

Histopathological Study of *Mastacembelus armatus* Infected With Cestode Parasite From Buldana District (M.S.) India

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Abstract

The freshwater fish *Mastacembelus armatus* (Lecepede, 1800) were collected from different places in the Buldana district, and after dissection, their intestinal passage was examined for cestode parasites. The cestode *Senga* Sp., Dollfus (1934) was recovered from the intestine. The histopathological studies were carried out and observation clearly shows that the parasites, *Senga* Sp. approaching the intestinal villi embedded in fibroblast cells, and plasma cells, and are attached to the intestinal villi. The histopathological studies of cestode *Senga* sp. have been studied to find the pathological changes and extend the damage of the intestinal layers of *Mastacembelus armatus*.

Keywords: Cestode, *Mastacembelus armatus*, Buldana, *Senga* Sp.

1. Introduction

The infection of helminth parasites is found plenty of in fishes which reduces the food value of fishes decreases their production and results in mortality and morbidity, so the study of helminth parasites is a necessity today. Histopathology is the microscopic study of tissue affected by disease. Histological and anatomical changes in parasitized organisms have been studied in various ways and by several workers. And yet a detailed cytological study of the effect of parasitism upon the host is nearly a virgin field [1]. Fish diseases and histopathology, with a broad range of causes, are increasingly being used as indicators of environmental stress since they provide a definite biological endpoint of histological exposure, it is a mechanism that can indicate fish health by determining early injury to cells and can therefore be considered an important tool to determine the effect of parasites on fish tissue. The pathogenicity of cestode adjacent various order [2].

Mcvicar [3] studied of host-parasite relationship described in fishes *Acanthobothrium*, *Phllobothrium*, *Echinobothrium*. Murlidhar and Shinde [4] observed the histopathology o *Acanthobothrium uncinatum* from the fish *Rhynchobatus djeddensis*. Borucinska and Caira [5] subsequently described the histopathogenicity of two adult *Trypanorhynchus* from the mucosa of the nurse shark.

Jadhav et al., [6] observed the histopathology of *Circumoncobothrium osmanabadensis* from the *Mastacembelus armatus*, and Fartade and Fartade [7] studied the histopathology of *Circumoncobothrium govindii* from fish *Channamarulius*.

Gaikwad et al., [8] [9] studied the histopathology of *Lytocetus indicus* from freshwater fish *Mastacembelus armatus* (Lecepede, 1800).

The present investigation deals with the study of histopathology of *Mastacembelus armatus* infected with the cestode parasite i.e. *Senga* Sp. From Buldana district (M.S.) India.

2. Methodology

For the histopathological study, *M. armatus* of fresh water fishes were collected from different places in the Buldana district. These fishes were brought to the laboratory, dissected out of the intestine, and examined for cestode infections. Some fishes were found to be infected whereas few were not. Both infected and normal host intestines 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. The best slides or sections were selected and observed under the microscope for histopathological study. The photomicrographs were taken with the help of the camera. These slides were identified by using the keys "Systema Helminthum" [10].

3. Result and Discussions

After cestode parasite infection, there is a drastic alteration that leads to the destruction of the internal anatomy, resulting in a total change of its appearance. Normal intestine showed healthy villi and all layers were observed. Infected fish intestine includes shortening of villi, thickening of the muscle layer, destruction of the villi, fast penetration of the mucosa, and damage of both the mucous and submucous membranes.

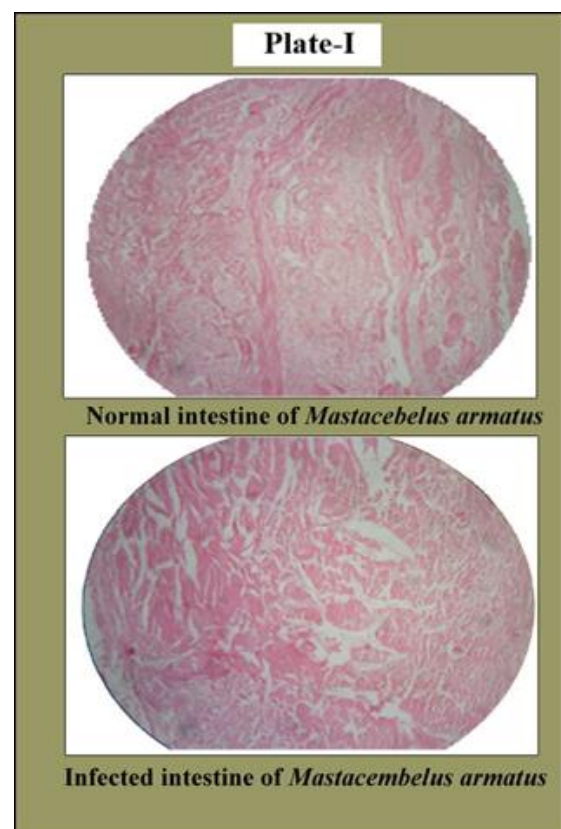


Plate 1: The host-parasite relationship between *Mastacembelus armatus* and *Senga* Sp.

- A. T.S. of normal Intestine of *Mastacembelus armatus*.
- B. T.S. of infected Intestine of *Mastacembelus armatus*.

In T.S. of the intestine of *Mastacembelus armatus*, it has been observed that the cestode has having penetrative type of scolex and there is no doubt that they cause heavy mechanical tissue damage to their host. Scolex of the worm deeply penetrated through layers causing heavy mechanical injury to the mucosa, submucosa,

which comes to lie near the muscularis mucosa. The intestinal villi encircle the scolex of the worm and intestinal architecture gets destructed also it forms a cyst-like structure, and pad formation takes place.

The present investigation depicted that the cestode parasites are extensively destructed in the intestine of freshwater fish *Mastacembelus armatus*. Being parasitic in nature, they damage the organs on which they survive. Due to the occurrence of these parasites, the physiological activities of the infected fish are hindered and their growth is retarded which cause economic loss to the fishery industry. Parasites affect the productivity of the fish in the systems through mortalities by decreasing growth rate reducing the quality of flesh and making the hosts more susceptible to more pathogens. From the above histopathological discussion, it can be concluded that cestode parasites i.e. *Senga* Sp. finds nutritive material from the intestine of hosts i.e. *Mastacembelus armatus* which is essential for their nourishment and growth.

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Conflicts of interest: The author stated that no conflicts of interest.

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