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RESEARCH ARTICLE

HISTOPATHOLOGICAL MANIFESTATION CAUSED BY NEMATODE PARASITE *Eustrongylides* Sp. INFECTED IN FRESHWATER FISH *WALLAGO ATTU*

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ABSTRACT

In the present investigation the pathological effects and occurrence of nematode *Estrongyylides excisus* parasitizing freshwater fish was observed. The nematode E. excisus was recorded for the first time on in *Wallago attu* from Kaiogaon toka, Dist. Chh. Sambhajinagar. In addition, this research provides useful data regarding histopathology effects of E. excisus on freshwater fish Wallago attu i.e Hyperaemia, edema, microhaemorrhages, and inflammatory reaction necrosis were observed around the encysted parasites in the liver tissue.

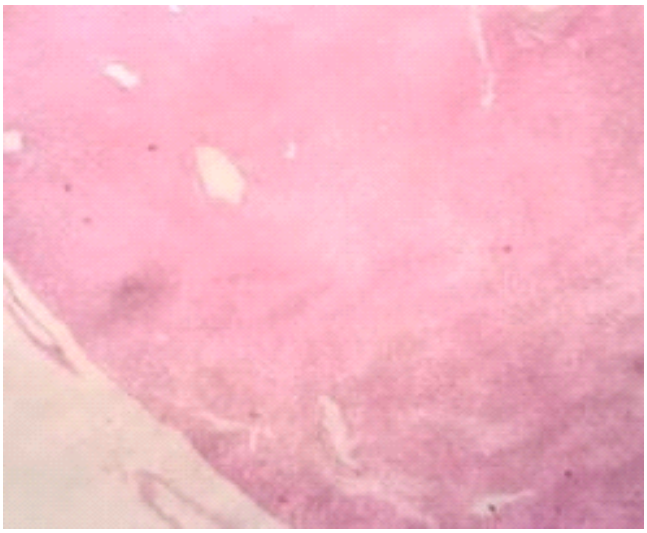
INTRODUCTION

Nematodes are frequent parasites of fish that can parasitize fish as adults or as larvae, attacking almost every organ in the body. In addition to being of theoretical importance, fish nematodes are one of the most important groups of fish parasites in tropical and subtropical regions. Some of them are known to be the cause of serious illnesses in humans, domestic animals, and fish. The importance of nematodes as fish pathogens is growing in tandem with the swift advancement of freshwater, brackish-water, and marine aquaculture in various nations in recent times (Sood, 2017).

According to Branciari *et al.*, (2016) and Goncharov *et al.,* (2018), the freshwater zoonotic nematode *Eustrongylides excisus,* Jägerskiöld, 1909 is a parasite that is found around the world and may pose a health risk to humans. Fish serve as intermediate hosts in the life cycle of this worm, with the larvae developing in muscles, the body cavity, the liver, or other visceral organs; wading bird species like cormorants, egrets, or herons are the ultimate hosts (BjelićČabrilo *et al.,* 2013).

Although the presence of *Eustrongylides excisus* been described in several fish hosts worldwide, studies based on pathological effects of this nematode species remain scarce. To date, the only available data about the pathological findings of E. excisus larvae infection in fish were recorded in genus Aphanius (Innal et al., 2019).

Histopathology of liver tissue in *Wallago attu infected* Nematode "*Eustrongylides*"



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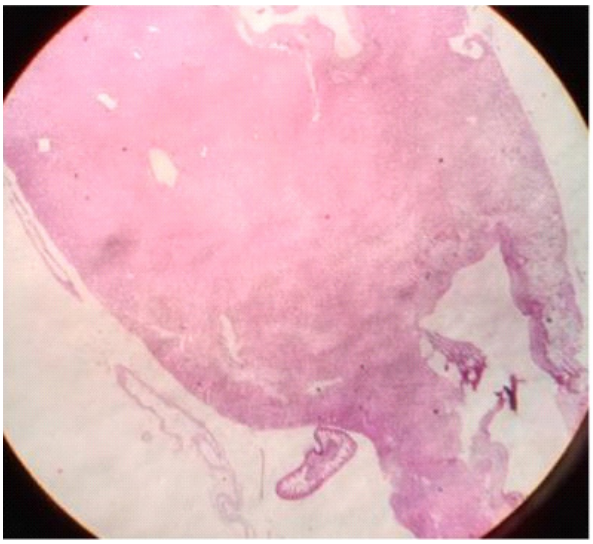

