

## HISTOPATHOLOGY OF THE CESTODE *ECHENEIBOTHRIUM SHINDEI* JETHWANI (1995) FROM *CARCHARIAS ACUTUS* MARINE WATER FISH

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### ABSTRACT

The present study deals with the histopathology of cestode parasite from intestine of Marine fish *Carcharias acutus*. One hundred and sixty seven intestines of marine fish *Carcharias acutus* were collected from various sampling site such as Mirkarwada, Rajiwada and main fish market, Bhatey Ratnagiri. Collected fishes were brought to Marine Research Laboratory Bhatey, Ratnagiri for further examination. Fifteen fishes of them were infected with cestode parasites. The detached worms were later identified as *Echeneibothrium shindei* Jethwani (1995). In transverse section of intestine, it has been observed that the worm attached to the mucosa layer of intestine and slowly invades the host tissue causing heavy mechanical injury to mucosa.

### KEY WORDS:

Marine water fish *Carcharias acutus*, histopathology, cestode, *Echeneibothrium shindei*.

### INTRODUCTION

A cestode parasite makes contact with the tissues at least two different hosts during his life cycle. In an adult stage, it infects the intestines results mild or non-existent clinical manifestations, and in the larval stage causes signs and symptoms secondary to enlarging larval cysts in various tissues of a mammalian host. The study of this contact, interaction and relationship between the host and the parasite is known as histopathology. The mechanism which present in the establishment of parasite within a particular host, varies widely from species to species in fishes. Cestode live in a very haphazard environment as on there is movement of the gut and food present in the gut the nature of its related gland, hence they require superb organs of attachment for their survival.

The host parasite relationship in cestode is complex one, involving interaction between atleast two and sometime more, genetic system, namely those of the parasite, its intermediate and its definite host. Thus a cestode, it has to survive must be suitably adapted to the morphology, physiology, biochemistry and ecology of its own hosts. There is immense literature on pathogenesis of adult cestodes of various orders, as it has been done by Rees, G. in 1967. In fishes, Mevicar (1972) described host parasite relationship of *Echinobothrium*, *Phyllobothrium* and *Acanthobothrium*. Sircar and Sinha 1980 have also studied the histopathology of *Lycocystus indicus* occurring in fish water fishes. Murlidhar and shinde (1987) observed histopathology of *Acanthobothrium* of fish *Rhynchobatus* species. Hunter (1927), Amlacher 1961, Hayunga E.G. (1977) and Mackiewilz (1972) has studied the histopathology of intestine of fish caused due to cestodes. Boruclnska and Caria (1993) observed a comparison of mode of attachment and histopathogenicity of tapeworm representing two orders infecting the spiral intestine of the nurse shark, *Ginglymostoma cirrtusa*. Bhaware (1993) observed *Echeneibothrium shindei* sp. n. from the spiral valve of *Rhynchobatus djeddensis*

### MATERIALS AND METHODS

During the period of June 1999 to May 2002, *Carcharias acutus* marine fishes were collected from Mirkarwada and Rajiwada in Ratnagiri district for their histopathological study. The fishes were brought to the laboratory, dissected out the gut and inspected for the cestodes infection. Some of them were found infected. Both infected and non infected intestines were fixed in Bouin's Fluid. The fixative inhibits the post mortem changes of tissue. Then tissues were washed, dehydrated through alcoholic grades cleared in xylene and embedded in paraffin wax (58-60°C). The blocks were cut at 7D by rotary microtome and slides were stained in Eosin Haematoxyline double staining method and the section were mounted in the DPX. The best sections were selected and examined under the microscope for histopathological study. The photomicrographs were taken with the help of camera.

### RESULTS AND DISCUSSION

The present study reveals that some of the intestines were found infected with cestode parasite. The Figure 1. shows the healthy intestine while Figure 2. shows the infected intestine. The plate shown in Figure 2, observes the worm attached

mucosal layer of intestine and slowly invades to the deeper layers of the host tissue while in healthy intestine villi and all layers were clearly observed. The *Echeneibothrium* sps. is having scolex with suckers, which are used for attachment with host *Carcharias acutus* in L.S. of intestine. It has been observed that the *Echeneibothrium* sps. attached to the mucosal, sub-mucosal and muscularis mucosa of gut and slowly damages the host intestinal tissue and it destroys the intestinal epithelium of villi of *Carcharias acutus*.

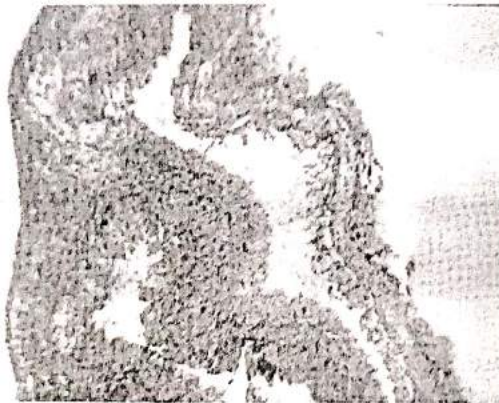


Figure 1. Shows the healthy intestine



Figure 2. Shows the infected intestine.

The observation shows the parasites turned out to be *Echeneibothrium shindei* and are found in the anterior part of the intestine. The transverse section of healthy intestine of *Carcharias acutus* shows intact histological architecture and all layers observed. *Echeneibothrium shindei* was approaching the intestinal villi and damages the epithelial layer, embedded in the fibroblast, lymphocytes, plasma cells, and attached to the intestinal villi therefore, causing inflammation, vacuolation and damage the intestinal villi. (Gopal Krishnan 1968) The Worm enters in to the intestine, forming the ulceration in the intestinal wall causing damage to the host tissue and may affect hosts physiology in many ways that induce stress in the host the parasitic infection in turn disturbs the metabolic pathway. (Esch G W et al 1977)

Haque and Siddqi (1978) have reported the infection of cestodes parasite affect the productivity of the fish in the system through mortalities by decreasing growth rate, reducing the quality of the fish and making the hosts more susceptible to pathogens. From the above histopathological discussion, it can be concluded that the tapeworm parasites like *Echeneibothrium shindei* finds the nutritive material from the intestine of hosts.

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