

Histopathological Damage by Cestode *Uncibilocularis dasyatisii* Sp. Nov. In the intestine of *Dasyatis walga* (Muller and Henley, 1841)

Sandeep A. Anarse¹, Babu S. Khaire², Sambaji D. Ovhal³

^{1,2,3}Department of Zoology, Anandrao Dhonde Alias Babaji Mahavidyalaya, Kada
Ta: Ashti, Dist: Beed.-414 202
Email: sandeepanarse23@gmail.com

ABSTRACT: *The marine water fish Dasyatis walga collected from Ratnagiri district during the period of June 2018 to May 2019. After dissection their intestinal passage was examined for tapeworm parasite. The genus Uncibilocularis was established by Southwell (1925) with its type species U. trygonis (Shiple et Hornell 1906), the histopathological studies were carried out and observation clearly shows that the parasite, Uncibilocularis dasyatisii Sp. Nov. was approaching to the intestinal villi, embedded in the fibroblast cell and is attached to the intestinal villi. The histopathological studies of tapeworm Uncibilocularis dasyatisii Sp. Nov. Have been studied to find the pathological changes and extent of damage of the intestinal layers of Dasyatis walga.*

Keywords: *Dasyatis walga, Histological Damage, Uncibilocularis dasyatisii Sp. Nov, intestinal villi.*

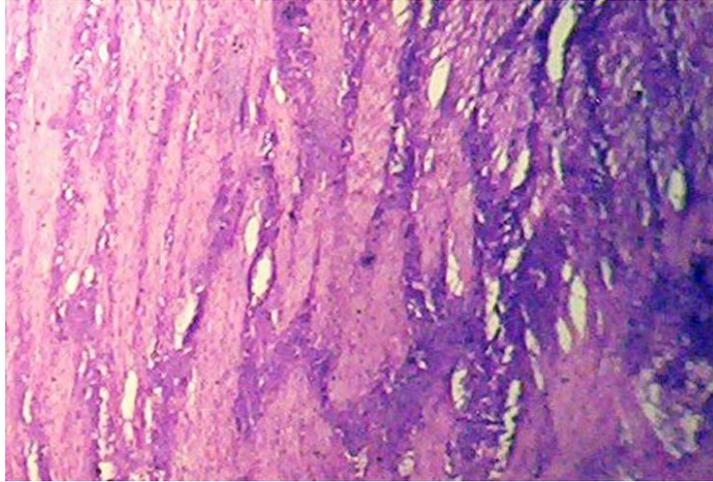
1. INTRODUCTION

The study of different types of the diseases to the tissues of host is known as "Histopathology". During the life cycle of cestode, it is accomplished twice in different host. In fishes the mechanism of parasites establishment varied from species to species and it also depends on the stage of parasite, host tissue and environmental conditions. The physiological conditions in a particular host gut (fishes) with regard to pH or other physiological characters may provide favourable or unfavourable site for metabolism of particular species. The various forms of cestodes scolex or head bears hold fast organs, which are beautifully adapted for attachment to the mucosa of specific hosts, but in some species scolex are poorly developed; hence they cannot specifically adapted to any particular intestine, and have a wide host spectrum. The extensive study on the host parasite relationship has been carried out by Ahmed, A.T.A. and Sanullah, M. 1975. The pathogenicity of cestodes of various orders, R.M. and DE. SA, L. M. 1962. Described host parasite relationship of *Phyllobothrium*,

