

Trichomoniasis in kites in Gujarat state

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Abstract

Trichomoniasis, caused by *Trichomonas gallinae* is a significant parasitic disease affecting kites and other birds. The study investigated its prevalence, mortality, and therapeutic efficacy of metronidazole. Among 897 kites studied during 2021, 51.01% were positive for trichomoniasis. Gross lesions consisted of nodules or abscesses in the oesophagus and pharynx. Histopathological findings revealed epithelial and submucosal ulceration with inflammatory cell infiltration. Mortality increased with severity in lesions. The study highlights the high prevalence of trichomoniasis in kites. Treatment with oral was attempted and was beneficial in managing the affected birds.

Keywords: Trichomoniasis, Metronidazole, Kites

Trichomoniasis, caused by the flagellated protozoan parasite *T. gallinae*, is an infectious disease affecting a wide range of avian species worldwide (Schulz *et al.*, 2005). It poses a threat to both wild and domesticated birds, including columbiforms, passerines and raptors (Xiang *et al.*, 2023; Saikia *et al.*, 2021). The parasite *T. gallinae* spreads directly between birds during courtship, feeding or indirectly through contaminated food and water resources. Raptors acquire the parasite by predating on infected columbiform prey, such as feral pigeons, wood pigeons and stock doves (Lawson *et al.*, 2012). The parasite colonizes the upper respiratory and digestive tracts of infected birds, leading to a variety of clinical signs and potentially causing mortality (Bulbul *et al.*, 2018). Despite its global prevalence, the impact of trichomoniasis on bird populations varied considerably depending on factors such as host species, age, immune status and environmental conditions (Clark *et al.*, 2017). While some adult birds may exhibit no overt signs of infection and act as asymptomatic carriers, others may experience weight loss, dysphagia, regurgitation, and death due to severe lesions in the oral cavity and oesophagus (Deplazes and Mathis, 2015). Understanding the prevalence, transmission dynamics and pathological effects of *T. gallinae* infection in different avian groups is crucial for developing effective conservation strategies. This study aims to investigate prevalence of trichomoniasis, impact on kite mortality and efficacy of metronidazole treatment in trichomonas infected kites.

The work was carried out at the Jivdaya Charitable Trust (JCT), Ahmedabad, Gujarat, India. The presence of typical gross lesions or positive detection

of motile protozoa on swab examination and severity was the criterion for identifying and inclusion in the study. The samples of *T. gallinae* were collected from oropharyngeal region using sterile cotton swab. The swabs were stored in round bottom polypropylene tube containing 1 ml normal saline at room temperature. The processing of samples was carried out within 4 hr of collection. *T. gallinae* examined under light microscope at low power objective by hanging drop method. Trichomonas was further confirmed when stained by Giemsa and examined under oil immersion (**Fig. 1**) as described by Levien (1985). The prevalence of trichomoniasis was calculated by number of positive cases as a percentage of the total number of individual birds seen during the year.

Infected birds were treated with the metronidazole @30 mg/kg once a day PO till resolution of lesions. All the cases under study were monitored on 5, 10 and 15 days after the last treatment. Efficacy of Metronidazole was calculated by total number of negative cases as a percentage of the total number of positive cases after course of treatment. Mortality was calculated on the basis of recorded mortality that occurred during study period amongst infected kites. The post-mortem examination of birds died during the course of treatment was carried out and gross lesions were recorded. Tissues like crop and oesophagus were collected in tissue collection bottles containing 10% neutral buffered formalin solution and processed by paraffin embedding technique for histopathological examination. The sections were cut at 4-5µm thickness with the help of an automatic microtome machine

(Leica, Germany) and stained with haematoxylin and eosin (H&E) stains (Luna, 1968). The H&E-stained slides were observed under light microscope and lesions were recorded.

In 2021, a total of 897 kites were admitted to the veterinary hospital at JCT, Ahmedabad, of which 456 cases were diagnosed as avian trichomoniasis. This represented a prevalence of 51.01% in kites examined. Approximately half of the suspected cases were positive for protozoa under wet preparation, but had no detectable gross lesions. The cases of trichomoniasis were recorded throughout the year with highest number during the months of January to April followed by May to August and least during July to December. In the months of January, the Ahmedabad city and Gujarat state celebrates Kite festival, during which large number of injured birds were brought to JCT hospital for treatment which formed part of the study. The raptors predate on pigeon which

usually have high prevalence of trichomoniasis and could be the reason for high prevalence of trichomoniasis in raptors. Begum *et al.* (2008) reported that out of 300 pigeons examined, 67.3% were found infected with trichomoniasis. The trichomoniasis affected birds were given metronidazole @30 mg/kg orally and clinical improvement was noticed in 80.04% of kites. The present findings are in agreement with Abd El-Rahman *et al.* (2008) and Saikia *et al.* (2022) who reported 16% and 100% effectiveness of metronidazole in pigeons infected with trichomoniasis respectively. Lesions were noticed within the cervical oesophagus/pharyngeal region, crop or thoracic/distal oesophageal region in affected kites. Lesions were nodules or abscesses which sometimes nearly occluded the oesophagus when present in the cervical or thoracic region (Fig. 2). Similar lesions were reported by Ecco *et al.* (2012) and Rijks *et al.* (2019) in the cervical oesophagus / pharyngeal region of naturally infected greenfinch and striped owl with *T. gallinae*.

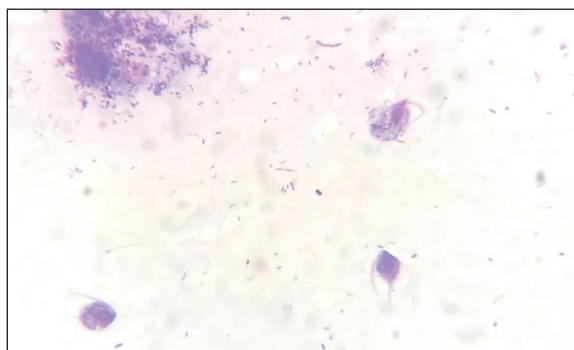


Fig. 1 Three trophozoites of *T. gallinae*, along with bacteria in the background



Fig. 2 Profuse yellow, cheesy material on the oral mucosa that partially occludes the opening of the oesophagus.

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