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Survey of egg per gram (EPG) parasite ovum in pigeon

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ABSTRACT

Clinical signs, para-clinical tests and gross lesion can be used for identification of parasite contamination. In most parasite contamination the clinical signs are not obvious. Thus, para-clinical tests and gross lesion play important roles in identifying parasite disease as all organs of animals such as skin, eyes, kidneys, liver and digestive tube can be affected by the parasites. Consequently, there is a possibility to use the feces of animals in order to observe parasite ovum and larva to identify the disease. This research was conducted from May to September 2011, and the number of 250 faecal samples of pigeon from mixed companion birds keeping in the cages. Faecal samples were examined by direct smear method whereas egg per gram (EPG) was counted by modified McMaster technique and centrifugal flotation method using Sheather's saturated sugar solution. In this study, *Raillietina* spp, *Tetramers, Sygnamus, Capillaria, Ascaridia colombae* and *oocyst protozoa, Phthiraptera, Ceratophyllus columbae* contamination were studied and the frequency were found to be 24%, 8%, 9%, 14%, 4%, 7%, 8% and 6% respectively. The result of this study and the finding from other studies indicates that pigeons could be less susceptible to mixed infections as compared to chickens.

1. Introduction

Poultry industry is the most effective and economical source of animal protein in shortest possible time. Poultry producers are looking for some substitute of chicken meat, which in the future will come in the form of pigeon and quail meat to contribute towards the increase in gross domestic production (GDP) through livestock sector (Basit et al., 2006; Urquhart, 1996).

Pigeon are probably one of the most common nuisance birds. Pigeons have adapted to life in the city, and they seem to be everywhere in urban environments. Unfortunately, the bird lovers of the world feed them, and they have developed a dependence upon people, thus reinforcing their dependency upon urban areas. They roost on signs, ledges, almost anywhere, and they bring nesting material and leave droppings everywhere. Pigeons can carry or transmit encephalitis, histoplasmosis, Newcastle disease, pigeon ornithosis, cryptococcosis, pigeon coccidiosis, toxoplasmosis, pseudo-tuberculosis, and *salmonella* food poisoning. Pigeons can also carry fleas, ticks, mites,

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and other parasites (Balicka-Ramis et al., 2007; Rehman, 1993).

It was shown that birds harbor ticks, fleas, mites and other ectoparasites. The parasite bites an infected animal and sucks in blood containing the germ. When the bug bites, it passes along the germ to the new victim. This occurs because parasites inject some of their saliva into the host when feeding. Over forty types of parasites live either on the birds or in the places they roost. They are responsible for the transmission of several hundreds viral and bacterial agents. These diseases include plague, encephalitis, pox and meningitis. Control of these parasites is a crucial phase of the bird control project. Unless the parasites are exterminated when the birds are excluded from a site, the mites, fleas and ticks will seek to a new host, often the human inhabitants (Balakrishnan and Sorenson, 2007; Soulsby, 1982). Therefore, a proper bird control project will always include parasite extermination. The most common worms found in pigeons are roundworms hair worms, stomach wall worms, gapeworms, strongly lids and tapeworms. The symptoms vary with the type of infestation, and conceivably pigeons can live with slight infestations and show no signs of illness. Severe infestations generally cause droopiness, loss of weight and diarrhea. Gapeworms can cause breathing problems. The best way to determine the existence of worm problem is to check the droppings (Begum and Sheikh., 1987; Kulisic, 1988; Urquhart, 1996; David., 2003).

The most common external parasites that pester our birds are feather lice, red mites, pigeon flies, and mosquitoes. Feather lice chew up holes into the flights or cause other types of visible damage to the feathers. The common red mite can be considered as a real problem if it becomes established. It commonly hides somewhere in the loft during the day and comes out from its hiding place at night to bite and feed on the blood of the birds. They can help to spread an assortment of diseases. The pigeon fly is probably the most dangerous parasite that can attack the birds. It lives most of its life on the pigeons, leaving only to lay its eggs somewhere in the loft. Pigeon flies bite the birds, causing considerable discomfort and may be a major cause of pigeon malaria. Mosquitoes would have to be considered the next worst parasite, simply because they are found in almost all climates. They are the most common carrier pigeon pox virus. By keeping our lofts clean, we can eliminate many of the places where mites and flies can hide their eggs. The aim of this study was to investigate the *Raillietina* spp, *Tetramers, Sygnamus, Capillaria, Ascaridia colombae* and *oocyst protozoa, Phthiraptera, Ceratophyllus columbae* contamination in the faecal samples of pigeon.

2. Materials and Methods

This research were conducted because of several unofficial reported from different clinic and veterinary head quarter of the Ilam border line with Iraq, from May to September 2011. The number of 250 faecal pigeon samples from mixed companion birds keeping in the cage with each other was used in this study. Twenty five birds' specific pathogen free (SPF) were managed in the hygienically environment and care was taken to avoid any contamination from outside as control and were kept in animal house, school of veterinary sciences, Ilam University and feed both group with the same ration and ingredient.

The tray at the bottom of the cages were completely washed and disinfected. The fresh faeces were collected (at least 3 grams). Data were collected according to the questionnaire prepared regarding the number of the birds, number of the deaths, number of the sick birds, and race of the birds. The samples were immediately tested in laboratory.