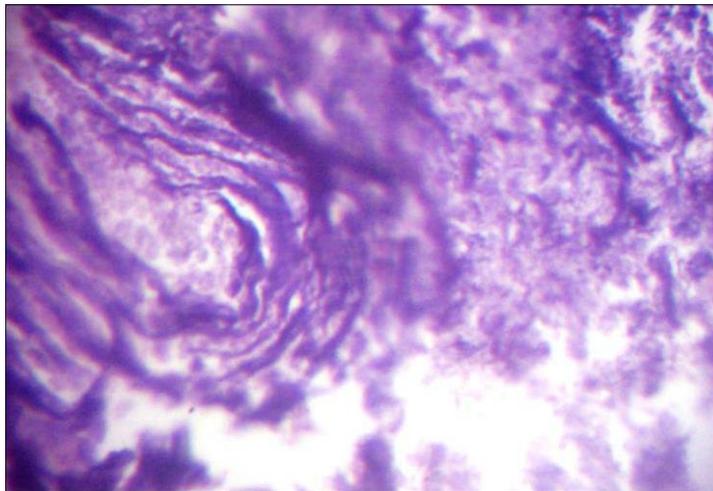
Acanthobothrium, *Echinobothrium*, Sircar and Sinha(1980) have also studied the histopathology of *Lytocestus indicus* occurring in fresh water fishes. Hayunga, E.G. 1977. Comparative histology of these scolices of three caryophyllaeid tapeworms: Relationship to pathology and site selection in host intestine. Diss. Abs. Int. Murlidhar and Shinde (1987), Amlacher (1961), Hayunga E. G. (1977) and Mackiewilz (1972) has studied the histopathology of intestine of fish caused due to cestodes. Boruclnska and Caira (1993) observed a comparison of mode of attachment and histopathogenicity of tapeworm representing two orders infecting the spiral intestine of the nurse shark, *Ginglymostomacirratus* degree of response varies from host to host and also varies in different tissue sites, within the host. It was observed in suitable host of the parasites, followed by accumulation cells, mostly eosinophil, occurred around the parasite tissue, followed by a stratiform necrosis of granulated tissue. Sometimes, neurotic nodules or abscesses also develop and sometimes no marked cellular reaction is seen, even though the scolex enters and dilates the crypts of Lieberkuhn and invades the lamina propria to cause bleeding. Thus the host parasite relationship results in the gain of one organism and the loss of another. It leads to various diseases and disorders in the infected hosts. Naturally it is important to study this relationship not because of their parasitological value but for the relative existence of mankind these studies may have considerable intrinsic interest and raise fundamental questions common to other areas of Biology at a molecular, cellular tissue and whole organism level.

2. MATERIAL AND METHODS

For the histopathological study, different types of marine water fishes were dissected to observe the rate of infection. Some fishes were found to be infected and some uninfected. Both infected and uninfected hosts intestine were dissected 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 7 μ and slides were stained in Mallory's Triple staining method. Best slides or sections were selected and observed under the microscope for histopathological study.



T.S. of non-infected intestine of *Dasyatis walga*



T.S. of infected intestine of *Dasyatis walga*

3. RESULT AND DISCUSSION

The host parasite relationship between *Dasyatiswalga* and *Uncibilocularisdasyatisii* Sp. Nov.

a) T.S. of non-infected Intestine of *Dasyatiswalga*

b) T.S. of infected Intestine of *Dasyatiswalga*

In T.S. of intestine of *Dasyatiwalga* it had 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 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 cyst like structure, pad formation took place.

4. CONCLUSION

Parasite 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 finds nutritive material from the intestine of hosts which is essential for their nourishment and growth.

ACKNOWLEDGEMENT

My heart to say a few words of thanks, It is my pleasant privilege to place on record my deep sense of gratitude, to Principal Dr. H. G. Vidhate. AnandraoDhonde Alias BabajiMahavidyalayaKada, for providing laboratory facilities.

5. REFERENCE

- [1] **Ahmed, A.T.A. and Sanaullah, M.1975.** Pathological observationof the intestinal lesions induced by caryophyllaeidcestodes inClariasbatrachus (Linnaeus). (Siluriformes: Clariidae) FishPath. 14:1-7.
- [2] **Avivah Zuckerman and David W. Weiss (1973):** Dynamic aspects of host-parasiterelationships Vol-I. Academic press New York / London PP. 227
- [3] **Bailey, W.S. 1951.** Host tissue reactions to initial superimposedinfection with Hymenolepis nana varFraterna. J. Parasit, 37:440-444.
- [4] **Befus, A.D. (1982):** Mechanism of host resistance of mucosa parasite interface. Inparasites their world and ours Elsevier Biomedical Press 34-36.
- [5] **Bhagwan H.K., And Mohekar A.D. (2003):** On a new species ofTylocephalum
- [6] **(Cestoda: Lecanicephalidae Braun, 1900)** from *Trygonzuei* at Alibag India. Parasites and Diseases 189-193.
- [7] **Bu. S. S.H. and Seng L.T. (1997):** The histopathology of sleepy grouper disease. AahriNewslelter
- Campbell, R., Haedrich, R. L. & Munroe, T. A. (1980):** Parasitism and ecologyrelationships among deep-sea benthic fishes. Marine biology, 57, 301-331. Article 6 (2).
- [8] **C.J. Hiware ET. Al. 2008.** Studies on Histopathology of Clariasbatrachus (Linnaeus) IntestineParasited by Cestode,LytocesusclariasaeJadhav and Gahvane, 1991 Journal ofYalaRajabhatUniversity.Coleman,
- [9] **Dezfuli, B. S., Giari, L. Simoni E, Bosi G. &Manera, M.(2002a):** Histopathology, immune histochemistry and ultrastructers of the intestine of *Leuciscuscephalus* (L.) naturally infected with *Pomphorhynchuslaevis* (Acanthocephala). Journal of fish diseases, 25, 7-14.
- [10] **Esch GW, Hazen TC, Aho JM 1977.** Parasitism and rand K-selection In: GW Esch (Ed), Regulation of parasitepopulations. Academic Press New York p 9-62.
- [11] **Foresk, Z. And Rukavina, J. 1959.**Experimental immunization ofdogs against Echinococcusgranulosus. I. First observation.Veterinaria, Saraj. 8: 479-482.

