Prevalence of Nematode Infection of Pigeons of Gujarat State, India

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Introduction

Among the birds, importance of pigeons in relation to domestic chicken can not be ignored, as pigeons act as reservoir host or carrier and an important source of infection for other avian host, which share the common parasitic fauna (Kumar, 1998). There are quite a large number of problems related to management of parasitic infestations in birds. Clinical or sub clinical parasitoses leads to anaemia as a result of continuous suckling of blood by parasites. Clinically birds show partial or complete anorexia, diarrhea, dehydration, loss of body weight and alteration in body microelements, which resulting in to immunosuppression in birds. The object of the present study was to record the prevalence of nematodes of pigeons in Gujarat, state.

Materials and Methods

About 5-20g of fresh faecal samples from zoo pigeons were collected in clean sterile containers from Kamla Nehru Zoological Garden, Kankaria, Ahmedabad. Feed grains were broadcasted on a clean floor of public places and wild pigeons were allowed to feed. The composite faecal samples of about 20g were collected from floor. Faecal samples were collected at two months intervals for a period of one year during morning hours. The samples were preserved in 10% formalin and examined as per technique of Thienpont (1979) and Georgi (1985) for qualitative examination. Quantitative examination of nematode ova was carried out following McMaster technique (Gordon & whitelock-1939).

Post-mortem of 40 zoo and 60 wild pigeons were carried out in the laboratory. Gastrointestinal as well as respiratory tract was opened and helminthes were collected in a separate container containing either 10% formalin or normal saline. Nematodes were examined in live condition, fixed in 70% alcohol and then cleared in 70% glycerol-alcohol or lacto phenol to study the internal details.

Results and Discussion

Faecal sample examination: Qualitative faecal examination of 30 samples of pigeons revealed 27 samples (90%) with parasitic infection. Among them nematode, cestode and coccidian infection was 88.88, 26.92 and 74.07%, respectively. In India parasitic infection in pigeons reported by Jayagopala *et al*. (1992) and Bhatnagar & Ruprah (1970) were 57.6 and 96% respectively. Parasitic infection of pigeons reported by Begum & Shaikh (1987) in Bangladesh, Kulisic (1989) in Yugoslavia and Martinez *et al*. (1989) in Spain are 86, 87 and 92.2% respectively. Ibrahim *et al*. (1995) reported *Ascaridia* sp. and *Capillaria* sp. infection in pigeons was 29.50 and 4.8% respectively in Egypt. Hayat *et al.* (1999) reported 36.92% nematode infection of pigeons in Pakistan. Quantitative examination for nematode infection was high (200-1600 EPG) during monsoon (June to September) in the present study. This may be due to mean temperature and high relative humidity, which lowers the resistance of birds and favours heavy infection (Hawkins, 1945). Lower rate of infection (200-800 EPG) was recorded in our study during the period of February to May (summer), which might be due to climatic conditions, which was not very much favourable for the development of parasitic infection. The rate of infection was found to be moderate (200-1000 EPG) during winter season (October to January), which might be attributed to low temperature, which also helped in arrested development of parasites in host and environment (Ogunsui & Eysker, 1979).

Post-mortem examination: In present study zoo and wild pigeons revealed 80 and 88.33 percent parasitic infection respectively by post-mortem examination. Bernard and Biesman (1987), Kulisic (1989), Tacconi *et al*. (1993), Ibrahim *et al*. (1995) and Hayat *et al*. (1999) reported 69.6, 60.24, 89.41, 49.75 and 40% parasitic infection, respectively by post-mortem examination of pigeons. In present study, nematode infection of zoo and wild pigeons were 90.62 and 86.79% respectively. Tacconi *et al*. (1993) reported 57.64 percent nematode infection, while Ibrahim *et al. (*1995) reported *Ascaridia sp*. and *Capillaria* sp. infection were 29.50 and 4.8% respectively. Single infection of nematode in zoo and wild pigeons were 12.50 and 3.87% respectively. In the present study, faecal sample and post-mortem examination revealed nematode infection as 88.88 and 75% respectively, which included *Ascaridia columbae* (fig. 1,2,3) and *Capillaria obsignata (*fig. 4,5). *A. columbae* is one of the common nematodes of pigeons which has been reported by a number of workers from different parts of the world (Bernard & Biesman (1987) in Brussels, Begum & Shaikh (1987) in Bangladesh, Kulisic (1989) in Yugoslavia, Martinez *et al*. (1989) in Spain, Tacconi *et al*. (1993) in Italy, Ibrahim *et al.* (1995) in Egypt and Hayat *et al*. (1999) in Pakistan). In present study, only mild catarrhal enteritis was noticed in small intestine with presence of *A. columbae* worms. In heavy infection of *A. columbae* caused obstruction, dilation (fig. 6), and mild to necrotic ulcer in small intestine (fig. 7,8). The worms were mainly found in small intestine but some were also found in gizzard lining (fig. 9) or trapped in mesenteries as reported by Ali *et al.* (1985) and Wajihullah and Ansari (1986). *Capillaria* species infection was observed in pigeons

