

Case report of chondroma in a grass carp (*Ctenopharyngodon idella*)

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Article Info	Abstract
Article history: Received: 18 April 2015 Accepted: 02 November 2015 Available online: 15 June 2016	The grass carp (<i>Ctenopharyngodon idella</i>) is a herbivorous, freshwater fish species of the family Cyprinidae, and the only species of the genus <i>Ctenopharyngodon</i> . Neoplasms in fishes are generally less aggressive than neoplasms in mammals and are most commonly discrete, focal and benign neoplasms. A 3-year-old grass carp with a big mass on the vertebrae was referred to the clinic. According to the owner's statements, the fish had no signs of lethargy, ataxia and abnormal behaviors. The size of the mass was 7 × 6 × 6 cm. It cut hardly with audible sounds. The consistency of the mass was as hard as a cartilage. Microscopic examination revealed numerous irregular crests of hyaline cartilage beneath the skin. According to histopathologic characteristics, chondroma on the vertebrae of grass carp was diagnosed.
Key words: Chondroma Histopathology Grass carp	

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گزارش موردی کندروم در ماهی کپور علف خوار (*Ctenopharyngodon idella*)

چکیده

کپور علف خوار جزء ماهیان گیاه خوار آب شیرین می باشد که در خانواده ی کپورماهیان قرار دارد و این جنس (*Ctenopharyngodon*) فقط یک گونه دارد. به طور کلی نئوپلاسم در ماهیان نسبت به سایر حیوانات کمتر به صورت تهاجمی و بدخیم رخ می دهد و اغلب به صورت گسسته، کانونی و خوش خیم می باشد. ماهی آمور سه ساله دارای یک توده ی بزرگ بر روی ستون مهره ها بود که بر اساس اظهارات پرورش دهنده، این ماهی هیچ گونه علامت بی حالی، عدم تعادل و رفتارهای غیر طبیعی نداشت. توده دارای ابعاد ۶ × ۶ × ۷ سانتیمتر بود. به سختی بر روی توده برش زده و صدای خاصی شنیده شد. قوام آن سفت، همانند غضروف بود. در بررسی میکروسکوپی ستیغ های نامنظم متعدد و گسترده ای از غضروف هیالینی در زیر پوست مشاهده گردید. بر اساس مشخصات هیستوپاتولوژی، کندروم بر روی ستون مهره های ماهی آمور تشخیص داده شد.

واژه های کلیدی: کپور علف خوار، کندروم، هیستوپاتولوژی

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Introduction

The grass carp (*Ctenopharyngodon idella*) is a herbivorous, freshwater fish species of the family Cyprinidae, and the only species of the genus *Ctenopharyngodon*. It is a large cyprinid native to eastern Asia with a native range from northern Vietnam to the Amur River on the Siberia-China border. Grass carp is a sub-tropical to temperate species. Grass carp have been extensively introduced, mainly for macrophyte control, to many parts of the world.¹ Spontaneous neoplasms of cartilage have been reported and include chondromas of the gill arch or filamental cartilage,² osteochondroma in the jewel fish (*Hemichromis bimaculatus*),³ and chondrosarcomas of the paddlefish⁴ and mangrove rivulus.⁵ A branchial osteochondroma has also been reported in a gilthead sea bream.⁶ The aim of the present paper was description of chondroma in a grass carp and to the best of author's knowledge this is the first report.

Case Description

A 3-year-old grass carp had a big mass on the vertebrae. According to the owner's statements, the fish had no signs of lethargy, ataxia, and abnormal behavior. During fishing a big mass had been seen on the fish vertebrae and then it was referred to the veterinary teaching hospital. The other fish were normal. After macroscopic examination the mass was dissected out and fixed in formalin buffer 10%. Routine procedures of pathology laboratory were performed and semi-thin sections were stained with hematoxylin and eosin and periodic acid-Schiff (PAS). Then they were assessed under light microscope.

Results

The size of the mass was 7 × 6 × 6 cm. It cut hardly with audible sounds. The consistency of the mass was as hard as a cartilage (Fig. 1). The cross section was white to pink and there were many cavernous structures which were filled with brownish fluid. Microscopic examinations revealed numerous irregular crests of hyaline cartilage beneath the skin. The crests had different thicknesses (Figs. 2 and 3). Chondroblasts were laid on outer layer of crests. They were cuboidal with scant cytoplasm (Fig. 4).



