

# Histopathological study of tapeworm infection in *Mastacembalus armatus* from Sina Kolegoan dam Osmanabad dist. (MS).

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## Abstract

The histopathological study of the parasitized tissues of fishes of Sina Kolegoan dam was undertaken. The fish *Mastacembalus armatus* (Lecepede, 1800) examined for gastrointestinal parasitic infections are Ptychobothridian cestode, *Circumoncobothrium osmanabadensis*. The histopathology of the fish tissues shows different pathological conditions. Histopathological study has been made to assess the extent of damage caused by the parasite. Histological changes include destruction and extrusion of the intestinal villi, fibroblast cell and plasma cell. It seems that the environment of the intestine is quite favourable for the worm *Circumoncobothrium osmanabadensis*. So the worm finds it easy to absorb the same through tegument for growth and nourishment.

**Keywords:** *Circumoncobothrium osmanabadensis*, Histopathology, Intestinal villi, *Mastacembalus armatus*, Sina Kolegoan Dam.

## INTRODUCTION

Fishes are said to be gold in water, they play an important role in nation's economy. As a nutritional point of view, fishes give high content of proteins to the daily growing population. Now a day they are facing the problems of malnutrition. The tapeworms present in them cause considerable damage. Cestodes are said to absorb semi digested material from the intestine and it has been assumed that these worms lie in a both of semi digested 'soup' from which they can absorb nutrient, metabolic and in vitro studies suggest that a complex nutritional relationship occurs between cestode and its host. In host parasite relationship host provides a suitable environment to parasites and in turn parasites either directly or indirectly injures host and also deprives host getting required nutritional requirements. The pathogenicity of cestode adjacent various order described by (Rees, G. in 1967 [7]) study of host parasite relationship described in fishes (Mcvicar 1972) *Acanthobothrium*, *Phllobothrium*, *Echinobothrium*, (Murlidhar and Shinde 1987 [6]) observed histopathology of *Acanthobothrium uncinatum* from the fish *Rhynchobatus ajeddensis* (Borucinska and Caira, 1993) Subsequently described the histopathogenicity of two adult *Trypanorhynch*s from the muscosa of the nurse shark. Never the less quit of few reports on the pathogenicity of cestode on fishes are available i.e. (Sinde 1970, Bylund 1972).

The present communication deals with the study of histopathology of Ptychobothridian cestode *Circumoncobothrium*

*sp.* intestinal tape worm of host *Mastacembalus armatus*.

## MATERIAL AND METHODS

For the histopathological study, *M. armatus* of freshwater fishes were collected from local fisherman of Sina Kolegoan Dam. These fishes were brought to the laboratory, dissected out the intestine, examined for the cestode infections. Some fishes were found to be infected whereas few were not. Both infected and normal hosts intestine were cut and fixed in Bouin's fluid to study histopathological changes. The fixative inhibits the post mortem changes of the tissues. Then tissues were washed, dehydrated through alcoholic grades, cleared in xylene and embedded in paraffin wax (58-62°C). The blocks were cut at 7µ and slides were stained in Eosin and Haematoxylin double staining method. Best slides or sections were selected and observed under the microscope for histopathological study. The photomicrographs were taken with the help of camera. These slides were identified by using keys "Systema Helminthum" (Yamaguti, 1956[8]).

## RESULTS AND DISCUSSION

From the present communication the results indicate that some of the intestines were found to be infected with cestode parasite. The (Plate No. A) Shows the healthy intestine, in which villi and all layers are clearly observed, where as in (Plate No. B) infected intestine shows that the worm attached to the mucosal layer of intestine and slowly invades to the deeper layers of the host tissue.

The worm *Circumoncobothrium sp.* is having scolex with hooks, which are used for attachment with the intestine of host *M. armatus*. In T.S. of intestine of host *Mastacembalus armatus* it has been observed that the cestode is having penetrative type of scolex and there is no doubt that they cause heavy mechanical tissue damage to their host. Scolex of worm deeply penetrated through layers causing heavy mechanical injury to mucosa, sub

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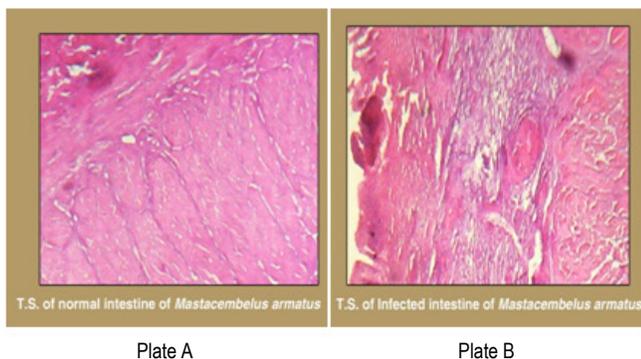
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mucosa, come to lie near the muscularis mucosa. The intestinal villi encircle the scolex of worm and intestinal architecture gets destructed and also it forms cysts like structure, pad formation took place.

The worm is not only successful to enter into the intestine forming the ulceration in the intestinal wall causing damage to the host tissue but the parasite may affect host physiology in many ways that induce stress in the host. The parasitic infection in turn disturbs the metabolic pathways (Esch GW *et al.*, 1977 [2]). The present study showing that, the *Circumoncobothrium sp.* damage the epithelial layer, these results are matching in accordance with the studies carried out by (Gopal Krishnan, 1968[3]) patterns of scolex invasion in serosa showed as previous reports. Haque and Siddiqi, (1978) [5] have reported the infection of *F. buskicauses* surface desquamation of mucosal epithelium, infiltration of eosinophils and plasma cells. They have also observed the destruction of mucosal epithelium and villi of intestine. These finding are similar to those of Haque and Siddiqui [5] who observed surface desquamation and damage laminapropria. It is also observed that inflammatory nodulation in the intestinal wall and increased number of goblet cell.

The Atlantic salmon (*Salmosalar*) had ananisakid larva partly embedded in the wall of an intestinal caecum (Hammerschmidt, K., 2007 [4]). However, the helminths crosses majority of the intestinal layers (internal epithelium, submucosa, muscularis layer) and come to lie near serosa suggesting that, it is very dangerous and destructive parasites to the definitive host (C. J. Hiware, 2008[1]).

## OBSERVATIONS



## CONCLUSION

Parasites affect the productivity of the fish in the systems through mortalities, by decreasing growth rate, reducing the quality of

the flesh and making the hosts more susceptible to more pathogens. It is concluded that the *Circumoncobothrium sp.* Cestode contact with host tissue and utilize the nutritive material to the favorable for its nourishment and growth from the host tissue and make host weak affecting the growth of host causing damage to intestinal tissue of host.

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