

***Ichthyophthirius multifiliis* Infection in A Black Tetra (*Gymnocorymbus ternetzi*)**

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Summary

In this case, the macroscopic and microscopic findings of a Black tetra (*Gymnocorymbus ternetzi*), infected with *Ichthyophthirius multifiliis* were described. Macroscopically, there were white spots in the different sizes on the skin of head and back, and increase amount of mucus on the skin and gills of fish. Microscopically, the parasites were found on the epidermis of operculum and gill lamellae. Gills showed the hyperplasia between the chlorid cells and adhesions in the secondary lamellae.

Keywords: *Black tetra, Protozoa, Ichthyophthirius multifiliis, Pathological findings*

Siyah Tetra Balığında (*Gymnocorymbus ternetzi*) *Ichthyophthirius multifiliis* Enfeksiyonu

Özet

Bu olguda bir siyah tetra balığında (*Gymnocorymbus ternetzi*) *Ichthyophthirius multifiliis* enfeksiyonunun makroskopik ve mikroskopik bulguları tanımlandı. Makroskopik olarak balığın baş ve sırt bölgelerinde değişik büyüklüklerde beyaz benekler ile deride ve solungaçlarda aşırı mukus artışı gözlemlendi. Mikroskopik olarak parazitlere operkulum ile solungaçların sekonder lamellerinde bol miktarda rastlandı. Ayrıca solungaçların chlorid hücrelerinde şiddetli hiperplazi ve buna bağlı sekonder lamellerde yapışmalar belirlendi.

Anahtar sözcükler: *Siyah tetra, Protozoon, Ichthyophthirius multifiliis, Patolojik bulgular*

INTRODUCTION

The parasitic ciliate *Ichthyophthirius multifiliis* is a common protozoan pathogen of freshwater fishes ¹ and etiological agent of "Ich" or "White Spot Disease" ² which has caused economic losses in ornamental fish culture in the tropics ³⁻⁵. It is the main parasitic threat to freshwater fish ^{6,7} and commonly found in gills and dermis of fish ³. Trophozoite or feeding stage of *Ichthyophthirius* is found within the epidermis of fish where it may reach up to 1 mm in diameter and is seen as a characteristic white spot from which the disease takes its name ⁷. *Ichthyophthirius* is easily recognized in skin scrapings by its size and characteristic horse-shoe-shaped macronucleus ⁷ and the center of the adult organism has a C-shaped nucleus ⁸. The parasite caused problems during the warmer seasons ⁶ and infections

fall when the water temperatures are between 18 and 25°C ¹. It is an obligate parasite with a life cycle that consists of fish associated and free-swimming stages referred to as trophonts and theronts, respectively ⁹⁻¹¹.

In this report, we were described macroscopic and microscopic findings in a Black Tetra (*Gymnocorymbus ternetzi*) naturally infected with *Ichthyophthirius multifiliis*.

CASE HISTORY

Dead Black Tetra was presented to Department of Pathology, Faculty of Veterinary Medicine, University of Adnan Menderes for histopathological diagnosis. Fish was necropsied, and tissue samples were collected and



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fixed in 10% buffer formalin solution, embedded in paraffin, sectioned at 5 µm and stained routinely with Hematoxylin-Eosin.

Clinical signs consisted of anorexia and surface swimming of fish. In the final stage of disease, fish was appeared lethargic and irregular swimming.

At necropsy, lesions were generally found in the skin and gills. Macroscopically, white spots in the different sizes on the skin of head and back (Fig. 1) and increase amount of mucus on the skin and gills of fish, anemia of the gills were often noted.

Microscopically, large amounts of *Ichthyophthirius multifiliis* (parasites) on the epidermis of branchial arch, in the operculum and gill lamellae were seen. These ciliated parasites were have characteristic, basophilic horse-shoe-shaped macronucleus with vacuolated cytoplasm and adult parasites were have a C-shaped nucleus (Fig. 2). Hyperplasia between chloride cells, adhesions of the secondary lamellae, hyperemia, necrosis and telangiectasia in the gills were observed (Fig. 3). Proliferation of the mucoid cells of the branchial arch and operculum was determined.