Fig. 1. Chondroma. Note the big mass on the vertebrae of grass carp and transverse section of the tumor.

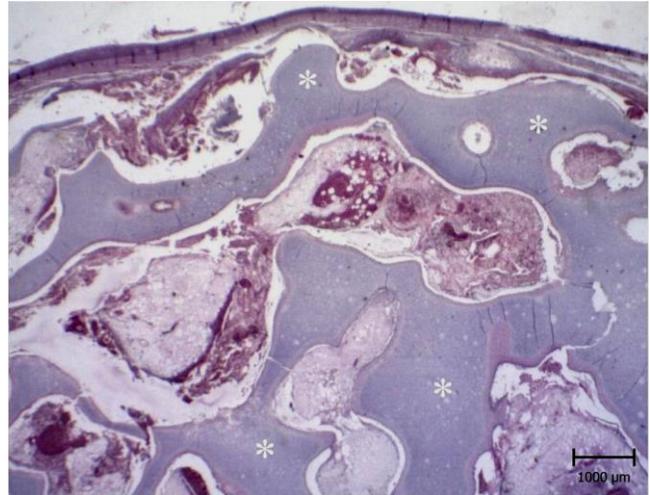


Fig. 2. Chondroma. Note the numerous irregular crests of hyaline cartilage beneath the skin (white stars), (H & E).

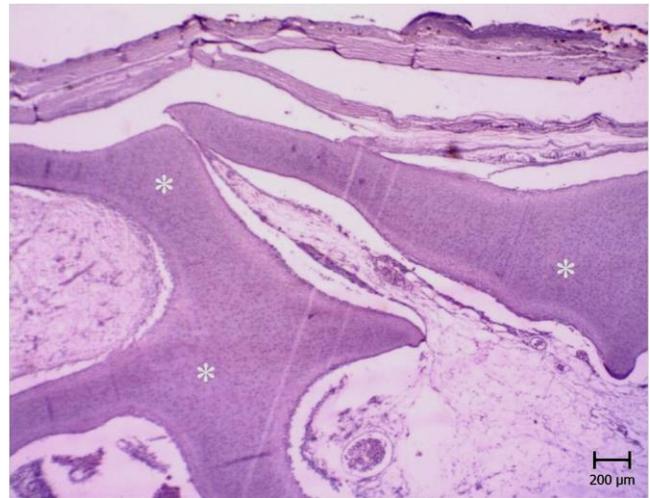


Fig. 3. Chondroma. Note the irregular crests of hyaline cartilage (white stars), (PAS).

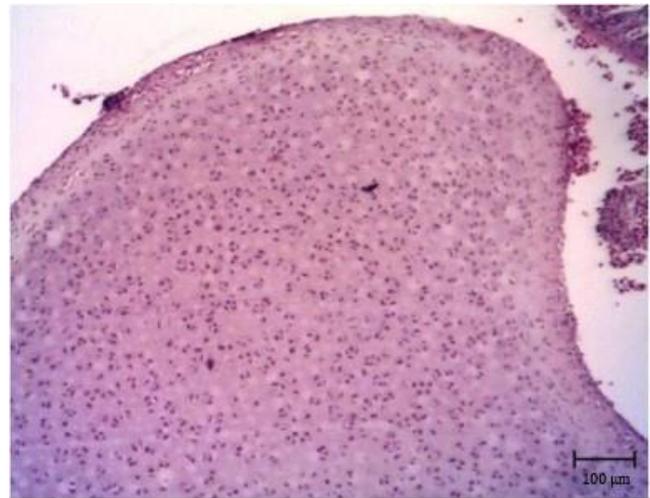


Fig. 4. Chondroma. Note the cartilage structure with lacunae and chondrocytes (H & E).

Chondrocyte cells were located in lacuna and isogenic groups were common (Fig. 5). They were suited in basophilic matrix of cartilage. There were spaces between crests of cartilage. In several cavities, numerous blood vessels and inflammatory cells were seen (Fig. 6). These cells were often neutrophils.