2.1. Diagnostic methods

Faecal samples were examined by direct smear method whereas egg per gram (EPG) was counted by modified McMaster technique and centrifugal flotation method using Sheather's saturated sugar solution (Soulsby, 1982). The ectoparasites were collected as described by Soulsby (1982). Briefly after killing the pigeons by anaesthesia, they were immediately placed in a polythene bag and the parasites were collected. The ectoparasites were preserved for identification purposes in 70% alcohol. Subcutaneous nodules of each bird were fixed in 10% potassium, heated for 20 minutes in a jar containing water and the sediments were looked for parasite.

3. Results

Out of 250 sample, 198 were positive with parasitic infection at lest with one of the parasites and 34% were carrying multiple infection. Symptoms of worms consist of weight loss and in the case of sever multiple worm infestation diarrhea were seen in the pigeon. Infected young birds grow slower. The parasites have been identified in this study consisted of *Raillietina* spp, *Capillaria, Tetramers, Ascaris, Sygnamus*, oocyst protozoa, *Phthiraptera, Ceratophyllus columbae*. The prevalence of parasitic infection in pigeon has been shown in table 1.

In this study, the birds above two years (32%) show more resistance against worms' infestation than young birds below two years (68%). The maximum and minimum environmental temperature of the area was set to 32 ^{o}C and 43^{o}C and the maximum humidity was 6%.

Table 1: Types of parasite ovum in pigeon faeces

parasite	Percent
Raillietina spp	24%
Capillaria	14%
Tetramers	%8
Ascaridia colombae	4%
Sygnamus	9%
Oocyste	7%
Phthiraptera	8%
Ceratophyllus columbae	6%
Multiple infection	20%

4. Discussion

Balicka-Ramisz (2007) and colleagues have worked on intestinal parasitic species, composition, prevalence and intensity of infection in selected parrots and reported the samples of budgerigars *Melopsittacus undulatus* (n=36), cockatiels *Nymphicus hollandicus* (n=21), grey parrots *Psittacus erithacus* (n=18), eastern rosella *Platycercus eximius* (n=10) and Senegal parrots *Poicephalus senegalus* (n=10) using the Willis-Schlaff and McMaster's methods and they found protozoa (*Isosporidae* and *Eimeriidae*) and nematodes (*Ascarididae*, *Capillaridae* and *Heterakidae*) in the tested samples. Coccidian oocysts were detected in all examined parrots. Three species of parrots were infected with the nematodes, but only *Ascaridia platycerci* was present in these hosts (Balicka-Ramisz et al., 2007).

The parasites have been identified in this research were *Raea Tenia, Capillaria, Tetramers, Ascaris, Sygnamus*, oocysts. The obtained results show that introduction of parasitological prophylaxis programs may be necessary, especially in the larger birds' farming and zoological shops.

In this study we collected ectoparasites included of feather lice (*Phthiraptera*) and pigeon fleas (*Ceratophyllus columbae*). In a study carried out by Balakrishnan and Sorenson brood parasitic birds offer a unique opportunity to examine the ecological and evolutionary determinants of host associations in avian feather lice (*Phthiraptera*). Brood parasitic behaviour effectively eliminates vertical transfer of lice between parasitic parents and offspring at the nest, while at the same time providing an opportunity for lice associated with the hosts of brood parasites to colonize the brood parasites as well (Balakrishnan and Sorenson, 2007). Thus, the biology of brood parasitism allows a test of the relative roles of host specialization and dispersal ecology in determining the host-parasite associations of birds and lice. If the opportunity for dispersal is the primary determinant of louse distributions, then brood parasites and their hosts should have similar louse faunas. In contrast, if host-specific adaptations limit colonization ability, lice associated with the hosts of brood parasites may be unable to persist on the brood parasites despite having an opportunity for colonization. Balakrishnan reported lice on four brood parasitic finch species (genus Vidua). The molecular phylogeny showed that lice infesting the two avian groups belong to two distinct clades within Brueelia. Likewise, distinct louse lineages within the amblyceran genus Myrsidea were found on estrildid finches and the parasitic pin-tailed whydah (Vidua macroura), respectively. Although common on estrildid finches, Myrsidea lice were entirely absent from the brood parasitic indigo birds. The distribution and relationships of louse species on brood parasitic finches and their hosts suggest that host-specific adaptations constrain the ability of lice to colonize new hosts, at least those that are distantly related.

Haag wackermagel (2004) has reported concerns a married couple who were repeatedly invaded by pigeon fleas (*Ceratophyllus columbae*) over a period of 2 months. The source of the fleas was a pair of breeding feral pigeons (*Columba livia*). The birds' nest was located in the attic immediately above the couple's apartment, and the fleas found their way along an unsealed heating pipe. The people encountered up to 40 bites per night. With invasions repeated almost every night, the man gradually developed an allergic urticarial reaction. The most traumatic experience for the couple, however, was to learn that they were invaded by fleas (initially, they had presumed they were bothered by mosquitoes). This information resulted in severe psychological distress with phobic reactions and insomnia. Despite the successful removal of the fleas and the pigeons that were source of the pest, parasitophobia of the man persisted over the following 4 months. This case is discussed from the broader aspect of health risks related to feral pigeons and animal fleas.

5. Conclusion

Clean, sanitary lofts are most beneficial to keeping worms in check, but since pigeons often mingle with many hundreds of other birds, a bird can become infested through ingestion of worm eggs from the basket or through contact with stray pigeons. Therefore, it is advisable to develop a preventative worming program in which all birds are wormed at least twice a year. The result of this study and the finding from other studies indicates that pigeons could be less susceptible to mixed infections as compared to chickens.

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