



E-ISSN: 2320-7078

P-ISSN: 2349-6800

JEZS 2020; 8(1): 536-539

© 2020 JEZS

Received: 21-11-2019

Accepted: 25-12-2019

Chhavi Gupta

Assistant Professor, Veterinary
Clinical Complex, Veterinary
College and Research Institute,
Tirunelveli, Tamil Nadu, India

P Kowsalya

Student (Internship), B.V. Sc.
and A.H., Veterinary College and
Research Institute, Tirunelveli,
Tamil Nadu, India

K Dhandapani

Assistant Professor, Dept. of
Veterinary Parasitology,
Veterinary College and Research
Institute, Tirunelveli, Tamil
Nadu, India

R Ramprabhu

Professor and Head, Veterinary
Clinical Complex, Veterinary
College and Research Institute,
Tirunelveli, Tamil Nadu, India

Corresponding Author:**Chhavi Gupta**

Assistant Professor, Veterinary
Clinical Complex, Veterinary
College and Research Institute,
Tirunelveli, Tamil Nadu, India

A concurrent parasitism by *Dermanyssus gallinae* and *Dispharynx spiralis* in a spotted owlet

Chhavi Gupta, P Kowsalya, K Dhandapani and R Ramprabhu

Abstract

A Spotted Owlet weighing 150 gram was presented to the Veterinary Clinical Complex, Veterinary College and Research Institute, Tirunelveli by the forest department of Tirunelveli District, Tamil Nadu with the history of dullness and lateral recumbency. Physical examination of bird revealed presence of numerous red and black colour ectoparasites all over the body with blanched conjunctival mucous membrane. Ectoparasites, faecal sample and blood samples were collected for detailed examinations followed by intravenous fluid therapy and immunomodulators. Faecal examination revealed presence of larvated eggs and the ectoparasites were identified as *Dermanyssus gallinae*. Haematological examination revealed hypohaemoglobinemia with eosinophilia. Bird was treated with 0.2% Ivermectin oral solution @200µg/kg body weight as a single dose, but the bird collapsed. On postmortem examination sex of the bird was identified as female with multiple diffuse haemorrhages and numerous tiny worms on proventriculus and gizzard. According to the key diagnostic features for endoparasites in avians, the parasite was identified as *Dispharynx spiralis*. This paper reports about the concurrent infestation of *Dispharynx spiralis* and of *Dermanyssus gallinae* in a spotted owlet.

Keywords: spotted owlet, parasitism, *dermanyssus gallinae*, *dispharynx spiralis*, ectoparasite, helminth

Introduction

The spotted owlet *Athene brama sub spp. brama* is a small owl breed in Southern India which generally nests near human habitations that may show higher breeding success due to increased availability of rodents for feeding young ones. As per the BirdLife International [1] IUCN Red List of birds Spotted Owlet is under least concern category. There is lack of sufficient literature about the prevalence of parasitic populations of wild owls.

Ectoparasites can impair the thermoregulatory ability [2], reduce nestling body mass and survivorship [12], influence sexual selection [4], and transmit endoparasites and pathogens [4]. *Dermanyssus gallinae* is commonly observed ectoparasite in wild and domestic birds [8], which is an obligate haematophagous parasite causing mild to severe anaemia [11].

Very little information is present in India on the endoparasitic infestation in owlets although in Europe and Spain a survey on helminthes in Owls is performed by Kinsella *et al.*, [9] and Ferrer *et al.* [6] respectively. *Dispharynx spiralis* is a common nematode found in proventriculus and gizzard of the poultry causes economic loss to the farmer. This nematode causes ulceration at the site of attachment followed by nodular reaction in the mucosa and inflammation leads to haemorrhages and hyperplasia of proventriculus [13].

Case report

A 150grams spotted owlet was presented to Veterinary Clinical Complex, Veterinary College and Research Institute, Tirunelveli by rescued and presented by the forest department of Tirunelveli District of Tamil Nadu with the history of dullness and lateral recumbency. Physical examination of bird revealed presence of numerous red and black colour ectoparasites all over the body with blanched conjunctival mucous membrane.

On microscopical examination of ectoparasites were identified as different feeding stages of mite i.e. red colour mite was fully fed (Figure 1) followed by pink colour mite was half fed (Figure 2) and black colour mite was the hungry mite (Figure 3). After fixation of the mite, based on the presence of single dorsal shield (Figure 4) that tapers posteriorly, chelicerae were long and styliform with the sternal shield (Figure 5) has two pairs of setae (Figure 6) and third pair is located more posteriorly and distinctly separated from the others, mite was identified as

Dermanyssus gallinae. Haematological examination revealed hypohaemoglobinemia (76gm/l), decreased RBC Count (1.6×10^9) with eosinophilia (5%).