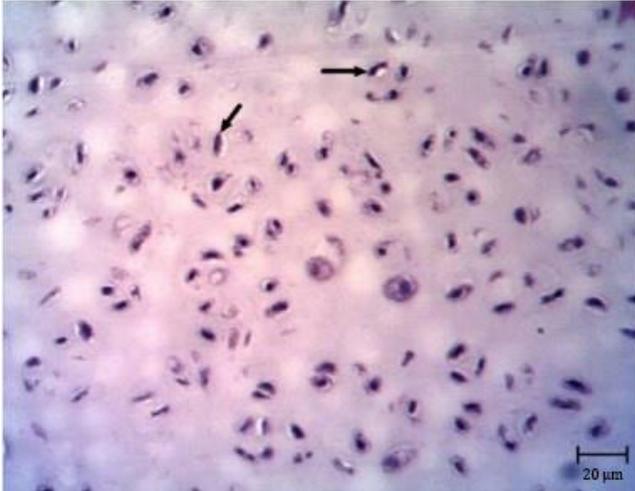


Fig. 5. Chondroma. Note the chondrocyte cells located in lacuna (black arrows), (H & E).

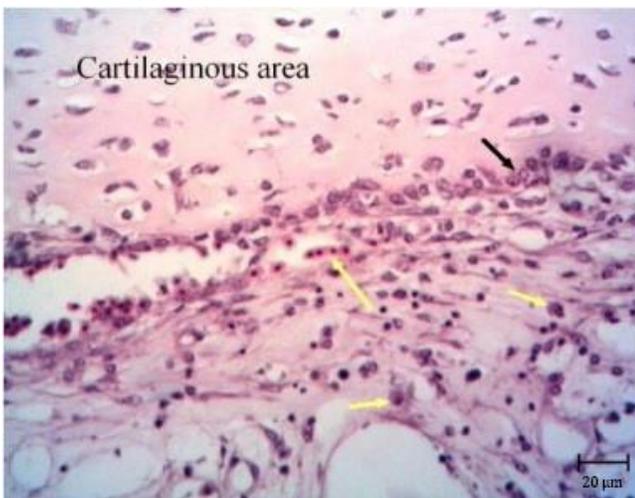


Fig. 6. Chondroma. Note the chondroblasts laid on outer layer of crests (black arrow) and inflammatory cells (yellow arrows), (H & E).

Discussion

Fish neoplasms are generally less aggressive than neoplasms in mammals and are the most commonly discrete, focal and benign neoplasms.² Development of neoplasm in fish is a multifactorial and multistage process that may result from acquired genetic characteristics⁷ or exposure to various environmental agents such as chemicals⁸ or infectious agents including viral agents⁹ as in other vertebrates. Although the etiology of majority of fish spontaneous neoplasm has not been determined, however,

genetic predisposition is inherently an important factor in development of neoplastic disease in all species including fish.¹⁰

Diagnostic procedures for differentiation of neoplastic lesions from non-neoplastic lesions in fish are generally limited to wet-mount, cytological, histological, and ultra-structural examinations of the lesions. Direct wet-mount examination of any lesion is a simple, however, a highly diagnostic procedure that should be included in the routine diagnostic protocol of the aquatic animal practitioner.¹¹ In this case histopathologic examination could detect the entity of the mass and it is completely reliable.

The treatment of neoplastic disease in fish is generally restricted to surgical intervention, whereas other treatment modalities used in mammalian species such as radiation and chemical therapies are not practical in fish.¹²

Neoplasm in several groups of fish such as chondrichthyan (class chondrichthyes), elasmobranchs (sharks, skates, and rays),¹³ holocephalans (chimeras) and other primitive fish including African lungfish (*Protopterus* spp.; family Protopteridae)¹⁴, bowfin (Family Amiidae)¹⁵ and the chondrosteian fish (sturgeons and paddlefishes; Order Acipensiformes)⁴ have been reported. Intrinsic factors such as age, gender and genetic predisposition and extrinsic factors such as temperature, season and environmental quality are factors related to the occurrence of neoplastic disease in fish.¹⁶

According to histopathologic characteristics, chondroma on vertebrae of grass carp was diagnosed. To the best of authors' knowledge this case appeared to be the first report of chondroma in *Ctenopharyngodon idella*.

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