

## HISTOPATHOLOGICAL MANIFESTATION IN GALLUS GALLUS DOMESTICUS INFECTED WITH CESTODE PARASITE

Ziyaurrehman Z. Husain<sup>1</sup>, Sunil D.Patil<sup>2</sup>

<sup>1</sup> Dept. of Zoology, Loknete Vyankatrao Hiray Arts Science & Commerce College

<sup>2</sup> Dept. of Zoology, M.S.G. College, Malegaon Camp, Dist. Nasik (MS) India

### ABSTRACT

In the present investigation on histopathology of Gallus gallus domesticus infected from cestode parasite, Amobetanea sp. The cestode worm attaches to the host tissue and ingests the food. The worm is linked to the mucosal layer, according to the T. S. of the gut. The gut mucosal layer was disrupted and seemed to be damaged as a result of its attachment. It also shows hemorrhages, nodular growth, lesions, eroded mucosal epithelium, and ulcerations. Moreover, Intestinal mucosa was damaged and eroded as a result of the parasites' attachment, which may have favoured additional bacterial infections that led to greater inflammation and severe cellular reactions in the affected area.

Keywords: Histopathology; Amobetaenia; Gallus gallus domesticus; cestode.

### 1. INTRODUCTION

Chicken have a significant role in the supply of animal protein. Their affordable supplies are directly related with rural economic status includes poultry meat and eggs (Allouse, 1961). It is seen that, most of the diseases of various origins such as parasitic, bacterial and viral diseases affect local chickens and constitute a real blight which slows down the development of this breeding. Among these diseases, chicken digestive parasitism, which is defined by the presence of parasites in different parts of the digestive tract, from the oral cavity to the cloaca, is a fairly common pathology. Endoparasites can produce nodules and severe enteritis in the intestine, which reduces the ability of the intestine to absorb nutrients and vitamins from the host (Hayat and Hayat, 1983). According to Borghare *et al.*, (2009) parasite causes body weight loss, delays in growth, decreased egg production, impaired body defenses, and even death.

The parasitic disease decreases the poultry's output in rural areas. Despite the fact that parasite infections are among the main causes determining the decline in chicken output, they are frequently disregarded due to their rarely fatal effects (Alemu, 1985; Sonaiya, 1990). Helminth parasites were implicated as major causes of health deterioration and loss of productivity, and helminthiasis is regarded as a significant concern for local hens (Abebe *et al.*, 1997; Eshetu *et al.*, 2001).

Helminth are principal parasites associated with parasitism in chicken (Bindoula, 1989). Helminthiasis is caused by harmful worms from the Nematode, Cestode and Trematode that have developed in chickens' digestive tracts. (Cribb and O'Callaghan, 1922). The cestode inhabits the small intestine and causes stunted growth of young chicken, emaciation of the adult, and decreased egg production of the hen (McDougald, 2003). More than 1400 species of tapeworms have been recognized as the cause for cestodiasis in domestic and wild birds throughout the world (Ashenafi and Eshetu, 2004).

From the literature it has been noticed that histopathological changes are not discussed in detail, there for the present study discusses the histopathological changes occur due to cestode infection in *Gallus gallus domesticus* from Nashik District Maharashtra India.

## 2. MATERIAL AND METHODS

Intestine of chicken were collected and brought to the laboratory for observation of helminth parasite infection. Most of the intestine was found to be infected with cestode parasite of genus *Amoebotaenia* sp. The worm was cleaned in saline water and was fixed in Bouin's fluid for 24 to 48 hrs before being thoroughly cleaned in distilled water. The sample was then dehydrated using increasing concentrations of alcohol for 20 to 30 minutes at a time: 30%, 50%, 70%, 90 %, and 100%. Dealcoholization was accomplished for 20 to 30 minutes with two changes of xylene again. The material was infiltrated with paraffin wax for histopathological purposes by first preserving it in a 1:1 combination of xylene and wax for 30 minutes at 40–42°C in an oven, and then two changes in pure wax kept in a molten state in an oven. With the use of a microtome, thin paraffin slices of tissues were cut and stained with haematoxyline and eosin stain which were observed under research microscope in order to analyse their histological characteristics. The cestode parasites were indentified using the keys given by Yamaguti, (1956).

## 3. RESULT AND DISCUSSION

In the present work histopathology of intestine in *Gallus gallus domesticus* infected with cestode parasites *Amoebotaenia* sp. Intestinal mucosa was damaged and eroded as a result of the parasites' attachment, which may have favoured additional bacterial infections that led to greater inflammation and severe cellular reactions in the affected area as shown in the fig. 1, When normal intestine as in fig. 3 is compared with the infected intestine in the fig. 4, it shows heavy infection of cestode parasite in the intestinal tissue is easily observable in the

fig.2 causing hemorrhages, lesions, nodular growth, ulcerations, eroded mucosal epithelium. Which is similar to the observation by Suhail *et al.*, (2019) in *Gallus gallus domesticus* infected with cestode parasite *Raillientina* sp. According to Urquhart *et al.*, (1996) tapeworm species under the genera *Choanotania* and *Amoebotaenia* are not normally pathogenic unless present in large numbers. Overall, the histopathological manifestations of cestode infection in *Gallus gallus domesticus* can range from mild to severe and may result in serious health consequences if left untreated. Early diagnosis and treatment is crucial to prevent long-term damage to the bird's health.

