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**A Shanmuga Sundaram**

Assistant Professor, Livestock Farm Complex (TANUVAS), Madhavaram Milk Colony, Chennai, Tamil Nadu, India

**K Rajkumar**

Assistant Professor, Livestock Farm Complex (TANUVAS), Madhavaram Milk Colony, Chennai, Tamil Nadu, India

**S Arunkumar**

Professor, Livestock Farm Complex (TANUVAS), Madhavaram Milk Colony, Chennai, Tamil Nadu, India

**P Tensingh**

Professor and Head, Livestock Farm Complex (TANUVAS), Madhavaram Milk Colony, Chennai, Tamil Nadu, India

**Correspondence**

**A Shanmuga Sundaram**

Assistant Professor, Livestock Farm Complex (TANUVAS), Madhavaram Milk Colony, Chennai, Tamil Nadu, India

## Subcutaneous emphysema in a domesticated fantail pigeon caused by *Columbicola columbae* infestation: A case report

**A Shanmuga Sundaram, K Rajkumar, S Arunkumar, P Tensingh and Gnanaraj**

### Abstract

A rare case of subcutaneous emphysema in fantail pigeon flock due to itching leading to continuous scratching with inanimate objects caused by lice infestation was reported in Livestock Farm Complex (TANUVAS), Chennai, Tamil Nadu in the month of January 2018. Examination of feathers revealed the presence of lice and these lice were collected and identified as *Columbicola columbae*, a slender biting type louse. Post-surgical intervention with injectable antibiotic along with B complex treatment resulted in uneventful recovery within 7 days. The flock of pigeons were sprayed with deltamethrin solution and were examined on regular interval (0<sup>th</sup> day, 4<sup>th</sup> day, 7<sup>th</sup> day and 15<sup>th</sup> day) to ascertain the presence of lice visually.

**Keywords:** *Columbicola columbae*, fantail pigeon, subcutaneous emphysema

### 1. Introduction

The domestic pigeons (*Columba livia domestica*) in the recent decades occupy the premises of human habitat in close association even though the first mention of the domestication of the rock dove was found in Mesopotamian carvings dating back over 5000 years<sup>[1]</sup>. Indian fantail pigeon in one such medium sized domesticated pigeon with beautiful appearance. They are large in size in comparison with English fantail pigeons with distinct dense and fan shaped tail<sup>[2]</sup>. Louse infestation along with variety of other ectoparasites is quite common in pigeons. Severe form of lice infestation can lead to behaviour changes in pigeons along with drop in egg production and impaired immunity<sup>[3]</sup>. Pigeons naturally scratch themselves as a way to remove lice from their skin. Eventually there is loss of feathers and damage to skin leading to a condition called subcutaneous emphysema. Subcutaneous emphysema is also called as wind puff<sup>[4]</sup>, which is a common presentation affecting avian species. This condition occurs in avian species when tissue overlying an air sac is ruptured and if there is direct contact to subcutaneous space<sup>[5]</sup>. Gas accumulated under skin causes discomfort, affects the bird's quality of life, and immune status. The accumulated air then diffuses down the neck and produces a puffiness of the weight and pallor of skin<sup>[5]</sup>. Usually this condition doesn't occur in commercial farms with good hygienic practises. Accumulated air under the skin can be successfully treated by puncture with hypodermic needle and antibiotic treatment<sup>[6]</sup>. A number of therapeutic trails were carried out to alleviated louse infestation in poultry<sup>[7]</sup>. But very scanty information is available with respect to pigeon louse infestation leading to subcutaneous emphysema and their treatment. In the current study *Columbicola columbae* infestation in 40 weeks old domestic fan tail pigeons with subcutaneous emphysema and its therapeutic management is discussed.

### 2. Materials and method

#### 2.1 Clinical History

A flock consisting of 20 pairs of 40 weeks old fantail pigeons were maintained at Animal Science Park of Livestock Farm Complex, TANUVAS in the month of January, 2018. Pigeons were maintained in wire mesh cages separately in pairs with good ventilation and protection from sun and rain. The pigeons were fed with compounded mash feed and supplied with nipple water drinkers.

