



Tikrit University
College of Veterinary Medicine

Fungal diseases

Subject name: Fish diseases

Subject year: 5th stage

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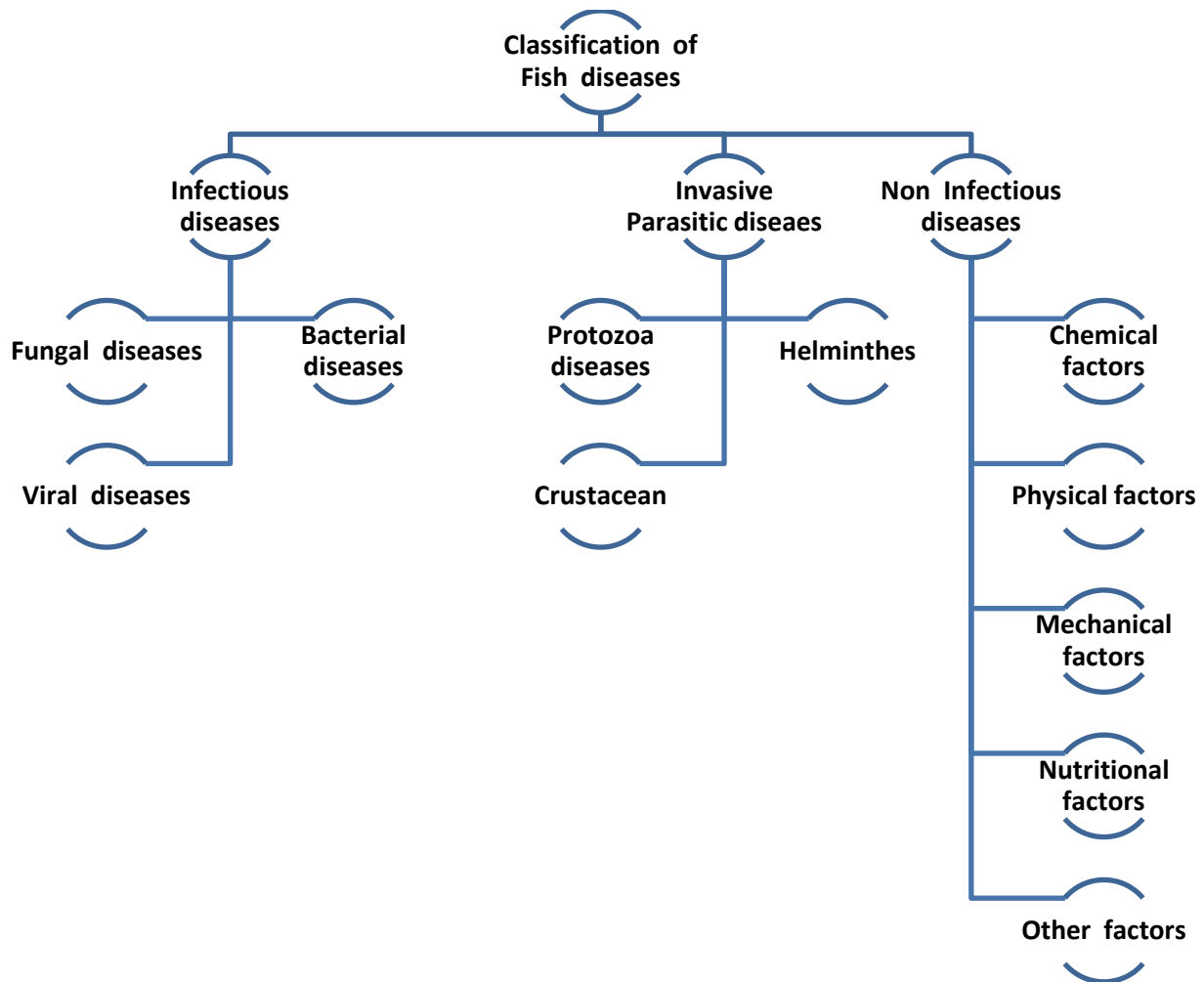
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Fungal diseases in fish (Mycotic diseases)

Fungi belong to lower plants, but they don't have chlorophyll. Mycotic cells appear as elongated threads called Hyphae, its length 100 micron or more and width 0.5-40 micron. Hyphae of most fungi affecting fish are non-septets. Mycotic diseases in fish could be systemic or non-systemic.

1- Saprolegniasis (Water mold)

It is fungal disease of fishes and fish eggs caused by member of family *Saprolegniaceae*. Characterized by presence of cotton like, white to gray growth on the skin, gills or eyes of fishes or in fish eggs.

