FUNGAL DISEASES

Fungal disease in aquarium fishes is associated with adverse environmental conditions. Infections, whether occuring in isolated individuals or in epidemic proportions, is preceded by some environmental insult that disrupts host homeostasis.

Fungal diseases infect both fishes and fish eggs.

These diseases are generally considered as an oppurtunistic secondary infection following injury.

Outbreaks often occur after a drop in temparature or when temperatures are near the physiological low end for a particular fish species.

Handling, crowding,heavy feding rates, and high organic loads also appear to increase the risk of fungal diseases.

SAPROLEGNIOSIS

Integumental damage coupled with adverse water conditions, in particular lower water temperatures, initates hyphal growth, leading to dermal necrosis.

The term saprolegniosis refers to a cotton-like growth of fungi adherent to skin or gills. Spores of Saprolegnia with a cotton are usually present on the skin of fish bur are prevented from germinating by healty skin and antibody-containing mucus. When these normal defenses of skin and gills are damaged, the spores germinated, grow into skin , and form the hyphal mat consisting of grayish-white to brown layer.

The characteristic groos lesions consist of a focal epidermal erosion with cotton-like mass randomly distributed on the surface. The cottony apperances is seen only when the fish are in the water. Once they are taken out of water the mass collapse, resembling a ball of wet cotton.

The infection is usually chronic. Damages can be directly releated to tissue necrosis in the area of the hyphae. Death is due to impaired osmoregulation and the inability to maintain body-fluid balance.

Saprolenia occasionally infects gills and eyes and is oppurtunistic in eyes that are already damages.

Zoospores can not infect fish eggs,but hyphae can colonize dead fish eggs, producing an abundant mycelial mat. Live eggs then die of respiratory obstruction as hyphae inhibit the entry of oxygenated water.

In diagnosis; inspection with eye or magnifying glass is usually sufficient

In prevention and treatment;

primary lesion formation and skin - mucoid attention is paid to the integrity of the layer.

dead and sick fishes are not kept in the aquarium (zoospores 24-48 hours in the water passes, all the fish will be infected)

clean organic substances in the aquarium , no overfeeding

the number of fish is limited

infected eggs are cleaned from the aquarium

the fish to be treated are taken to another aquarium

Small lesions are cleaned with disinfectants in the patients who were initially caught.
10% malachite green is applied to the lesion area. Application is done 1-2 times a week.

For the same purpose; 1/100 iodine + 1/1000 merthiolete + 1/1000 potassium dichromate is used similarly
After these applications, sick fish 1 / 20.000 potassium dichromate kept for 7 - 10 days potassium permanganate solution 1 / 10,000 30-90 min per day.

bathroom.

Phenoxethol 1 / 100.00, bath for 1 hour

copper sulfate 1 / 200,000 bath, 1-2 minutes
malachite green 1 / 15.000 bathrooms, 10-30 seconds
malachite green 1 / 200,000, bathroom, 1 hour

methylene blue (1/100) 1 ml from the main solution, taking 5 ml water is added, fish are kept for a few days, water is cleaned, same the application is made 3-4 times

B) In progressing cases; with the above-mentioned therapeutic applications
antiseptic applications are made.

C) In egg infections; used malachite green 1 / 200.000 kept for 50-60 minutes.
painted, not damaged, at the end water change

Formalin 250-300mg / lt / 30-40 min. bath for fish
1-2 ml / lt / 15-20 min for eggs. It kept.

ICHTHYOPHONIOSIS

Small nodules in various parts of the body and internal organs, darkening of color, exophthalmus, attenuation and death, chronic and contagious.

Factor; Ichthyosporidium (Ichthyophonus) hoferi
The agent develops at 3 - 25 °C.
The main route of the agent is by digestion. Agent is found dead and sick fish, feeds

Cysts develop in the internal organs after 10 days of ingestion

Cysts grow in the digestive tract and internal organs and reach 100-200 µm
Symptoms; color darkening, flakes irregularity, exophthalmos, slimming, stagnation, swimming disorder small nodules on the body

The skin becomes necrotic with time and is poured black, gray-white and ulcers develop.

swimming and balance disorders when fungal agents settle in the brain

Necropsy; sandy appearance in many internal organs and muscle tissue
fungal cysts in organ and muscle tissue visible with a magnifying glass

diagnosis; findings help in definitive diagnosis

PARASITIC DISEASES

Parasites vary form organisms that morphologically resemble free-living copepods. Most are skin or gills parasites. A few penetrate deep into host tissues.
The life cycle of copepod parasites have typically comprise 1 to 5 free- living stages (larval stages) and one adult stage.
The life cycle is typically faster with higher temperature.

Ergasilus (fish lice) : Ergasilus spp. most frequently attach to the gills but also found on the body surface.

Severaly effeced gills may be anemic. Ergasilus spp.damages its host during attachment and feeding.
The feeding activity of parasites causes severe gill damage. Lysis of tissue and hyperplasia at the point of attachment is caused by the extrabuccal digestion characteristic of ergasilid copepods.
The lesions caused b the copepod can become foci for secondary infections by bacteria.

Lernae (anchor worm): Adult females are permanently fixed to a fish and can be very damaging. Larval stages are free living swimming. After copulation male parasites dies.

