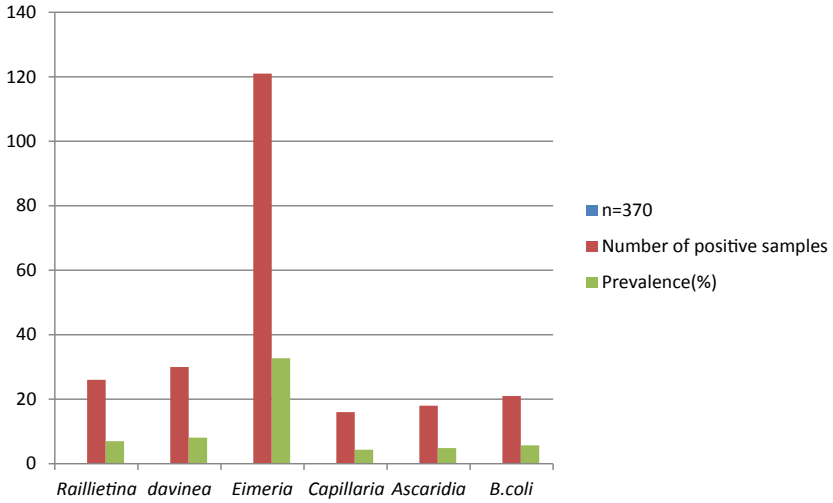

Figure 1. *Prevalence of Gastro intestinal parasitic infections in pigeons.*

Discussion

Prevalence of gastro-intestinal parasites

The present study depicting 38.4% prevalence for protozoa with the detection of *Eimeria* species oocyst (32.7%) [1] and prevalence of *Balantidium coli* cyst was 15.14%. In the present study *Davinea* sp. showed highest rate (8.1%) which is in contrast with findings of [10-12]. Where they recorded 44%, 80%, 63% prevalence of *Raillietina* species. In this study the prevalence of *Raillietina* species was 7%. Among nematodes, occurrence of *Ascaridia* species and *Capillaria* species were much lower than the observation made by the Rabbi et al. [13].

Prevalence of haemoprotozoan disease

During the present study, blood parasites were quite abundant but their distribution and prevalence markedly varies from region to region and from one avian family to other Indian subcontinent. The relative frequency of *Haemoproteus columbae* found in this study in agreement with the Levine and Kantor; Desser and Bennett, found a range of 28-100% occurrence of *Haemoproteus* in domestic pigeons. *Haemoproteus* infection rate may be as high as 75% ranging from 6-86%. Because migratory nature of birds is indicative of local transmission and presumably gametocytomia with *Haemoproteus* species which is controlled by the physiology of the host species and infection [6, 7, 14-19].

Conclusion

The study was performed to determine the prevalence of gastro-intestinal and haemoprotozoan infections in pigeons in and around Hyderabad. To explore overall idea about the distribution of the disease and also provides epidemiological status in the occurrence of parasitic diseases.

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***Correspondence to:**

Sreenivasamurthy GS
Associate Professor, Department of Veterinary Parasitology,
College of Veterinary Science, Rajendranagar,
Hyderabad-30, Telangana State,
India.
Tel: 08143849489
E-mail: gssmurthy26@rediffmail.com