-Several investigators considered the saprolegniasis as the most significant mycotic disease affecting wild and culture fish causing economical losses, because the disease is difficult to prevent and treat, particularly in the intensive fresh water system, and is reported to be second only to bacterial disease. The disease occurs mostly at 10-18°C.

Causative agent:

Saprolegnia is the main genus of water molds responsible for significant fungal infections of freshwater fish and fish eggs.

1-*Saprolegnia diclina*

2-*S. parasitica*

3-*S. mixta*

Clinical and pathological lesions

1-The fungal agents appear as cotton wool like tufts or layers white grayish masses on the skin, fin, and the gills.

2-The area which undergoes from O₂ deficiency the necrosis may be present on the affected muscles and the scales lifted from the body wall.

3-The internal organs can be affected due to skin laceration, fungal threads extending and reaching the internal organs.

4-Mortality rate up to 50%.

Diagnosis

1-Clinical symptoms and lesions (present cotton wool like tufts or layers on the skin, fin, and the gills or any part of the body).

2-Direct smear from fungal growth, presence of long, branched non-septate hyphae help in diagnosis of saprolegniasis.

3-Fungus culture on nutrient agar.

Treatment and control:

- NaCl 1% for 15-30 minute
- Malachite green 1:2000 for 1 hour.
- Cupper sulphate 1:2000 for 1 hour.
- Potassium permanganate 1:2000 for 30 minute.
- Treatment of egg 1:1000 formalin or by ultraviolet.

2-Branchiomycosis (Gill rot)

It is a fungal disease involving gill tissues in the most species of freshwater fish. The disease is caused by *Branchiomyces sanguinis*. It is characterized by areas of necrosis with ulcerations of the gills and anorexia.

Predisposing factors for the disease infection

This disease appears in high temp. 20 – 22 C°, it occurs usually in farms containing high organic matter (high acidity) disturbance in hydro chemical regime, unbalanced diet, mortality may occur in two to four days, with an incidence high as 50%.

Clinical and pathological lesions

The 1st general symptoms may occur few days (3-5 days) before death.

- 1-The fish cease feeding
- 2-Gather in groups at the surfaces and the pond water inlet
- 3-The fish don't react to the approach of man & can be caught by hand
- 4-The don't swallow water their head is under the water surface.
- 5-Shown narrow dark red stripes on the gill filaments due to the occlusion of the blood vessels by the Hyphae
- 6-Present the necrosis on the gills

Diagnosis

- 1- Clinical symptoms
- 2- Pathological lesions
- 3- Microscopic examination (Hyphae & spores can be seen).

Treatment and control:

- 1- Dead fishes should be collected and daily and burned or deeply buried.
- 2-Ponds should be dried and treated with calcium oxide (quicklime) or 2 to 3 kg copper sulphate per hectare.
- 3- Sick fish can be treated with malachite green at 0.1mg/l for extended periods of time or 0.3mg/l for 12 hours.
- 4 -Increase of water supply help in control of that disease.
- 5- Regulating the feeding rate during warm weather

3-Ichthyosporidiosis (Zygomycotina)

Its systemic granulomatous disease which can be affected on the fresh water & aquarium fish. The fungus which responsible for this disease is called *Ichthyosporidium hoferi* .

Pathogenesis:

The disease appears under temp.(20°C), its transmitted through swallowing of the contaminating material with spores which undergo germination & penetrate the internal wall circulate in the blood stream & can be localized in different organs of the body.

Clinical signs:-

- 1-Exophthalmoses with present hyphae between the scales
- 2-The infected fish undergo from cease feeding with the skin become rough
- 3-Present the ulcers or abscesses varying size appear on the skin
- 4-The infected fish undergo from ascites.
- 5-The sick fishes lies on the bottom of the bond because occurs the damage of the swim bladder.

Post Mortem lesions

- 1-Inflammation of liver , kidney with accumulation of the exudates in the body cavity.
- 2-Present the causative agent in the subcutaneous layer & muscles

3-Present numerous nodules (1-3 mm.) similar to granulomatous of Tuberculosis grayish white in color are observed in the visceral organs spleen , liver , heart , kidney & mesentery.

Microscopic pathology

1-Spores reported in bronchial blood vessels & can be seen by Giemsa stained blood smears.

2-The granulomatous lesion is clearly seen in the muscle layer of the intestine as well as red pulp of the spleen.

Diagnosis

1- Clinical signs

2-Post Mortem lesions

3-Microscopic pathology

Treatment and control for the disease

1-Infected fish should be isolated

2-Severely infected one must be burned.

3-Ponds should be disinfected with quick lime.

4-The fish must be examined before transporting at least 15 specimens of each batch.