

A study on the gastro intestinal parasites of domestic pigeons in YSR Kadapa district in Andhra Pradesh, India

Abstract

A study was conducted to record the prevalence of gastrointestinal parasitic infections in domestic pigeons (*Columba livia*) in YSR district of Andhra Pradesh in India. A total of 132 pigeons from four different farms were examined for the presence of gastrointestinal parasites. Faecal samples were obtained from individual birds and processed by direct examination, flotation technique and sedimentation techniques. Overall 72.7% of the birds harbored parasites including *Ascaridia colombae* (33.3%), *Eimeria spp* (31.0%), *Capillaria colombae* (17.4%) and *Raillietina* (9.0%). Most of the pigeons were more likely to harbor mixed infections (31.8%). In the present study, there is a relation between the occurrence of gastrointestinal parasitic infections with the age of the pigeons which showed that high prevalence in adults (75%) when compare to squabs (64.2%).

Keywords: endoparasites, pigeons, YSR district, India

Volume 2 Issue 6 - 2015

Sivajothi S,¹ Sudhakara Reddy B²

¹Department of Veterinary Parasitology, Sri Venkateswara Veterinary University, India

²Teaching Veterinary Clinical Complex (Veterinary Medicine), Sri Venkateswara Veterinary University, India

Correspondence: Sivajothi S, Department of Veterinary parasitology, College of Veterinary Science, Sri Venkateswara Veterinary University, Proddutur- 516360, YSR Kadapa District, Andhra Pradesh, India, Email sivajothi579@gmail.com

Received: November 1, 2015 | **Published:** November 25, 2015

Introduction

Domestic pigeons (*Columba livia domestica*) are ubiquitous in nature and associated with humans in every place around the world. Pigeons often occupying the premises of people and causes contamination of surroundings with their droppings. Pigeons are used as pets, cultural and religious symbols.¹ Domestic pigeons don't go for migration, but if allowed they return to their nests from long distance due to their good homing ability. Pigeons can carry many parasites and pathogens to different flocks.² They can also serve as a source for different zoonotic diseases for humans.³ Birds can be parasitized by a wide variety of ecto and endoparasites that is nematodes, trematodes, cestodes, acanthocephalans.^{4,5} Due to an increased risk of exposure, parasites can lead to serious problems or even to death in birds kept for prolonged periods in confined housings, and stressed by injuries, illnesses, or adaptation to new environments.⁶ A good knowledge about the parasitic disease of the pigeons would aid in the development of possible control measures, which may help in enhancing its survival and complement efforts towards public enlightenment. Research work on parasitic infections of poultry in India was done so many years back although most pigeons (*Columba livia*) are domesticated. However, there is a huge literature on avian medicine including parasitic diseases⁷ little has been documented about the parasites in pigeons. Studies on the distribution of the different parasitic infections will help to the clinicians for their treatment and aware the farmers to take appropriate control measures.

Materials and methods

The Present study was carried out in four different pigeon farms located in YSR District of Andhra Pradesh, India. In each farm, birds were maintained in free range system. Present investigation was carried out for a period of four months from November, 2013 to February, 2014 a total of 132 birds (104 adults and 28 squabs) were

considered for present study. Faecal samples were collected into a dry vial from the cloacal orifice by gently squeezing the abdomen. Examination of faeces was carried out by gross examination, direct smear technique, sedimentation and floatation techniques. Faeces were grossly examined for the presence of proglottids of cestodes. The direct smear technique was done for examination of coccidial oocysts. Direct smear, this method was done by mixing a drop of tap water with bit of feces using an applicator stick on glass microscopic slide covered with slip and examined at low and high power. The floatation and sedimentation techniques were used for detecting eggs, cysts, oocysts.^{8,9} The parasites were identified according to keys developed by Soulsby.¹⁰ Different types of ova observed in individual samples from adults and squabs were recorded separately to know about the multiple parasitic infection status. Obtained data were analyzed by using statistical software by Chi-Square Test.