## 2.2 Clinical Examination

Among 20 pairs of fantailed pigeons, 8 pigeons were found with stress, lowered growth rate, itching and damaged skin. On close clinical examination of affected birds, gas accumulation under the skin in the breast region was found in 3 pigeons. The feathers were lost and the skin was found with lacerated wound along with loss of weight and pale mucous membranes. Examination of feathers revealed the presence of lice and these lice were collected for identification (Fig 1).



**Fig 1:** Subcutaneous emphysema and feather loss in Fantail pigeon (Before treatment)

## 2.3 Parasitological Examination

The lice specimens collected were processed by gently boiled in 10 per cent potassium hydroxide solution. After adequate boiling, the samples were washed in tap water. Thereafter the samples were dehydrated using ascending grades of alcohols (70%, 90% and absolute alcohol) with 5 mins of gap between each step and then clearing with xylene. Finally, samples were permanently mounted using DPX as per standard protocol [8]. The slides were viewed under 10X magnification for morphological identification [9, 10].

## 2.4 Treatment

The condition was diagnosed as subcutaneous emphysema due to constant itching caused by lice leading to physical damage of the feathers and skin. The treatment was carried out to the affected pigeons by gentle puncturing of the skin over the body with 18 G hypodermic needle. The air was extracted gently through the needle and then the area was injected with streptopenicillin to prevent bacterial contamination and also, reduce the reoccurrence of emphysema in the same area. Same procedure was followed in multiple areas of the skin to reduce the volume of air trapped in the subcutaneous area. The pigeons were also treated with enrofloxacin and B-complex vitamins as supportive therapy. The flock of pigeons were sprayed with deltamethrin solution (Butox, 12.5 % solution, 1 ml in 2 litres of water) until they are completely wet after ascertaining the intensity of infestation.

## 3. Result and Discussion

The lice species collected from tail and wing feathers were processed and identified as *Columbicola columbae* as per Soulsby [11] (Fig 2).



**Fig 2:** *Columbicola columbae* under 10 X magnification

The louse was biting type with slender body of 2.00 to 2.5 mm length. The head was elongated reddish brown in colour in front of the five segmented antennae with two pairs of dorsal spines. The first segment of the antennae is much enlarged. Saikia *et al.* [12] reported 12.03 % incidence of *Columbicola columbae* in Assam, India. The prevalence and mean intensity of *C. Columbae* was reported to be 59-98.6 % and 17.9-179.3% respectively [13]. Lice infestation in pigeons can cause serious ill health as they are blood sucking in nature. There are evidence of weight loss at the rate of about 711 grams per bird and decrease in the egg yield at the rate of about 66 egg per bird / year and lameness are associated with heavy infestation of lice in birds [14]. Similar kind of subcutaneous emphysema was recorded in desi chicken were the chicken recovered uneventfully with within 4 days after treatment [15]. Deltamethrin is used widely for ectoparasitic infestation especially, lice infestation in birds [16, 17]. Khater *et al.* [18] reported that the louse infestations can be completely eliminated within 14 days with deltamethrin. Temporary coughing, sneezing, and ocular inflammations without dermatitis can be observed among birds which are sprayed with deltamethrin.



**Fig 3:** Fantail pigeon after recovery (After treatment)

## 4. Conclusion

All the pigeons were examined on regular interval (0<sup>th</sup> day, 4<sup>th</sup> day, 7<sup>th</sup> day and 15<sup>th</sup> day) to ascertain the presence of lice visually. The bird recovered with no evidence of subcutaneous emphysema (Fig 3). Identification and elimination of the etiology is more important in successful treatment of the case. Ectoparasites not only discomfort the pigeons but also can act as a vector for transmission of

various bacterial, viral and protozoan diseases. The fantail pigeons are more prone to ectoparasitic infestation due to its unique tail patterns even if they are maintained at hygienic enclosures. Early identification of infestation and periodic cleaning of pigeon enclosures along with ectoparasiticidal bath has to be practiced for healthy maintenance of stock.

