

## Haemoproteus spp. Infection of Domestic Poultry of Bangladesh

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*Haemoproteus sp. can infect a variety of avian species including domestic poultry. An exploratory study was conducted from January, 2006 to December, 2006 in different areas of Netrokona and Mymensingh district to determine the presence of Haemoproteus spp. in different types of birds. Blood samples were collected from the veins of 57 pigeons (Columba livia), 30 chickens (Gallus gallus domesticus), 50 ducks (Anas platyrhynchos domestica) and 32 quails (Coturnix japonica) and smears were prepared. Of all the examined birds, 23.3% (7/30) chickens, 50.9% (29/57) pigeon and 12.5% (4/32) quails were found to be infected with Haemoproteus spp. All the ducks were tested negative for Haemoproteus spp. Highest presence of Haemoproteus spp. was observed among older bird in case of both chicken (13.33%) and pigeon (33.33%). In case of chickens, 20% (14/30) male were infected with Haemoproteus spp. while in female it was only 3.33% (16/30). Out of 57 pigeon 31.58% female and 19.3% male were tested positive for Haemoproteus spp. infection. Present study shows that this protozoan parasite is capable of infecting several species of domestic poultry. Further study needs to be conducted to list different species of this parasite and determine*

*the economic losses due to the parasitic infection along with control strategies.*

### KEYWORDS

Haemoproteus, chicken, duck, pigeon, quail.

### INTRODUCTION

The genus *Haemoproteus* includes a large number of intracellular protozoan parasites of birds distributed all over the world (1). It is the most common blood parasite of birds and has been reported from 67% of total bird species (2). This parasite is transmitted by blood sucking insects like mosquitoes, biting midges (*Culicoides*), louse flies (*Hippoboscidae*) and tabanid flies (*Tabanidae*) (3). Asexual development of this parasite occurs in the peripheral blood of the birds and sexual development in the vector louse fly (4). The pathogenicity of this parasite can vary depending upon the species of the parasite from altered physiology up to mortality (5-7). *Haemoproteus columbae* widely occurs in pigeon in tropical and subtropical regions. It is usually non-pathogenic and only causes disease when the pigeons are stressed. *H. lophortyx* infection in captive bobwhite quail has been reported from California, USA (8). From Asia 4.5% prevalence of *Haemoproteus* spp. among poultry has been reported (9). Meager information is available presence of avian hemoprotozoa in Bangladesh which includes reports on different parasites of pigeon including *H. columbae* (10) and *Leucocytozoon* spp. among ducks (11). The present study was designed to explore the presence of *Haemoproteus* spp. among different types of poultry birds of Bangladesh.

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## MATERIAL AND METHODS

To study the presence of *Haemoproteus* spp., 57 pigeons (*Columba livia*), 30 chickens (*Gallus gallus domesticus*), 50 ducks (*Anas platyrhynchos domestica*) and 32 quails (*Coturnix japonica*) were examined from different areas of Mymensingh and Netrokona district from January, 2006 to December, 2006. Chickens and pigeons were sampled from the same house hold. To observe the age related presence of *Haemoproteus* spp., all the three species were grouped as 1-6 month, 6-12 month and more than 12 month age group. Blood samples were collected from the wing vein of the birds. Thin smear was prepared, made air dried and stained with Giemsa's stain. Then the slides were examined under microscope for the detection of the protozoa using immersion oil objective. Statistical analysis was performed using the software SPSS (Statistical Package for Social Science 11.5).

## RESULTS

Of all the examined birds, 23.3% (7/30) chickens, 50.9% (29/57) pigeon and 12.5% (4/32) quails were found to be infected with *Haemoproteus* spp. (Fig. 1). All the ducks were tested negative for *Haemoproteus* spp.

Of the 30 chicken 12 were under 1-6month age group, 8 were under 6-12month age group and 10 were under more than 12 month age group (Table 1). In case of chicken, highest presence of *Haemoproteus* spp. was observed in the 6-12 month age group (13.33%) followed by the 1-6 month age group. Chickens of more than 12 months age group were found to be free from this parasite

Out of 57 pigeon 14 were in the 1-6 month age group, 24 in the 6-12 month age group and 19 in the more than 12 month age group. The highest presence was observed in the more than 12 months age group (33.33%) followed by 6-12 month age group (22.80%) in the 1-6 month age group (3.51%).

## DISCUSSION

In pigeons the highest presence was observed in the more than 12 months age group (33.33%) followed by 6-12 month age group (22.80%) in the 1-6 month age group (3.51%). Similar

finding was observed by Msoffe et al (2010) who found *H. columbae* more significantly prevalent in adult (63%) than in nestlings (11%) (18).

In case of chicken, highest presence of *Haemoproteus* spp. was observed in the 6-12 month age group (13.33%) followed by the 1-6 month age group. Chickens of more than 12 months age group were found to be free from this parasite. Of the 30 chicken, 20% (14/30) male were infected with *Haemoproteus* spp. while in female it was only 3.33% (16/30) (Table 2). On the other hand, out of 57 pigeon 28 were male and 29 were female and highest presence was recorded in female (31.58%) in comparison to male (19.3%). These reports corroborate the earlier findings of (19). In case of quail though the number of male and female was equal but the highest presence was observed in female (9.38%) in comparison to male (3.13%).

There is evidence that the vector (*Culicoides* spp) is capable to feed on chickens and turkey (12-14). *Pseudolynchia canariensis* flies lack strong host specificity (15) with a very wide host range that includes 33 genera, 13 families and 8 orders of birds. So it can be assumed that infected *P. canariensis* flies might transmit the infection among the chicken. *H. columbae* occurs in pigeon associated with human settlements throughout the world (16). The overall presence of *H. columbae* has been recorded in pigeon as 47.05% (17). Recurring outbreaks of *H. lophortyx* infection in captive bobwhite quail with well identified clinical signs and mortality has been reported from California, USA (8). But in present study all the quails sampled was apparently healthy.

The finding of present study could not be thoroughly compared and discussed due to paucity of the literature available on the subject. Thorough study with diversified parameters on the subject is needed. Identification of different species of this blood protozoon among the domestic and wild birds of Bangladesh not only will generate knowledge but also help in developing strategies for successful control programs.

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## TABLES

Table 1: Age related presence of Haemoproteus spp. in different species

Species	Age	Birds examined	Present
Chicken (30)	1-6 m	12	3 (10%)
	6-12	8	4 (13.33%)
	more than 12 months	10	0
Pigeon (57)	1-6 m	14	2 (3.51%)
	6-12	24	13 (22.80%)
	more than 12 months	19	14 (33.33%)
Quail (32)	1-6 m	32	4 (12.5%)

## FIGURES

Figure 1: Malaria parasites (*H. columbae*) in the gametocyte stage in pigeon blood.