Fig 1: Fully engorged mites



Fig 2: Half fed mite



Fig 3: Hungry mite



Fig 4: Dorsal View of mite 10X



Fig 5: Ventral View of mite 10X (10X)

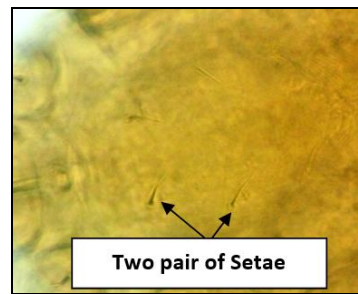


Fig 6: Ventral View of mite with Setae 100X. Identification of *Dermanyssus gallinae*

Faecal examination revealed presence of larvated eggs. The bird was stabilized by intravenous fluid therapy and immunomodulators. Oral rehydration therapy, liver stimulant were prescribed thrice a day orally for four days. Bird was treated with 0.2% Ivermectin oral solution @200µgm/kg body weight as a single dose, but due to severity of the infestation and delay in referring the case to the hospital, it died four days post-treatment. Corpse was subjected to post mortem examination.

On postmortem examination sex of the bird was identified as female with multiple diffuse haemorrhages (Figure 7) and numerous tiny worms on proventriculus and gizzard (Figure 8). On microscopical examination, the parasite was having smaller and triangular lips and cylindrical pharynx. Anterior part of the body was ornamented with transversely striated cordons (cuticular ridges) (Figure 9). In female worm eggs were present in posterior part of the body (Figure 10). On the other hand, hind end of the male worm was more coiled with left spicule was slender and boat shaped right spicule, according to these characteristic features the worm was identified as *Dispharynx spiralis* (Figure 11). Eggs presence in the faecal sample (Figure 12) and recovered from the vulva of the female (after crushing of the female worm) (Figure 13) were thick shells and presence of well developed larvae.

This paper reports first about the infection of *Dispharynx spiralis* and concurrent infection of *Dermanyssus gallinae* in a spotted owl.



Fig 7: Numerous tiny worms in Proventriculus



Fig 8: Inflamed proventriculus

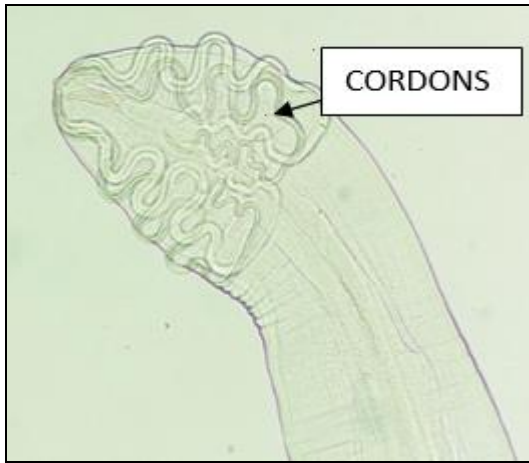


Fig 9: Head end (10X)

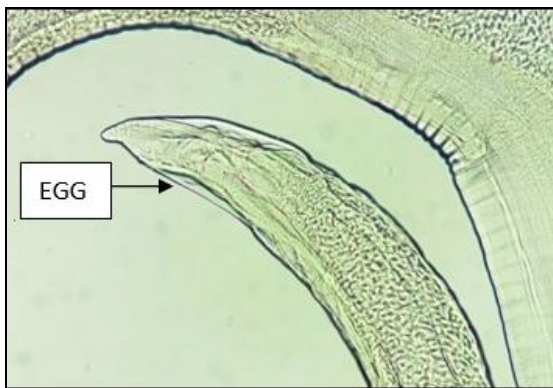


Fig 10: Tail end (10X)



Fig 11: Female worm (10X) magnification identified as *Dispharynx spiralis*



Fig 12: Faecal Examination Larvated egg on 40 x Magnification

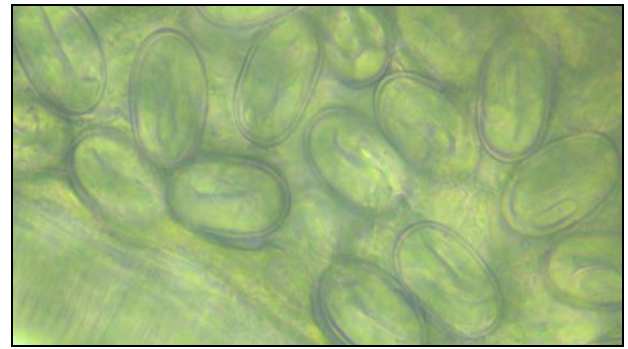


Fig 13: Intra uterine larvated egg on 40 x magnification

Discussion

Owls are beneficial predators and act as a form of natural pest control- an alternative to toxic and chemical pesticides and rodenticides [8], like other birds Spotted owlets are also susceptible for such as Coccidian parasites (*Eimeria atheni*) [3], protozoan parasite (*Trichomonas gallinae*) [16], endoparasitic mite (*Neocheletiella athenae*) [5] and lice (*Colpocephalum pectinatum*) [15]. *Dermanyssus gallinae* (poultry red mite) is a transient skin mite and a cosmopolitan haematophagus ectoparasitic of wild, domestic and synanthropic birds [17, 7]. Too much of blood loss results in energy and weight loss, anaemia and potentially death [14] this finding is in agreement with the haematological values of this study, which exhibits hypohaemoglobinemia, reduced RBC count and Eosinophilia than the normal haematological values [19] in Owls.