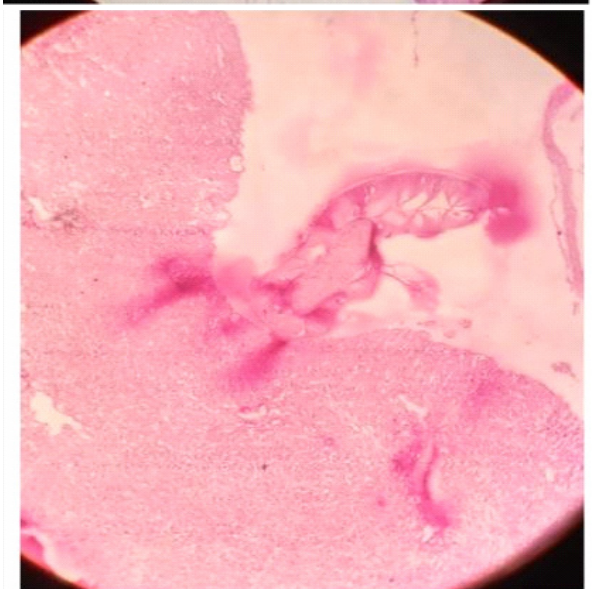

Attached Nematode Parasite in the liver tissue B) Normal Liver Tissue

C) Nematode approaching toward the liver tissue B) Nematode parasite infecting the liver tissue

MATERIAL AND METHODS

The fish sample were collected from Kaigaon Toka, Dist. Chh. Sambhajinagar and brought to the laboratory of Dept. of Zoology, Maulana Azad Research center, for histopathological study. The freshwater fish *Wallago attu* were dissected and observed. The infected liver tissue were collected in the normal saline water in petridish and examined carefully for helminth parasites. The Nematode parasite were collected from the liver, identified worm were kept separately and wash in saline water solution, then preserved in 4% formalin for taxonomical studies. Identification was carried out by the using Systema Helminthum Nematode Vol-I and II (1971) by Yamaguti. The infected livers attached with the Nematode parasite and were kept intact and small pieces of such liver were fixed in Bouins fluid for histopathological studied. The fixed tissues were washed in distilled water, dehydrated in alcoholic grades, cleared in xylene, embedded in paraffin wax with melting point (58–60°C). Block was cut at 8 lm and slides were stained with Haematoxylene counter stained with eosin stain. Best slides were selected, observed under the microscope and photographs are taken. The Nematode parasite was identified as Genus *Eustrongylides.*

RESULT AND DISCUSSION

Near the ovaries and hepatopancreas, the majority of the nematodes were discovered. Intestinal sections in certain cases showed multiple parasites present. A thin layer of fibrous tissue encased the parasites, and it was frequently possible to see inflammatory cell infiltrations surrounding them. There were instances of edema, microhemorrhage, and hyperemia. In severe cases, there was noticeable necrosis, and many parasites were found in the same location. The infection in the liver by a parasite causes disturbancesin the vital functions of the glands. These disturbances may directly affect the chemical nature of the infected tissue by lowering or increasing the important molecules which plays important role in metabolism.

The result of the present study are similar in accordance with the studies carried out Mitchell (1982) who studied the histopathology of the liver of Fathed minnow (Pinephalespromeles) fish infected with Posthodiplostomum m. minimumtrematode encysted in liver tissue causing little damage tohepatocytes, melanin-macrophage centres were diffuselyscattered throughout the fibrinous, fibroblast produce con-taining collagenous connective tissues.

Branciari et al. (2016) observed that A. boyeri had a comparable inflammatory response in fish infected with Eustrongylides spp. in Trasimeno Lake, Italy. In Eğirdir Lake, Metin et al. (2014) observed S. lucioperca abdominal enlargement and hemorrhage in the jaw, fins, gills, liver, intestine, spleen, and muscles. Additionally, A. iconii of Eğirdir Lake showed signs of bleeding and inflammatory responses associated with an E. excisus infection (Innal et al., 2019). This study discovered that when many parasites attacked the same location, serious lesions developed.

Lakshma et al. (2006) have studied the histopathological in liver of freshwater fish; Channa punctatus infected with the Euclinstomum hetero-stomum includes enlargement of hepatocytes, vacuolation of cytoplasm, disarray of hepatochord, hypertrophy of hepato-cytes and liver vacuolation.

The present study is in contrast from result of Revenga et al., (2006) have studies and obser-vation of the histopathology of the liver of Galaxias maculates fish infected parasites found in the hepatic parenchyma of ‘‘puyenes’’, causing hepatic parenchyma was unaltered a distance from the foci of the lesions and weak inflammatory reactions.

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