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Gastrointestinal helminthiasis in Pigeon: A case report on diagnosis, post mortem investigation and therapeutic management

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Abstract

A flock of pigeons were presented to Teaching Veterinary Clinical Complex, OUAT, Bhubaneswar in the month of December. Clinical manifestations were anorexia, unthriftiness, loose droppings with ensiled cloacal region, stunted growth, listlessness, unable to fly, reduced egg production with history of no deworming and no vaccination. Postmortem examination of one pigeon among them revealed anaemic conjunctiva, obstruction of intestinal lumen with ribbon like tapeworm, haemorrhagic patches on intestinal mucosa, air sacculitis, peritonitis, paleness of liver with hepatomegaly and splenomegaly. The tapeworm were also confirmed by department of Veterinary Parasitology. Diagnosis was made on the basis of clinical and postmortem findings. Treatment protocol was started with Niclosamide @175mg/kg body weight in drinking water and repeated after 14 days then in every 3 months. To provoke the condition of immunosuppression caused by Tapeworm Levamisole powder was given at the rate of 2.0mg/kg body weight. Levamisole was mixed in water at the rate of 1g/L for early recovery of pigeon. After therapeutic intervention the pigeons were recovered and Niclosamide was repeated after 15 days to prevent recurrence.

Keywords: Tapeworm, pigeon, ribbon like worm, Niclosamide, Levamisole

1. Introduction

Pigeons (order Columbiformes) are worldwide in distribution (Marques *et al.*, 2007). Diseases such as histoplasmosis, coccidiosis, cryptococcosis, etc. may occur in pigeons (Bahrami *et al.*, 2015) [3]. Pigeons also harbors flea, ticks, mites as well as other parasites (Ramisz *et al.*, 2007) [11]. Pigeon host myriads of endo and ecto parasites (Alkharigy *et al.*, 2018; El-Dakhly *et al.*, 2019) [1, 4]. The tapeworms are grouped under endoparasitic helminths that reside in the alimentary canal of the definitive host (Smyth and McManus, 2007) [16]. For completion of life cycle, eggs of tapeworm should pass through an intermediate host before infecting the definitive host. Snails, houseflies, ants, slugs, beetle as well as earthworms act as intermediate hosts. Consumption of these intermediate hosts infected with the larval stage of tapeworm leads to infection of the pigeons. Tapeworm infections are more common in tropics, due to its warm climatic conditions. Several helminthological studies intended to study the parasite fauna of domestic pigeons have been carried out in several parts of our country India (Alrikaby and Abul-Doanej, 2023) [2]. The parasitism possesses a serious health threat to the birds (Dranzoa, 1999). Helminth infections are known to cause serious host tissue damage (Hoste, 2001) [6]. Clinical manifestations of tapeworm infection are diarrhea, anemia, emaciation, droopiness and hemorrhage in the intestine. Physiological conditions include enteritis coupled with epithelial cell degeneration as well as lymphocyte macrophage infiltration (Kaufmann, 1996) [7].

Materials and Methods

A flock of pigeons were presented to Teaching Veterinary Complex, OUAT, Bhubaneswar in the month of December.

Clinical Sign: Clinical manifestations were anorexia, unthriftiness, loose droppings with ensouled cloacal region, stunted growth, listlessness, unable to fly, reduced egg production with history of no deworming and no vaccination

Post mortem Examination: Postmortem examination of one pigeon among them revealed anemic conjunctiva, obstruction of intestinal lumen with ribbon like tapeworm, hemorrhagic patches on intestinal mucosa, air sacculitis, peritonitis, paleness of liver with hepatomegaly and splenomegaly. The tapeworms were also confirmed by department of Veterinary Parasitology.

Diagnosis: Diagnosis was made on the basis of clinical and postmortem findings

Treatment: Treatment protocol was started with Niclosamide @175mg/kg body weight in drinking water and repeated after 14 days then in every 3 months. Levamisole powder was given @ 2.0mg/kg body weight. Levamisole was mixed in water @1g/L

Results and Discussion

Results with Discussion are as follows

Clinical signs: Clinical manifestations were anorexia, unthriftiness, loose droppings with ensouled cloacal region, stunted growth, pale mucous membrane, listlessness, unable to fly, dull and depressed (Fig:1) reduced egg production with history of no deworming and no vaccination. Tapeworms affect pigeons by depriving them of the required nutrients and hindering their absorption resulting in low feed efficiency. Heavy parasitic infections leads to stress that decrease the immunity of pigeons to other infections (Hendrix, 1998) [5]. Our findings are in consistent with the findings of Samour, (2004) Panich *et al.* (2021) [9], Siddiqui *et al.* (2023) [14] who reported reduced egg production, retarded growth, decreased weight gain, and visible reduction in hemoglobin content reflecting pale mucous membrane.



Fig 1: Dull and depressed

Postmortem examination: Postmortem examination of one pigeon among them revealed anemic conjunctiva due presence of tapeworms, obstruction of intestinal lumen with ribbon like tapeworm (Fig:2) accompanying with hemorrhagic patches (Fig:3) on intestinal mucosa, air sacculitis, peritonitis, paleness of liver with hepatomegaly and splenomegaly. Tapeworms can penetrate deeply in to the mucosa as well as sub- mucosa of the duodenum, leading to

hyperplastic enteritis at the site of parasite attachment (Vegad, 2018) [17]. The findings are in consistent with the findings of Panich *et al.* (2022) [10]. Tapeworm infected pigeon showed catarrhal enteritis, desquamation of villi, congestion of submucosal glands, inflammatory reactions and necrosis



Fig 2: Congested and inflamed intestine



Fig 3: Ribbon like worm

Treatment protocol

Niclosamide is an anthelmintic drug which is used for addressing tapeworm infections in pigeons. It eliminates tapeworms on contact, by enabling them to go in a partially digested state (Pearson and Hewlett, 1985) [12]. Treatment protocol was started with Niclosamide @175mg/kg body weight in drinking water and repeated after 14 days then in every 3 months. To provoke the condition of immunosuppression caused by Tapeworm Levamisole powder was given @ 2.0 mg/kg body weight. Levamisole was mixed in water @1g/L for early recovery of pigeon. After therapeutic intervention the pigeons were recovered and Niclosamide was repeated after 15 days to prevent recurrence.

Prevention and Control

Preventing the pigeons from contact with the intermediate hosts is the vital step in controlling tapeworm infection. These can be achieved by implementing strict sanitary measures. Suspected birds should be removed from the flock. Droppings of the pigeons should be disposed properly. New birds should be dewormed as well as quarantined before adding to the flock. Disinfection of the house should be carried out on regular basis and overcrowding should be avoided (Singh, 2012) [15]. Insects should be controlled and wild birds should not have access to domesticated pigeons. Affected birds should be treated at earliest. Necessary steps should be taken to eliminate intermediate hosts in order to prevent its outbreaks. Malathion or any other insecticides can be used to

control flies, ants other insects (Mandal, 2004) [8].

Conclusion

From here we can conclude that a large number of tapeworm results in anorexia, unthriftiness, stunted growth, listlessness, loss of condition and productivity loss in pigeons. More studies are required to have deep insights into the current rate of prevalence of tapeworm infections in pigeons of the studied area. However, this can be minimized by implementing strict biosecurity measures, raising awareness among the affected communities, adhering to strict hygienic norms and by carrying out regular deworming. This will assist in minimizing the incidence of tapeworm infection in pigeon populations.

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Conflict of Interest

Not available

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