Prevalence of helminth parasites infesting the digestive tract of common species of owl in Spain is established by Ferrer *et al.*, [6]. Although most reported endoparasites in wild birds do not cause disease under normal conditions, they can sometimes lead to serious health problems when combined with stress or immunocompromised [10], this finding is in agreement with our study. As per the Soulsby, 2006 [18], the morphology of worm revealed *Dispharynx spiralis*, this study is reported the infestation of *Dispharynx spiralis* first time in the Spotted owl (*Athene brama*). The necropsy finding of the lesions in proventriculus and gizzard our study is also same like that of Murthy and Panda, 2016 [13].

Conclusion

The present study documented the death of a Spotted owl due to the concurrent parasitism of *Dermanyssus gallinae* and *Dispharynx spiralis* for the first time in India.

Acknowledgement

The authors are thankful to the Director of Clinics, TANUVAS and Dean, Veterinary College and Research Institute, Tirunelveli for their support to carry out this study.

References

1. Bird Life International IUCN Red List for birds *Athene brama* (<http://www.birdlife.org>) on 18/06/2019. International Union for Conservation of Nature, 2019.
2. Booth DT, Clayton DH, Block BA. Experimental demonstration of the energetic cost of parasitism in free-ranging hosts. *Proceeding of Royal Society of London, B. Biological Science.* 1993; 253:125-129.
3. Chauhan MPS, Jain SP. A new coccidium, *Eimeria atheni* from a spotted owl, *Athene brama* (Temminck). *Rivista di Parassitologia.* 1979; 40:167-169.

4. Clayton DH. Host specificity of *Strigiphilus* owl lice (Ischnocera: Philopteridae), with the description of new species and host associations. *Journal of Medical Entomology*. 1990; 27:257-265.
5. Fain, Alex, Andre V Bochkov. On some new or little known species of parasitic Cheyletidae (Acari: Prostigmata). *Acarologia*. 2001; 52(2):145-160.
6. Ferrer D, Molina R, Castella J, Kinsella JM. Parasitic helminthes in the digestive tract of six species of owls (Stringiformes) in Spain. *The Veterinary Journal*. 2004; 167:181-185.
7. Haag-Wackernagel D. Parasites from feral pigeons as a health hazard for humans. *Annual Applied Biology* 2005; 147:203-210.
8. Kheirabadi KP, Cheraghchi-Bashi M, Navidpour S. Infestation of an owl (*Bubo bubo*) with *Lucilia* spp. *Comparative Clinical Pathology*. 2010; 19:221-224.
9. Kinsella JM, Foster GW, Forrester DJ. Parasitic helminthes of five species of owls from Florida, USA. *Comparative Parasitology*. 2001; 68:130-134.
10. Korne O, Cooper JE. Parasitic diseases. In: Cooper, J.E. (Ed.), *Birds of Prey. Health and Diseases*, third ed. Iowa State Press, 2002.
11. Kristofik J, Masan P, Sustek Z, Kloubec B. Arthropods (Pseudoscorpionida, Acari, Coleopetra, Siphonaptera) in the nests of the tengmalm's owl, *Aegolius funereus*. *Biologia Bratislava*. 2003; 58(2):231-240.
12. Moller AP. Effects of parasitism by a haematophagus mite on reproduction in the barn swallow. *Ecology*. 1990; 71:2345-2357.
13. Murthy GSS, Panda R. A note on concurrent natural parasitism by *Dispharynx spiralis* and *Heterakis gallinarum* in backyard poultry. *Journal of Parasitological Diseases*. 2016; 40(4):1369-1371.
14. Philips JR. A review and checklist of the parasitic mites (Acarina) of the Falconiformes and Strigiformes. *Journal of Raptor Research*, 2000.
15. Price, Rodger D, James R Beer. The species of *Colocephalum* (Mallophaga: Menoponidae) known to occur on the Stringiformes. *Journal of the Kansas Entomological Society*. 1963; 36(1):58-64.
16. Rogers KH, Girard YA, Woods L, Johnson CK. Avian trichomonosis in spotted owls (*Strix occidentalis*): Indication of opportunistic spillover from prey. *International Journal for Parasitology: parasites and wildlife*. 2016; 5:305-311.
17. Rosen S, Yeruham I, Braveman Y. Dermatitis in humans associated with the mites *Pyemotes tritici*, *Dermanyssus gallinae*, *Ornithonyssus bacoti* and *Androlaelaps casalis* in Israel. *Medical Veterinary Entomology*. 2002; 16:442-444.
18. Soulsby EJJ. *Helminth arthropods and protozoa of domesticated animals*. Bailliere Tindall, London. 2006; 7:298-300.
19. Szabo Z, Klein A, Jakab C. Haematological and plasma biochemistry reference intervals of healthy adult Bran Owls (*Tyto alba*). *Avian Diseases*. 2014; 58(2):228-231.