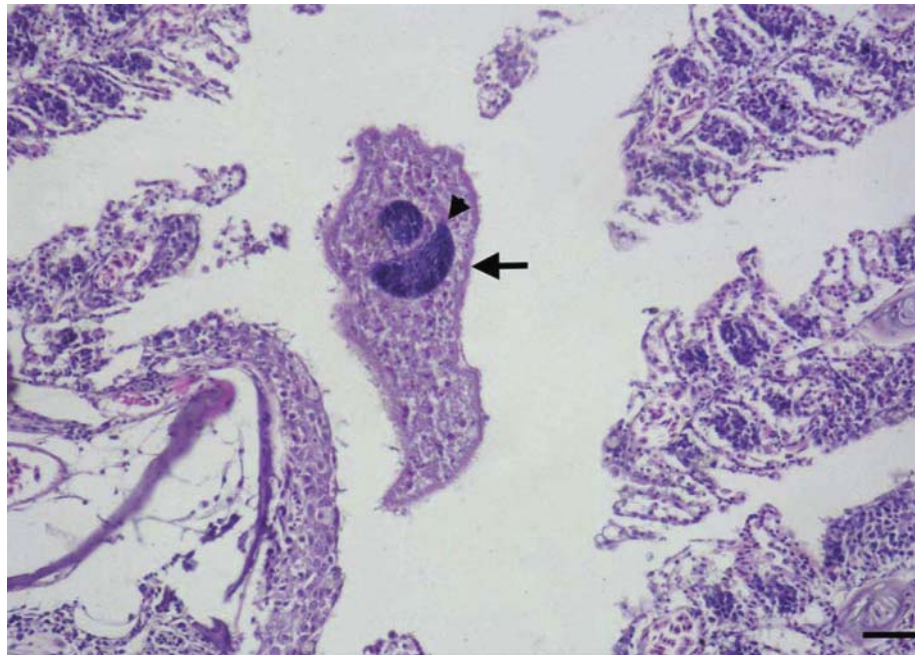


Fig 1. White spots in the different sizes on the skin

Şekil 1. Deride değişik büyüklüklerde beyaz benekler

Fig 2. Adult *Ichthyophthirius multifiliis* in the gills (arrow). C shaped nucleus of the adult *Ichthyophthirius multifiliis* (arrowhead). HE. Bar, 50 µm

Şekil 2. Solungaçlarda *Ichthyophthirius multifiliis* (ok). Parazitin C şekilli nükleusu (okbaşı) HE. Bar, 50 µm



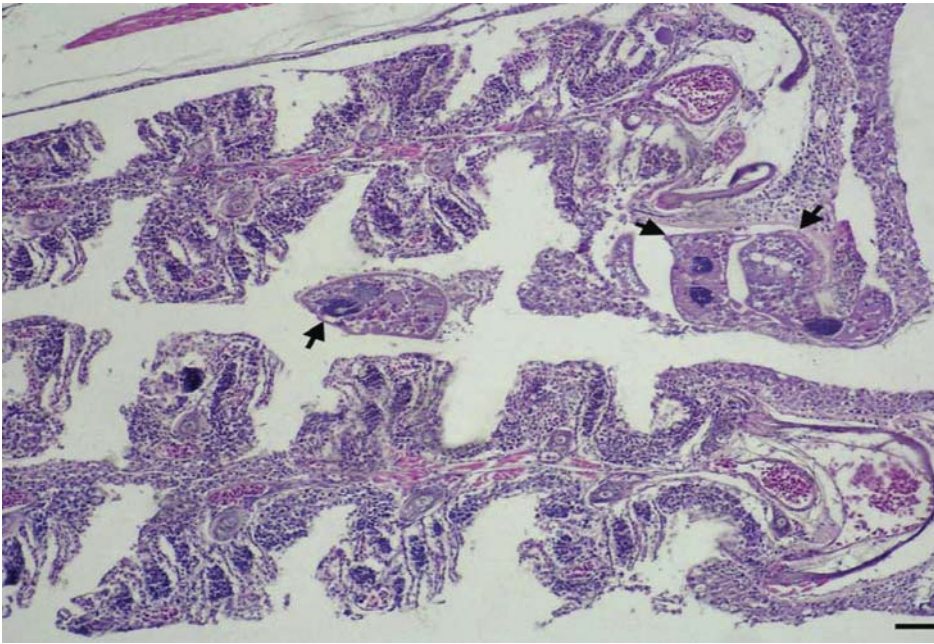


Fig 3. Parasites (*Ichthyophthirius multifiliis*) (arrows), hyperemia and adhesions of the secondary lamellae in the gills. HE. Bar, 50 µm

Şekil 3. *Ichthyophthirius multifiliis* etkenleri (oklar), solungaçlarda hiperemi ve sekonder lamellerde yapışmalar. HE. Bar, 50 µm

DISCUSSION

Ichthyophthirius multifiliis is a ciliated protozoan which causes "Ich" or "White Spot Disease" and this disease is a major problem to ornamental fish culture and commercial fish producers world wide ^{1-3,10}. According to the literatures, Black tetra is an ornamental aquarium fish. Many factors likely influence the susceptibility of disease outbreak including the high water temperature and it plays important role in the development of White Spot Disease ^{1,6,7} and in this report, infection was carried out over a temperature range of 20°C.

Histologically, the parasite is easily distinguished from other parasites of fish based on its size, characteristic horse-shoe-shaped macronucleus ⁷ and adult parasites have C-shaped nucleus ⁸. In the present report, findings on sectioning of the parasite where observed in the gills and dermis were similar to *Ichthyophthirius multifiliis* structure.

Parasites are commonly found in gills and dermis of fish ³ and in this report, we found the parasites in the gills and dermis of fish.

In conclusion, *Ichthyophthirius multifiliis* were described in the gills and the dermis of the Black tetra. According to the author's knowledge, no case of white spot disease in the Black tetra has reported in Turkey.

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