PATHOGENESIS OF COLUMNARIS DISEASE IN AFRICAN SHARPTOOTH CATFISH, CLARIAS GARIEPINUS

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Abstract:

This study was conducted to investigate the pathogenesis of columnaris disease in African sharptooth catfish, Clarias gariepinus. Flavobacterium columnare infections were detected in 33 (22.9%) fish out of 144 fish collected and examined over a year, in Assiut, Egypt. The present study demonstrated that parasitic infestation increases the susceptibility of fish to columnaris disease and plays an important role in initiation of natural infection. A reproducible model of experimental infection was developed to help studying the pathogenesis using immersion with either skin or gill scarification of challenged fish. Fish challenged through immersion with scarification developed severe signs of infections and showed mortalities, while fish challenged without scarification did not develop typical signs of infection and survived until the end of the experiment. F. columnare strain SK8FC isolated from skin of naturally infected fish was used throughout the challenge study. The invasion of F. columnare was enhanced by either skin or gill abrasion. Clinical signs and mortalities were more severe and rapidly developed in the gill-scarified group than in skin sacrificed group. Immunohistochemistry staining and histopathology studies were conducted to investigate the target organs, the distribution of the bacterium, and the pathological changes. Immunohistochemical staining demonstrated that the skin and gills were the main organs of F. columnare localization and the main organs expressing histopathological alterations. Skin and gill tissues were more strongly stained for F. columnare in scarified groups than in non-scarified group.

Keywords:

African sharptooth catfish, Flavobacterium columnare, pathogenesis, immunohistochemistry, challenge model.

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