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Editorial

Epizootic Hematopoietic Necrosis

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INTRODUCTION

This Epizootic Hematopoietic Necrosis (EHN) is a fish systemic iridoviral disease. The epizootic hematopoietic necrosis virus (EHNV) induces EHN in red fin perch and rainbow trout. This disease is extremely lethal in red fin perch; infected farms typically suffer significant economic losses, and extreme population reductions will occur in wild populations. Rainbow trout are less likely to be poisoned, and the average mortalities are lower. In catfish and sheath fish, closely associated viruses cause severe outbreaks of epizootic hematopoietic necrosis. At the moment, the propagation of EHN viruses is poorly known. Their long survival in the ecosystem and susceptibility to disinfectants further complicate their power. Epizootic hematopoietic necrosis is a chronic condition characterized by liver, spleen, and kidney necrosis. This disease is caused by viruses of the epizootic hematopoietic necrosis group in the genus Ranavirus and family Iridoviridae. EHNV has only been found in red fin perch (*Perca fluviatilis*) and rainbow trout in the wild (*Oncorhynchus mykiss*). *Macquarie perch* (*Macquaria australis*), mosquito fish (*Gambusia affinis*), silver perch (*Bidyanus bidyanus*), mountain galaxias (*Galaxias olidus*), Murray cod (*Maccullochella peelii peelii*), and Atlantic salmon have all been infected experimentally (*Salmo salar*). Other species may also be susceptible. Sheatfish/wels catfish (Silurus glanis) have been shown to carry ESV, while ECV can infect European catfish (*Ictalurus melas*), channel catfish (*Ictalurus punctatus*), goldfish (*Carassius auratus*), and short-finned eels (*Anguilla australis*). In Denmark, systemic necrotizing iridovirus syndromes have been identified in other fish species, including turbot (*Scophthalmus maximus*).

TRANSMISSION

Although our understanding of EHN transmission is still limited, fish may be infected by bath inoculation, and spread through the water is possible. Natural contaminated fish have gastrointestinal lesions that are not identified after intraperitoneal inoculation, so oral transmission is possible. It has also been suggested that infection may occur through the gills or the scalp. Asymptomatically infected fish have been reported, but it is controversial whether these are true carriers. Vertical (egg-associated) transmission has not yet been seen.

SYMPTOMS

The clinical symptoms are amorphous. The most frequent symptom of perch is sudden death. Body surface darkening, ataxia, lethargy, and erythema around the nostrils and brain area have also been observed. Hemorrhages in the gills and at the base of the fins are possible. Darkening of the body surface, lethargy, inappetence, abdominal distension, and lack of equilibrium have all been identified in experimentally infected rainbow trout. Skin ulcers, flared opercula, and reddening at the base of the fins have also been identified in outbreaks; however, these lesions may be the result of concurrent pathogens, poor water quality, or other husbandry issues, which are commonly associated with clinical EHN in this species. Deaths have also been reported in experimentally infected Macquarie perch, silver perch, mosquito fish and mountain galaxias.

DIAGNOSIS

When an outbreak is marked by sudden high mortality and histological signs of necrosis in the renal hematopoietic tissue, spleen, and liver, eizootic hematopoietic necrosis should be suspected in red fin perch. During rainbow trout outbreaks, far fewer fish are normally infected, and bad husbandry can be present. In this species, EHN may be difficult to identify and can be dimorphic. The identity of the virus can be confirmed by immunostaining, Enzyme-Linked Immunosorbent Assay (ELISA), immunoelectron microscopy, Polymerase Chain Reaction (PCR).

CONTROL

Culling, disinfection, quarantines, and other methods are used to monitor epizootic hematopoietic necrosis in regions where it is not widespread. To prevent the virus from entering a farm in endemic areas, good biosecurity and sanitation are required. Although it is debatable if carriers exist, EHNV has been identified in asymptomatic fish and may be introduced into these species. In liquid suspension, EHNV can be destroyed by sodium hypochlorite, heating to 60°C (140°F) for 15 minutes, or pH of 4.0 or 12.0. Farm equipment should be scrubbed to remove dried films, and then disinfected with sodium hypochlorite. Lime may be effective in earthen ponds.

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