[*]See image on web version @ www.zoosprint.org

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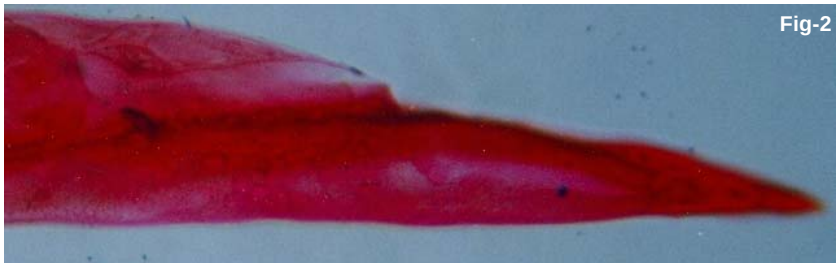

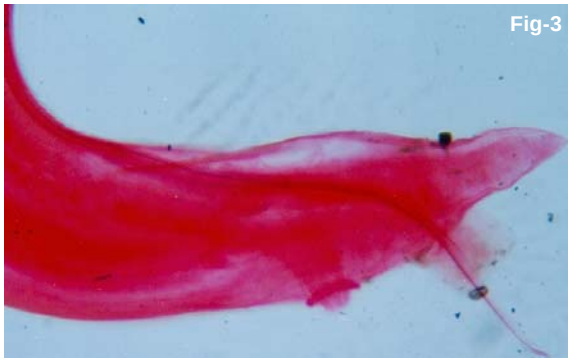

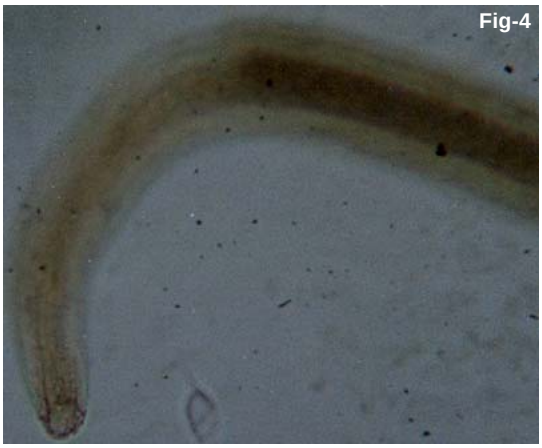

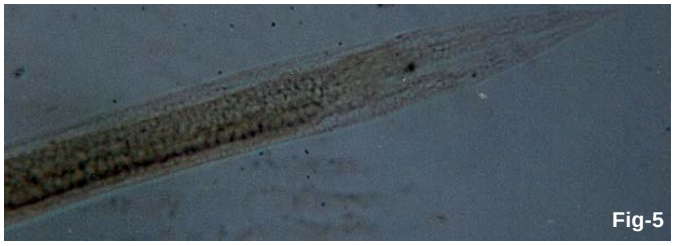

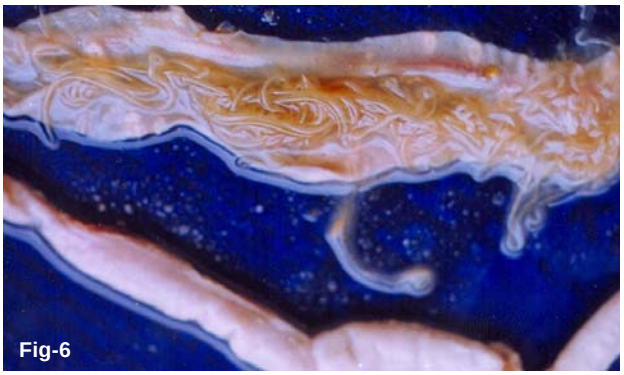

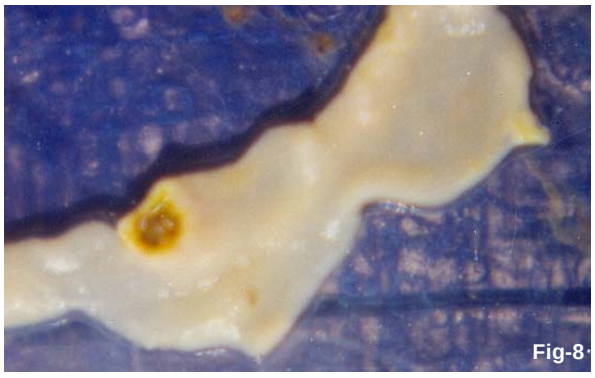

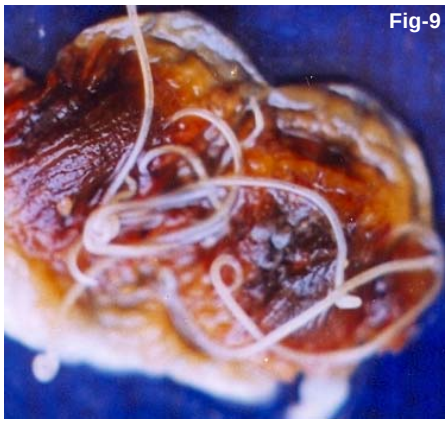

Figures 1 - Ant. end of *A.columba;* 2 - Post. end of male *A.columbae;* 3 - Post. end of female *A.columbae;*
4 - Ant. End of *C.obsignata;* 5 - post end of *C.obsignata;* 6 - Impaction & dilatation of intestine;
7 - Mild ulcer in small intestine; 8 - Necrotic ulcer in small intestine; 9 - *A.columbae* worms in gizzard

Table 1. Results of faecal sample examination of pigeons

Sr No.	Type of pigeon	Parasites ova/ oocysts	Eggs per gram for nematode					
			Dec-Jan	Feb-Mar	Apr-May	Jun-July	Aug-Sept	Oct-Nov
1	Pigeon Nicobar	*Ascaridia sp* ova, *Eimerian* oocysts	400	400	200	1000	800	600
2	Pigeon Crowned	*Ascaridia sp* ova, *Eimerian* oocysts	400	200	200	600	200	200
3	Pigeon green imperial	*-ve*	-	-	-	-	-	-