#### 4. CONCLUSION

From the present manuscript it has been concluded that cestode parasites seriously harm poultry farms, thus farmers must raise the caliber of their feed to ensure the health of their livestock. To reduce infection, the cultivation space should be increased to prevent chickens from becoming crowded. Eggs should stay away from areas used for breeding. In order to prevent the loss, the farmer or owner should be informed of the helminthes infections. To inform the public about illness prevention and treatment options, awareness campaigns should be launched. Domestic chicken coops need to be kept clean, sanitised, and inspected frequently. To combat the infection of not only *Gallus gallus domesticus* (chicken), but also food lovers for better hygiene, a helminthes parasite vaccine should be created.



Fig. 1 Attached Scolex of Cestode Parasites



Fig. 2 Heavily infection of cestode parasites

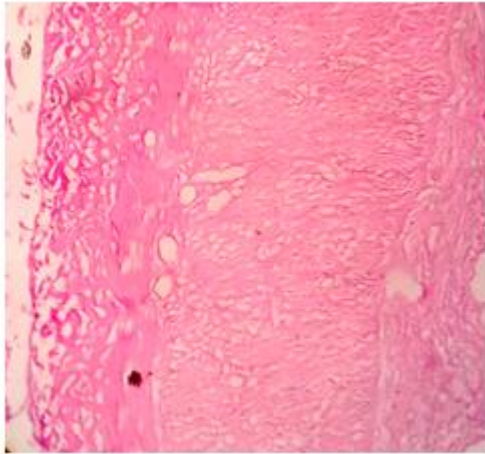


Fig. 3 Normal Intestinal Tissue of Gallus gallus domesticus

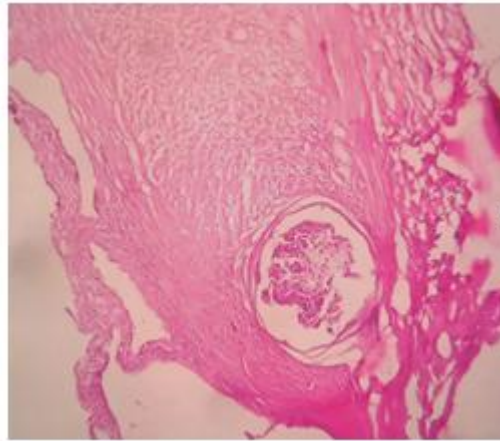


Fig. 4 Infected Intestinal Tissue of Gallus gallus domesticus

**CONFLICT OF INTEREST:** The authors have no relevant financial or non-financial interests to disclose. Also the authors have not any conflict of interest.

**Ethical approval:** Not applicable

**Consent to publish:** Not applicable.

## REFERENCES

- Abebe, W.; Asfaw, T.; Genete, B.; Kassa, B. and Dorchie, P.H. (1997). Comparative studies of external parasites and gastrointestinal helminths of chickens kept under different management system. *Rev. Med. Vet.*, 148: 497-500.
- Alemu, S. (1985): The status of poultry research and development in Ethiopia. In: IAR Proceedings (ed.): The status of livestock, pasture and forage research and development in Ethiopia. *Agric. Res. Inst.*, 62-70.
- Allouse, B.E. (1961). *Birds of Iraq, Vol. II, Galliformes- Piciformes*: Ar-Rabitta Press, Baghdad: 280 pp.
- Ashenafi, H and Eshetu, Y. (2004): Study on gastrointestinal helminthes of local chicken in central Euthopia. *Revue Med Vet.* 155: 504-507.
- Bindoula G. (1989): Contribution à l'étude des Helminthes du tube digestif chez le poulet au Sénégal : Région de Dakar [Contribution to the study of helminths of the digestive tract in chickens in Senegal: Dakar region]. Doctorat thesis in Veterinary Medicine. Université Cheikh Anta Diop de Dakar;83p.

- Borghare, A.T.; Bagde, V.P.; Jaulkar, A.D.; Katre, D.D.; Jumde, P.D.; Maske, D.K. and Bhangale. G.N. (2009): Incidence of gastrointestinal parasitism of captive wild pigeons at Nagpure. *Vet. World*, 2 (9): 343.
- Cribb T.H., O'callaghan M.. An unusual trematode infecting domestic chickens. *Aust Vet J.* 1992;69(3):69–70..
- Eshetu, Y.; Mulualem, E.; Ebrahim, H. and Abera, K. (2001). Study of gastrointestinal helminths of scavenging chicken in four rural districts of Amhara region, Ethiopia. *Rev. Sci. Tech. (Int. Office Epizootics)*, 20 (3): 791-796.
- Hayat, B. and Hayat, C.S. (1983): Incidence of intestinal parasites of chicken in Faisalabad district. *Pak. Vet. J.*, 3 (4): 165-167.
- McDougald LR. (2003): *Cestodes and trematodes: Diseases of Poultry*. 11th edition Blackwell Publishing Company: Iowa (USA); 2003: 961-972.
- Sonaiya, E.B. (1990). The context and prospects for development of smallholder rural poultry production in Africa. CTA- Seminar Proceedings on Smallholder Rural Poultry Production, Vol. 2: 108-141.
- Suhail Rashid, Syed Tanveer and Safiya Abdullah (2019): Histopathological studies of cestodiasis in domestic fowl, *Gallus Gallus gallus domesticus*. *SM Journal of Biology*.5 (1), 1020.
- Urquhart G.M, Amour J. Dunian J.L, Dunn A.M, Jennings F.W. (1996): *Veterinary parasitology*, 2<sup>nd</sup> edition, Blackwell Publishing; 120-196.
- Yamaguti S, (1956): *The cestode of vertebrates* Interscience publ. Newyork and London, *systema helminthum* Vol-II 1-860.