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Case Report
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Occurrence of Fibroma in White Skirt Tetra (*Gymnocorymbus ternetzi*): A Case Study with Literature Review

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Abstract

In fishes, neoplasia is generally a benign condition. However, few malignant diseases have been reported previously. Fibromas are benign and non-functional tumors composed of bundles of spindle-shaped cells having fibroblastic appearance arranged in a whorling or storiform pattern along with abundant collagen. A surgically removed mass from second dorsal fin of white skirt tetra (*Gymnocorymbus ternetzi*) with the history of unbalance swimming was referred to the Diagnostic Pathology Laboratory, Faculty of Veterinary Medicine, Urmia University, Urmia, Iran. Light microscopy revealed the presence of abundant collagen fibers in repetitive interwoven patterns along with spindle-shaped fibrocytes arranged in a whorling pattern presenting the histopathological feature of fibroma. Since carcinogenic compounds, viruses, irritants and parasites can be involved in fish benign tumors development, predisposing factors should be monitored carefully to promote animal welfare.

Keywords: *Gymnocorymbus ternetzi*; Fibroma; Fin; Histopathology; Animal welfare

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Introduction

In fishes, neoplasia is generally a benign condition. However, few malignant diseases have been reported previously [1]. Fibromas are benign and non-functional tumors composed of bundles of spindle-shaped cells having fibroblastic appearance arranged in a whorling or storiform pattern along with abundant collagen [2].

They have been reported in domesticated animals including cow [3], sheep [4], goat [5], camel [6], buffalo [7], horse [8,9], dog [10] and cat [11] and wildlife such as white-tailed deer (Odocoileus virginianus), mule deer *(Odocoileus hemionus)*,black-tailed deer (Odocoileus hemionus), fallow deer *(Cervus dama)*, red deer *(Cervus elaphus)*, roe deer *(Capreolus capreolus)*, Sika deer *(Cervus nippon)*, moose *(Alces alces)*, caribou *(Rangifer caribou)* [2], pronghorn *(Atilocapra americana)* [12], squirrel [13-15], nine-banded armadillo *(Dasypus novemcingtus)* [16], African pygmy hedgehog *(Atelerixal biventris)* [17], short-beaked echidna *(Tachyglossus aculeatus)* [18], Indiana cottontail rabbits [19], American black bear *(Ursus americanus)* [20], elephant [21], Indian python *(Python molurus)* [22], rattle snake *(Crotalus horridus)* [23], green sea turtle *(Chelonia mydas)* [24,25], common snapping turtle *(Chelydra serpentina)* [26], African clawed frog (Xenopus laevis) [27], Japanese common toad (Bufobufo japonicas) [28], newt [29], crocodile *(Crocodylus porosus)* [30], giant salamander and European edible frog *(Rana esculenta)* [31] as well as laboratory animals [32-34].

In marine mammals, fibromas have been described in beaked whale *(Mesoplodon densirostris)*, finless porpoise (Neophocaena phocaenoides), common dolphin *(Delphinus delphis)* [35], fin Whale *(Balaenoptera physalus)*, humpback whale *(Megaptera novaeangliae)*, blue whale *(Balaenoptera musculus)*, Blainsvilles beakedwhale *(Mesoplodon densirostris)*, sperm whale *(Physter macrocephalus)*, beluga whale *(Delphinapterus leucas)*, Pacific white-sided dolphin *(Lagenorhynchus obliquidens)* and California sea lion *(Zalophus californianus)* [36].

In fishes, fibromas have been found in common carp *(Cyprinus carpio)*, lake trout *(Salmo lacustris)*, cod fish (*Gadus morhua* and *Pollachius virens*), thwaite shad *(Alosa finta)*, crucian carp *(Carassius carassius)*, bream (Abramis brama), pike *(Esox lucius)*, gold fish *(Carassius auratus)*, sardine *(Arengus pilchardus)*, halibut *(Hippoglossus hippoglossus)*, haddock *(Mdanogrammus*

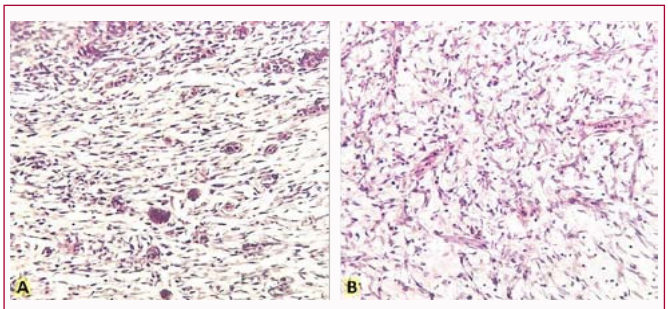

Figure 1: A) Fibroma in second dorsal fin of white skirt tetra, **B)** Fibrocytes arranged in a whorling pattern as well as interwoven pattern of repetitive collagen fibers can be observed.

aeglifinus), piaice *(Pleuronectes platessa)*, coal fish *(Theragra chalcogramma)*, rock fish *(Sebastodes inermis)*, brown trout *(Salmo trutta)* [31], southern flounder *(Paralichthys lethostigma)*, hardhead sea catfish *(Arius felis)* [37], flathead grey mullet *(Mugil cephalus)* [38], redband parrot fish *(Sparisoma aurofrenatum)* [39], angel fish *(Pterophyllum scalare)* [40], hooknose *(Agonus cataphractus)* [41] and redband parrot fish *(Sparisoma aurofrenatum)* [42].

To the authors' knowledge, there is no report regarding fibroma concurrence in white skirt tetra *(Gymnocorymbus ternetzi)*.

Case Presentation

A surgically removed mass from second dorsal fin of white skirt tetra *(Gymnocorymbus ternetzi)* with the history of unbalance swimming was referred to the Diagnostic Pathology Laboratory, Faculty of Veterinary Medicine, Urmia University, Urmia, Iran. The sample was stained with hematoxylin and eosin following being sectioned at 5 μm thickness.

Light microscopy revealed the presence of abundant collagen fibers in repetitive interwoven patterns along with spindle-shaped fibrocytes arranged in a whorling pattern presenting the histopathological feature of fibroma (Figure 1A and 1B).

Conclusion

Since carcinogenic compounds, viruses, irritants and parasites can be involved in fish benign tumors development, predisposing factors should be monitored carefully to promote animal welfare.

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