4	Pigeon pied imperial	*-ve*	-	-	-	-	-	-
5	Jacobin pigeon	*Capillaria sp* ova, *Eimerian* oocysts, Cestode ova	1000	800	600	1200	1000	800
6	Green fan tail pigeon	*Ascaridia sp* ova, *Capillaria sp* ova *Eimerian* oocysts	800	600	400	1400	1000	800
7	Black fan tail pigeon	*Capillaria sp* ova, *Eimerian* oocysts	600	400	400	1000	800	400
8	White fan tail pigeon	*Ascaridia sp* ova, *Capillaria sp* ova, Cestode ova	600	400	200	1200	1000	800
9	Shiraji pigeon	*Ascaridia sp* ova, *Eimerian* oocysts	400	200	200	800	600	400
10	Phouter pigeon	*Ascaridia sp* ova, *Eimerian* oocysts	200	400	200	800	600	400
11	Khal pigeon	*Ascaridia sp* ova, *Capillaria sp* ova, *Eimerian* oocysts, Cestode ova	600	400	600	1600	1200	800
12	Bronze pigeon	*Capillaria sp* ova, *Eimerian* oocysts	400	200	400	1000	800	400
13	Wild pigeon	*Ascaridia sp* ova, *Capillaria sp* ova, *Eimerian* oocysts, Cestode ova	600	400	400	800	800	400

along with *A. columbae*, causing cachexia and hemorrhagic enteritis. Similar observations were reported by Rao and Bandopadhyay (1993), Ibrahim *et al*. (1995), Pavlovic *et al*. (1986) and Hayat *et al.* (1999).