Results

Clinical examinations of the sick pigeon's emaciation, dullness and diarrhoea (greenish to white). Young birds had history of losing much body weight with slow growth rate and high rate of mortality. Results of the coprological examination are summarized in Table 1 & Figure 1. Out of the 132 pigeons examined, 84(63.6%) were infected by five species of parasite helminthes comprising one species of cestodes and three species of nematodes. The species of cestodes were included *Raillietina spp.*, while the nematodes were *Ascaridia colombae* and *Capillaria spp.* The intestinal protozoan parasites were *Eimeria spp.* Among 132 pigeons, 36.6% had multiple infections with internal parasites. Present study indicated that prevalence rate of various helminthes including *Ascaridia colombae* (33.3%), *Eimeria spp* (31.0%), *Capillaria colombae* (17.4%) and *Raillietina* (9.0%). In the present study, higher infection rate was recorded in adults when compare to squabs.

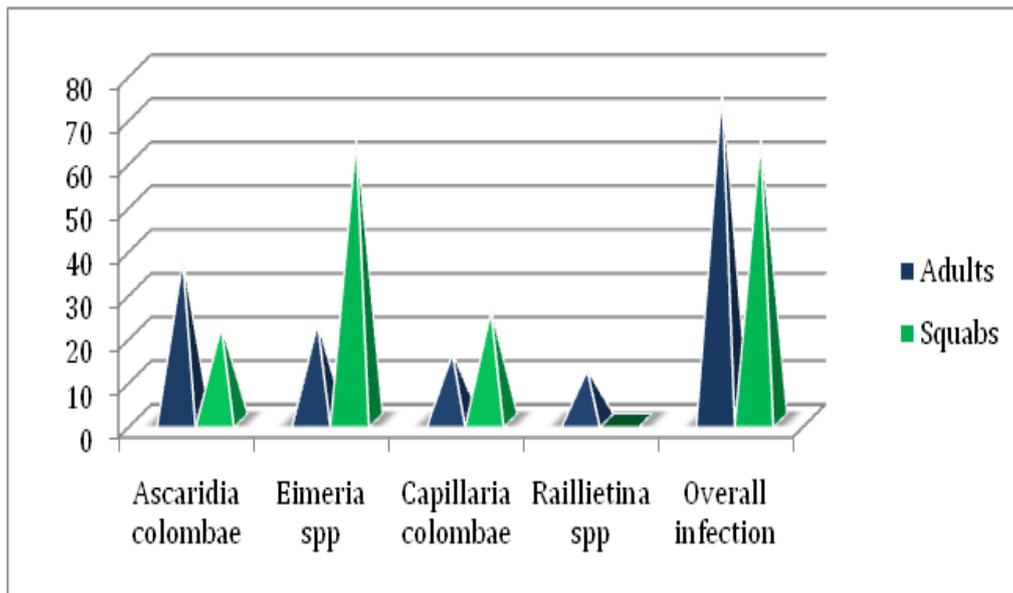


Figure 1 Graphical representation of parasites prevalence.

Table 1 The prevalence of endo-parasitic infections in different age groups in domestic pigeons

Name of the parasite	Adults(104)		Nestlings(28)		Overall%	Chi square value	P value
	Number	%	Number	%			
<i>Ascaridia colombae</i>	38	36.5	6	21.4	33.3	2.27	NS
<i>Eimeria spp</i>	23	22.1	18	64.2	31	18.32	**
<i>Capillaria colombae</i>	16	15.3	7	25	17.4	1.42	NS
<i>Raillietina spp</i>	12	11.5	0	0	9	3.55	NS
Overall infected pigeons	78	75	18	64.2	72.2	1.28	NS

NS, Statistically not significant (P>0.05)

*, Statistically significant (P<0.05)