### 5. Acknowledgment

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### 6. Reference

1. Blechman, Andrew. Pigeons-The fascinating saga of the world's most revered and reviled bird. St Lucia, Queensland, University of Queensland Press, 2007.
2. Wendell, Levi. The Pigeon. Sumter, SC. Levi Publishing Co, Inc, 1977.
3. Naz S, Rizvi SA, Sychra O. The high rate of infestation of chewing lice (*Phthiraptera*) in rock pigeons (*Columba livia Gmelin* 1789) in Pakistan. *Tropical Zoology*. 2010; 10(23):21-28.
4. Riddle C. Developmental, Metabolic and Other Noninfectious Disorders, in BW Calnek, HJ Barnes, CW Beard, LR McDougald and YM Saif (Eds.), *Diseases of Poultry*, 10th Edition, Iowa State University Press, Ames, IA, 1997, 913-950
5. Saif YM, Faldy AM, Calnek BW, Beard CW, Swayne DE, Barnes H, *et al.* *Diseases of Poultry*, 11th Edition, Iowa State Press, 2003.
6. Kamani J, Tijjani A, Yidawi JP, Gana AL, Egwu OK, Gusi AM. Subcutaneous Emphysema (Windpuff) in a 13 Weeks Old Pullet: Case Report, *International Journal of Poultry Science*. 2009; 8(11):1121-1122.
7. Ponnudurai G, Harikrishnan TJ, Rani N, Meenak Shisundaram A. Comparative efficacy of neem and pungan oil against lice infestation in chicken. *Journal of Veterinary Parasitology*. 2011; 25(2): 152-154.
8. Cable RM. *An Illustrated Laboratory Manual of Parasitology*. Indian Edition, Allied Pacific Private Limited, 1963.
9. Sen SK, Fletcher TB. *Veterinary Entomology and Acarology for India*, Indian Council of Agricultural Research, New Delhi, 1962.
10. Soulsby E.J.L. *Helminths, Arthropods and Protozoa of Domesticated Animals*. Seventh Edition, The English Language Book Society and Bailliere Tindal and Cassel Ltd., London, 2012, 367-370.
11. Soulsby E.J.L. *Helminths, arthropods and protozoa of domesticated animals*. 7. London: Bailliere Tindall, 1982.
12. Saikia M, Bhattacharjee K, Sarmah PC, Deka DK, Mushahary D. Prevalence of ectoparasitic infestation of pigeon (*Columba livia domestica*) in Assam, India. *Journal of Entomology and Zoology Studies*. 2017; 5(4):1286-1288.
13. Galloway TD, Palma RL. Serendipity with chewing lice (*Phthiraptera: Menoponidae, Philopteridae*) infesting rock pigeons and mourning doves (Aves: Columbiformes: Columbidae) in Manitoba, with new records for North America and Canada. *The Canadian Entomologist*. 2008, 140:208-218.
14. Khan MN, Nadeem M, Iqbal Z, Sajid MS, Abbas RZ. Lice infestation in poultry. *International Journal. Agricultural Biology*. 2003; 5(2):213-216.
15. Kamani J, Tijjani A, Yidawi JP, Gana AL, Egwu OK, Gusi AM. Subcutaneous Emphysema (Windpuff) in a 13 Weeks Old Pullet: Case Report. *International Journal of Poultry Science*. 2008; 8(11):1121-1122.
16. Reddy BS, Sivajothi S. Management of lice infestation in dairy calves. *Research & Reviews: Journal of Veterinary Science and Technology*. 2013; 2(3):13-14.
17. Reddy BS, Prameela DP, Sivajothi S, Venkatasivakumar R, Raju KGS. Dermatophilosis in cross-bred cattle in Y.S.R. district of Andhra Pradesh. *International Journal of Science, Environment and Technology*. 2014; 3(4):1371-1374.
18. Khater HF, El-Shorbagy MM, Seddiek SA. Lousicidal efficacy of camphor oil, d-phenothrin, and deltamethrin against the slender pigeon louse, *Columbicola columbae*. *International Journal of Veterinary Science and Medicine*, 2014; 2(1):7-13.