



VIRAL DISEASES I

INFECTIOUS PANCREATIC NECROSIS (IPN)

- IPN is a viral infection primarily of trout and salmon, but the virus has also been isolated from a wide variety of other fish species.

IPN

- The genus Aquabirnavirus; Family Birnaviridae
- Carriers and acutely-infected fish, may transmit the virus both horizontally or vertically.

IPN

- IPN is known to affect post-smolt Atlantic salmon after **transfer from freshwater to seawater**.
- IPN virus can **survive** in both **fresh** and **salt** water environments.

IPN

- Virus may be spread and healthy stocks exposed via **contaminated transport water, infected eggs** and blood feeding **parasites**.
Piscivorous **birds** are also known vectors of IPN virus.

IPN

- Fish may become infected with IPN virus by **ingestion**, or via the **gills**.
- In acute infections, virus can be isolated from many tissues including kidney, spleen, pancreas, pyloric caeca, liver and gonads.

IPN

- By comparison, in chronic infections, virus is generally restricted to pancreas, pyloric caecae, intestine, anterior kidney and gonads of most fish.

IPN

Clinical signs:

- Darkening of the skin
- Exophthalmia
- Abdominal swelling
- Cutaneous Petechiae
- Abnormal behavioural signs

IPN

- IPN virus produces lesions principally in **pancreas** and the **intestinal mucosa**.
- Extensive and/or severe **necrosis** of acinar pancreatic cells

IPN

- The so-called 'McKnight cells', the sloughing mucosal epithelium were described (eosinophilic and hyaline epithelial cells).
- Kidneys and liver can be affected.
- Focal or generalised necrosis of the liver

Viral hemorrhagic septicemia

- Viral hemorrhagic septicemia (VHS) is a serious systemic disease of fish. The VHS virus (VHSV) is carried by at least 50 species of marine and freshwater fish.

Family: Rhabdoviridae
Genus: Novirhabdovirus

VHS

- **Clinical Signs:**
- Affected fish are usually anorexic and may be either lethargic or hyperactive.
- Abnormal swimming (neurologic form)
- Darker coloring

VHS

- The gills are pale due to anemia and may have petechial hemorrhages.
- Hemorrhages can also be seen in the eyes and at the base of the fins, and sometimes on the body surface.
- Bilateral or unilateral exophthalmia and ascites may be present.
- Chronic carriers may be asymptomatic.

VHS

- **Scattered hemorrhages** may be seen in the skeletal muscles, perivisceral adipose tissue in the abdomen, swim (air) bladder, intestines and other organs.
- The spleen is usually enlarged and darker red than normal.

VHS

- The liver is also dark red early in the infection, but may later be a pale, gray color. It can contain petechiae or mottling.
- The kidneys are dark red in the early stage of disease, but can be severely necrotic in moribund fish.

VHS

- Histopathologic lesions typically include **extensive focal necrosis** and **degeneration** in the **kidney, liver and spleen**. Evidence of **hemorrhages** may be seen in the muscles.

VHS

- **Control:** Viral hemorrhagic septicemia is a highly contagious disease; quarantines are necessary to control outbreaks.

VHS

- VHSV can survive for long periods in the bottom of farm ponds if the ponds are not dried and disinfected.
- VHSV is sensitive to many common disinfectants including formalin, iodophor disinfectants, sodium hydroxide and sodium hypochlorite.