The holdfast organ , or anchor, attaches under the body surface, fins, gills, or mouth. Lernae spp. penetrate into the tissue of the host and then develop the large holdfast. Penetration is often into the body musculature butcan extend into the body cavity and liver of fish. The parasite causes extensive tissue damage, including ulceration, formation of a fibrous hillock, and severe acute inflammation. Infected fish may löse weight, and there can be mass mortalities in fish stocks.

Argulus (fish lice):

Argulus has a direct life cycle, meaning it only requires one host (the fish) to completely develop from an egg to a mature, reproducing adult.

The time required for Argulus eggs to hatch will vary, depending upon the species and temperature. Argulus spp. eggs hatch in 10 -17 days at 35°C but require 61 days at 15°C.

The lice can be found attached to the skin, gill chamber, and mouth. Localized inflammation occurs at the contact site because of mechanical damage from hooks and spines on the stylet and appendages, and irritation from digestive enzymes. Fish without visible lice may show non-specific signs of infestation. These include spot or pinpoint hemorrhages, anemia, fin and scale loss, increased mucus production, lethargy, erratic swimming, reduced feeding, hanging at the surface (avoiding swimming into the water column) and poor body condition.

Although fish may tolerate low and even moderate levels of Argulus with very few signs of disease, localized inflammation and damage at the affected site may lead to secondary infections. The parasite's high reproductive rate can quickly escalate an infection. Secondary pathogens, such as the bacteria Aeromonas and the water mold Saprolegnia, are often seen concurrently with Argulus infestations.

Because of their size, older stages of Argulus can be diagnosed with the naked eye. The parasites are visible moving on the host or swimming in the water. The parasite can also be identified on a wet mount of the affected tissue. Captured fish should be examined quickly because Argulus may rapidly leave the fish once it is disturbed or removed from the water. Filtering water from the system through a fine mesh net may also help capture free-swimming Argulus adults or juveniles for identification. Adults and juvenile stages (which are similar to adults but lack suckers) are relatively easy to identify, but their identification should be verified by a fish health professional.

Drug choice and length of treatment for Argulus infections should take into consideration the life cycle of the parasite, which varies from 30 to 60 days depending on temperature and species. Treatment should target all life stages, including eggs, juveniles, and adults, both on the fish and in the environment. Adult parasites can be manually removed from the affected fish, but this is impractical in many situations and is an incomplete solution because eggs, unattached juveniles, and adults will still be present in the environment. Fish can be moved to a clean tank and treated with the appropriate drugs, while eggs in the original system are eliminated either by cleaning and disinfecting the tank or allowing it to dry completely. However, drying may be difficult in humid areas, and at cooler temperatures eggs can survive much longer time periods. Optimal water quality should be maintained for the duration of any treatments.

Incoming fish should be quarantined, observed, and sampled in order to minimize the risk of introduction. Argulus outbreaks, once recognized, should be managed quickly. Source water should be evaluated to ensure that is not a pathway for introduction of argulid eggs. Ideally, water should be filtered or obtained from a fish-free and Argulus-free source.

DACTYLOGYROSIS - GYRODACTYLOSIS

Parasites are found skin, gill and fin

Fish affected with skin flukes typically have clamped fins and increased mucus covering their body, while those affected by gill flukes present for difficulty breathing. However, it is important to note that gill flukes can infest the skin and skin flukes can infest the gills too

Diagnosis

Because the presenting clinical signs (clamped fins, increased skin mucus, difficulty breathing) associated with these flukes are common for other diseases, the best method to confirm the presence of these flukes is a skin scrape and/or gill biopsy. Cytologic examination of a sample will reveal elongate flukes that have a row of hooks on their opisthaptor. These flukes cause damage to this fish at the site where their anchors (hooks) attach; they don't actually "feed" on the fish.

Treatment

The life cycle of the monogenean fluke does not have an intermediate host; therefore, it can perpetuate in a closed system indefinitely. These flukes can be livebearers or egg producers; the livebearers can reproduce at a phenomenal rate in a closed system. Warmer temperatures and poor water quality (higher nitrogen levels, organic loads) can increase the reproductive cycles of these parasites. Formalin, salt (freshwater for marine fish), organophosphates, praziquantel, mebendazole, and toltrazuril have all been used to manage monogenean fluke infestations in fish.

VELVET – RUST DISEASE - OODINIOSIS

The formation of a velvet-like layer in the skin, gill, fin, and especially in the digestive system
It is a disease caused by dinoflagellates.

The factors are round, oval, or pear-shaped
There are cysts at the base of the aquarium in development, cysts dinospores are divided into many of them, which clings to new fish.
the disease develops slowly. Leather gray color blurred look.

In intense infections skin color is golden yellow - yellow brown and spills on the skin.

Leather takes place in a velvet, glossy and light reflecting place.

There are tears in the fins.

If the entire skin takes a velvet appearance, the fish cannot be saved.

Especially young fish are more sensitive.

Excavation preparations taken from skin and other organs are examined

The parasites on the skin are seen as microscopic grape bunches

treatment; trypanflavin 1gr / 100lt 2-10 hours bath

Aureomycine 13g / lt long term bath

copper sulfate, 1gr / l for main solution is prepared
2ml anasol./lt bath, dose on days 3, 5 and 7
halved

Increasing the water temperature to 33-34 ° C is effective in combating the parasite