Disease Vectors

*Mycobacterium marinum* is the causative agent of a disease of the skin often known as “fish tank granuloma” or atypical mycobacteriosis. While relatively common in fish, human cases are infrequent in the U.S., with an estimated 100-150 cases annually (MedicineNet.com 2013). These bacteria are widely distributed and occur in fresh, salt and brackish water; aquaria; and aquaculture systems. The majority of cases originate from food fish processing, but infections can occur in aquaria. Infections in fish are more common in aquaculture where fish immune systems may be stressed by crowding and lower water quality, but the disease may occur in the home aquarium as well.

Symptoms, Diagnosis, and Treatment

Although these zoonotic bacteria are related to the species that cause tuberculosis in humans, *M. marinum* does not infect the respiratory system. Symptoms are found on the extremities of an infected person in the form of granulomas (nodules) where the body attempts to “wall off” the invading bacteria. The infection occurs when someone with an abrasion or puncture wound is exposed during the cleaning of an aquarium or other equipment where fish are cultured. A small red bump may appear within a few weeks and result in swelling of lymph nodes and the development of additional nodules. *M. marinum* is a slow-growing bacterium and this process may continue over a few months. Mild infections in healthy individuals may resolve on their own, but in some cases an extended course of oral antibiotics is required. If diagnosis is delayed, the infections can mimic rheumatoid arthritis, gout, or fungal infections (Medscape 2013). Persons with compromised immune systems are at greater risk. Children are rarely infected.

It may be difficult for the hobbyist to detect infected fish. Symptoms in fish are often generalized, manifesting in weight loss or poor condition, accompanied by a loss of scales and lesions (Floyd 2011).

Prevention

Aquarium owners with injuries to the hands and arms and those with weakened immune systems should avoid cleaning their tanks and equipment.

Incoming shipments of fish from sources where atypical mycobacteriosis has been found should be isolated for 30 days and testing of individual fish should be considered. Because there is no cure for atypical mycobacteriosis in fish, it is strongly recommended that infected fish be euthanized and tanks and equipment cleaned with a surfactant to remove organic material and disinfected with Lysol®, sodium chlorite or 70% ethyl alcohol (avoid 30% ethyl alcohol which requires at least 10 minutes contact time); common disinfectants including chlorine bleach, Roccal® and Virkon-S® are not effective.

When an infection has been confirmed, staff should wear gloves when cleaning tanks or handling aquarium gravel or filters. Individuals with breaks in their skin (i.e., cuts or other abrasions) should have no direct contact with mycobacteria-infected areas. Skin wounds should always be covered, preferably with a bandage and water-tight gloves, and, gloves should be worn when handling fish, especially during necropsy. Persons with weakened immune systems should not come in contact with mycobacterial-infected material (Floyd 2011).

References