**, Statistically highly significant (P<0.01)

Discussion

An endoparasitic infection causes debilitation, retarded growth in birds and hidden economic losses to the farmers.¹¹ In the present study, high (63.6%) parasitic infection was recorded and it might be due to constant source of infested droppings or infested intermediate hosts. A nestling also infected with parasitic infection which indicates early age infection.¹² In the present study, tematode parasitic ova were not detected. It might be due to presence of lower number of intermediate hosts. On gross examination of faeces, proglottids of cestodes were found in 12 samples. It was not possible to identify the cestodes as scolices were missing. But in four samples, ova of cestodes also noticed. Cestodes were the only helminths, found in the direct examination of faeces 12 out of 132 birds. Due to presence of these cestodes birds were in lethargic state and proglottids were passed in faeces, diagnosis should be made at necropsy, where mucosal scrapings were examined microscopically to detect the cestode species.¹³ *Ascaridia colombae* is one of the most common (33.3 %) helminth species in pigeons in this study. Heavy infection of *Ascaridia colombae* causes mild catarrhal enteritis, obstruction, dilation and mild to necrotic ulcer in small intestine. The low prevalence of *Capillaria sp* and *Syngamus trachea*

infection was in consonance with the findings of Sari et al.¹ Mixed parasitic infections were also recorded in the present study. This might be attributed to food preference at a particular time which determines the establishment of mixed or single infection.¹⁴

In the present study *Raillietina* showed low prevalence (11.50%). It was lower compare with the other studies conducted by the Musa et al.¹⁵ and Msoffe et al.¹⁶ where they found 50% and 63% prevalence of *Raillietina echinobothridia* respectively. Parasitic infection in pigeon can be affected by food supply, geographic location and climatic conditions and the availability of intermediate hosts. Khezerpour & Naem¹⁷ recorded the different cestode infections which includes *Raillietina echinobothrida* (10.14%), *R. Tetragons* (2.89%) and *R. Magninomida* (1.44%). Low prevalence of *Ascaridia colombae* (13.04%) was recorded which is lower than the present study. In the present study, there is a relation between the occurrence of gastrointestinal parasitic infections with the age of the pigeons which showed that high prevalence in adults (75%) when compare to squabs (64.2%) but it was not statistically significant (P>0.05). Prevalence of *Ascaridia and Capillaria sp* infections were in association with the previous records by Ghosh et al.,¹⁸ who recorded the occurrence

of *Ascaridia galli* (32%) and *Capillaria* sp infections (26%) in pigeons. Coccidia are common pathogenic parasites in pigeons. In the present study, coccidiosis is most commonly seen in young pigeons than in adult birds. Coccidiosis usually runs without clear clinical manifestations.¹⁹ Coccidiosis affected pigeons look like healthy, but have dullness and occasional watery diarrhoea. In the present study, young pigeons were more affected than compare with the adult birds. It is due to lack of acquired immunity in the young pigeons. Infection can also occur in older birds and they can act as carriers, and an important source of infection for other birds.¹⁰

Usually pigeon are reared in semi-scavenging or scavenging system in our country. Due to constant contact with the soil these birds serve as reservoir for soil transmitted helminthes. Especially in free-range birds parasitic infestations are often neglected though they are causing reduced growth and higher mortality.²⁰ The gastro-intestinal parasites recovered from this study are common parasites of domestic chicken.^{21,22} It might be due to the sharing of same food and water along with chicken. In this study the majority of the pigeons harbored multiple species of infections of helminthes which suggest that the environmental conditions. Based on the present study, different preventive and control measures can be formulated against infections.

Conclusion

The present study recorded the presence of gastrointestinal parasites in pigeons in Y.S.R. District of Andhra Pradesh.

Acknowledgements

All the authors are thankful to SVVU for providing the necessary facilities to carry out the study. Corresponding author also thankful to the owners of pigeon farms in YSR district for their cooperation during the study.

Conflict of interest

Author declares that there is no conflict of interest.

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