References

Ali, W., H. Khatoon and J.A. Ansari (1985). Histopathological study on *Ascaridia columbae* in pigeon (Gmelin 1790). *Indian J. Helminthol.* 34: 15-19.

Begum, N.J. and H. Shaikh (1987). Prevalence of helminth parasites of pigeons (*Columba livia*). Bangladesh Vet. J., 21: 89-93.

Bernard, J. and W. Bieseman (1987). Endoparasitic helminths of pigeons from the city of Brussels. *Bulletin des Recherches Agronomiques de Gembloux* 22: 81-85.

Bhatnagar, P.K. and N.S. Ruprah (1970). Some studies on helminths of pigeons at Hissar. *Haryana Veterinarian* 9: 1-7.

Georgi, J.R., (1985). Parasitology for Veterinarians 4th edition. W.B. Saunders., London, 344pp.

Gordan, H. Mcl. and H.V. Whitelock (1939). A new technique for culturing of nematodes eggs in faeces. *J. Cauns Scient. Ind. Res. (Aust.).* 12: 50.

Hayat, C.S., A. Maqbool, B. Hayat, N. Badar and S. Ayub (1999). Prevalence of various endoparasites of domestic pigeons. *Indian Vet. Med. J.* 29: 55-56.

Ibrahim, A.I., H.H. Hassanin, S.E.M. Aly and A.A. Abdelaal (1995). A study on some parasitic affections in domestic pigeons in Ismailia province. *Assiut Vet. Med. J.* 38: 153-161.

Jayagopala Reddy, N.R., M.S. Jagannath, Placid, E. D'Souza and S. Abdul Rahman (1992). Prevalence of gastointestinal parasites in wild mammals and captive birds at Bennerghatta National Park, Banglore, India. *Indian J. Anim. Sci.,* 62: 1046-1048.

Kumar,R. (1998). A survey of parasitic fauna of local pigeons and assessment of efficacy of certain drugs in poultry nematodiasis. M.V.Sc. thesis submitted to C.S. Azad University of Agriculture and Technology, Kanpur.

Kulisic,Z. (1989). Parasitical infection among pigeons (*Columba livia*) of different ages in the area of Belgrade. *Acta Veterinaria (Belgrade)* 39: 155-162.

Martinez-Moreno, F.J., A. Martinez-Moreno, C. Becerra-Martell and M.S. Martinez-Cruz (1989). Parasite fauna of pigeons in Cordoba province, Spain. *Revista Iberica de Parasitologia* 49: 279-281.

Pavlovic, I., G. Rosic, V. Vajic, D. Lazarov and Z. Misic (1986). Efficacy of mebendazole in treating helminthoses of gamebirds and pigeons maintained in controlled conditions. *Veterinarski Glasnik* 50: 779-784.

Rao, K.N.P. and A.C. Bandopadhyay (1993). Management of mixed infection of capillariosis and coccidiosis in a flock of pigeons. *Indian Vet. J.* 70: 1050-1052.

Tacconi, G., A. Moretti, D. Piergili Fioretti and M. Latini (1993). Endoparasitoses of pigeons (*Columba livia*, Gmelin 1789). Epidemiological survey in the city of Terni. *Zootecnica International* 4: 83-85.

Thienpont, D. (1979). *Diagnosing Helminthiasis Through Coprological Examination.* Beerse Jansen Research Foundation.

Wajihullah, K.H. and J.A. Ansari (1986). Histopathological studies of *Ascaridia columbae* (Gmelin, 1790) (Nematoda : Ascaroidea) in pigeons. *Indian J. Helminthol* 37: 84-88.