- [12] **GopalKrishnana, V. 1968.** Diseases and parasites of fishes in warm water ponds in Asia and the Far East, fisheries. Report. FAO-UN 445: 319-343. (Proceedings of the Foot worldsymposium on warm water pond fish culture).
- [13] **Hammerschmidt, K.2007.** Establishment of tapeworm's in sticklebacks- fast food or fast lane Experimental Parasitology. 116: 142-149.
- [14] **Haque M and Siddiqui A.H.1978.** Histopathology of pig and man. Indian Journal of parasitology. 2 (2): 97-98.
- [15] **Hayunga, E.G. 1977.** Comparative histology of the scolices of three caryophyllaeid tapeworms: Relationship to pathology and site selection in host intestine. Diss. Abs. Int., 38.11)
- [16] **Jaywant Dhole ET. Al, 2011.** Histopathological study of *Mastacembalus armatus* (Lecepede, 1800) infected with tapeworm from Osmanabad District (M.S.) India. Recent Research in Science and Technology 2011, 3(3): 17-19.
- [17] **Jadhav, B. V. and Shinde, G. B. (1981):** A new species of the genus *Tylocephalum* Linton, 1890 (cestode: Lecanicephalidae) from an India marine fish. Indian Journal of Parasitology 5 (1): 109-111.
- [18] **Mitra, K.B. And Shinde, G.B. 1980.** Histopathology of cestodea Indiana (Cohn, 1900), *Gallus domesticus*, at Aurangabad, India. Sci. Vol. 49(5): 206-207.
- [19] **Murlidhar, A. And Shinde, G.B. 1987.** Histopathology of the cestode, *Acanthobothrium uncinatum* (Rudolphi, 1819) from *Rhynchobatus ajeddensis* at Kakinada, A.P. India. Indian J. of Parasitology 11(1): 85-86.
- [20] **McDonough, J. M. and Gleason, L. M. (1981):** Histopathology in the rainbow darter, *Etheostoma Caeruleum* resulting from infections with the acanthocephalus, *Pomphorhynchus bulbocollis* and *A. dirus*. J. Parasitol 67: 403-409.
- [21] **R. M. and DE. SA, L. M. 1962.** Host response to implanted adult *Hymenolepis nana*. J. Parasit., 50 (Suppl.):17.
- [22] **Shinde G.B. 1968.** On *Circumoncobothrium ophiocephalin*. sp. From a freshwater fish *Ophiocephalus leucopunctatus* in India. Revistain Parasitologia, Vol. XXIX- No.2- Giugno, pp.111- 114.
- [23] **Sanjay Nanware, Baba Jadhav, and S. N. Kalyankar; (2005):** Histopathological studies on Anoplocephaline cestode, *Moniezia* (Blanchariezia) Kalawali Sp. Nov. Infecting *Capra Hircus* L. National Journal of Life sciences 2 (1 and 2) PP.123-124.
- [24] **Sanjay Nanware, Baba Jadhav, and S. N. Kalyankar; (2005):** Histopathological changes in intestine of marine fish, *Carcharias acutus* Parasitised by *Phoreiobothrium* Sp. National Journal of Life Sciences 2 (1 &2) pp. 127-128.
- [25] **Yamaguti, S. 1956.** Systema Helminthes Vol-II. The cestode of vertebrates. Interscience. New York and London, 1-860.