Therapeutic management to concurrent infection of *Haemoproteus columbae* and *Trichomonas* spp. in domestic rock pigeons


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**Abstract**

Two domestic rock pigeons were presented to Veterinary Clinical Complex, VC & RI, Orathanadu, TANUV AS with the history of circling, rotating its head, complete inappetence and regurgitation. On clinical examination bird appeared dull, depressed and circling of head appreciated and also noticed the presence of *Pseudolynchia canariensis*. Blood smear examination revealed a characteristic halter shaped gametocytes of *Haemoproteus columbae* encircling the nucleus of erythrocytes and the crop fluid examination revealed the presence of *Trichomonas gallinae*. Faecal sample examination revealed the absence of intestinal parasites. The birds were treated with oral Chloroquine @5mg/kg body weight and Metronidazole @50mg as total dose along with the multivitamin supplementation. The whole flock in the house hold were treated with Permethrin (0.25%) spray by external application to control vector population. After five days of the treatment the clinical condition of the birds were reviewed which showed complete recovery without any complications.

**Keywords:** Pigeon, Avian malaria, Canker, Chloroquine, Metronidazole.

Domestic pigeons (*Columba livia*) belong to the Columbidae family and are commonly seen in urban areas worldwide. Pigeons and doves make about 50% of all birds maintained in captivity for food, recreational activity, entertainment, and display (Harlin and Wade, 2009). Protozoal infections can cause serious impacts on birds, including stunted growth, reduced egg production, and susceptibility to diseases (Ashford, 1971). The disease caused by *Haemoproteus columbae* in pigeons is called as pseudo malaria or pigeon malaria transmitted by *Pseudolynchia canariensis*, affects domestic as well as wild pigeons which is highly fatal to young pigeons (Soulsby 1982). *Trichomonas gallinae*, a flagellated protozoan, causes avian Trichomoniasis, a disease that affects the upper digestive system of birds, especially pigeons. The disease has been described as canker. A digestive or canker disease was characterised by pyogenic oopharyngitis, ingluvitis, proventriculitis, and descending hepatitis (Chi et al., 2013). This paper presents the concurrent infection of *Haemoproteus columbae* and *Trichomonas gallinae* in a rock pigeon with its therapeutic management.

**Case History and Observation**

Two Domestic rock pigeon of young age were presented to the Large Animal Medicine Unit of Veterinary Clinical Complex, Veterinary College and Research Institute, Orathanadu, TANUV AS with a history of circling, rotating its head, complete inappetence and regurgitation. Nine pigeons in the flock of thirty-seven had already died with the same symptoms. On clinical examination ruffled feather, ocular discharge from both the eyes, white cheesy material in the oral region and ulceration of tongue were noticed and in addition *Pseudolynchia canariensis* was also recovered from the feathers. Blood from wing vein was collected in a vacutainer containing Heparin as an anti-coagulant and crop fluid was also collected by using sterile butterfly catheter. Faecal examination of the birds revealed absence of parasitic ova. The haematological analysis revealed RBC of $1.7 \times 10^6 /\mu l$, Haemoglobin 4.3 g/dL, PCV 15% which shows the bird was anaemic and WBC of $11.5 \times 10^3 /\mu l$, Heterophils 56%, Lymphocytes 39% and Eosinophils 4%. Blood smear examination showed halter shaped immature gametocytes of *Haemoproteus columbae*. Crop fluid on microscopical examination in wet mount revealed *Trichomonas gallinae*.

**Treatment and Discussion**

Based on the clinical observations and laboratory findings the pigeon was found to have multiple infections with *Haemoproteus columbae*, *Pseudolynchia canariensis*, and *Trichomonas* spp. The birds were treated with oral Chloroquine @5mg/kg B.W. and Metronidazole @50mg as total dose twice a day with supportive multi-vitamin syrup for 7 days.
was supplemented as it removes stress and enhances immunity. The pigeons recovered on fifth day without any complications. Permethrin (0.25%) was recommended as a topical insecticide for controlling vectors in pigeon habitats.

_Haemoproteus columbae_, a haematozoan homologous to the malaria parasite Plasmodium, causes pigeon malaria in both domestic and wild pigeons (Selvaraj _et al._, 2013). The regional variation in _H. columbae_ prevalence in pigeons is primarily influenced by vector abundance, in which our study confirms the presence of _Pseudolynchia canarensis_. Clinical symptoms of _H. columbae_ infection include anorexia, lethargy, depression, dyspnea, circling movement, and diarrhea (Maharana and Kumar, 2016) which is in agreement with our study. Chloroquine, an antimalarial drug, is utilised to treat _Haemoproteus_ sp. infection. Medications are not generally suggested for treating, since they are non-pathogenic parasites in most of the condition (Ritchie, 1999). Buparvaquone is highly effective in treating clinical _H. columbae_ infection in pigeons, according to previous research (Razmi _et al._ 2011). Young pigeons, known as “squabs,” are often infected with _Trichomonas gallinae_, which may ultimately result in mortality. However, adult and recovered pigeons can also be carriers without showing clinical signs (Mohamed _et al._, 2022). The clinical condition is characterised by greenish fluid or cheesy materials in the mouth and crop, which is a typical lesion in all canker birds (Seddiek _et al._, 2014). This study reports greenish diarrhoea, yellowish cheesy material in oral cavity, ruffled feathers, weakness, and depression, identical to Paul _et al._ (2015). Metronidazole and Ronidazole are the most often used drugs to treat cankers globally. The administration of metronidazole in our case showed effective results, supporting Hochleithner _et al._ (2021) observations. Control measures like vector control, proper cleaning of droppings, provision of separate waterer and feeder and routine prophylactic measures were advised.

Fig. 1. Rock pigeon showing torticollis

Fig. 2. Cheesy white material in the oral cavity

Fig. 3. _Pseudolynchia canarensis_ recovered from the wing

Fig. 4. Halter-shaped gamonts of _Haemoproteus columbae_ in the nucleated RBC

Fig. 5. _Trichomonas sp._, in crop fluid
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References


