

Reports

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## **Mycobacterium marinum, the "leisure-time pathogen"**

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# Marine Resource Advisory

NO. 44

VIRGINIA SEA GRANT MARINE ADVISORY PROGRAM AT VIMS/WILLIAM & MARY

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## *Mycobacterium marinum*, the "leisure-time pathogen"

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**M**ycobacteriosis, a comparatively common water contact infection, is often unrecognized or misdiagnosed, sometimes leading to treatments that can exacerbate the condition. This skin and tissue infection is caused by *Mycobacterium marinum* (the most common species) and is associated with lacerations, abrasions or puncture wounds obtained during recreational or occupational exposure to estuarine or marine waters.

In recent years at least five individuals—including recreational users of the Chesapeake Bay, graduate students, and watermen—have contacted Virginia Institute of Marine Science microbiologists concerning information about "lumps" or persistent infections which do not heal. Because in each of these cases the disease was either unrecognized or misdiagnosed, the intent of this newsletter is to increase awareness about *M. marinum*. Although mycobacteriosis may produce lesions which are self-limiting, deep seated infections can lead to bursitis, arthritis and osteomyelitis.

Mycobacteriosis is usually due to infection by *Mycobacterium marinum* although other species such as *M. kansasii* or *M. szulgai* may also be causative agents. *M. marinum* is an acid-fast bacillus

classified with the atypical mycobacteria. These organisms may cause skin and soft-tissue infections through abrasions, lacerations and puncture wounds in persons exposed to fresh and marine waters. *M. marinum* and the other species are related to *M. tuberculosis* (the cause of pulmonary tuberculosis) and *M. leprae* (the cause of leprosy). *M. marinum* can be isolated from both fresh and brackish waters. One characteristic of *M. marinum* is its resistance to chlorination. Sources of infection may include Chesapeake Bay water, fish tanks and infected fish, and swimming pools. Infections may occur when a cut or scrape—work or recreational-related—is exposed to the organism. Synonyms for *M. marinum* infections include fish tank granuloma, swimming pool granuloma, and oyster shucker's granuloma. It is sometimes called the "leisure-time pathogen" because of its association with recreational water sports.

*M. marinum* is a slow growing organism. It grows well at 30-33°C (86-91°F) but not at 37°C (98.6°F) which is normal body core temperature. This fact is partly responsible for the organism's tendency to cause infection in the cooler acral regions (extremities) of the body, especially the hands.



Infections usually begin as a warty, red and scaly or ulcerative lesion on the hand or forearm, according to Dr. Dirk M. Elston (Chief, Dermatology Service, Department of the Army, Fort Eustis, Virginia). The patient may or may not remember a preceding injury to the site. New nodules or ulcers may arise along lymphatic vessels draining up the arm. Occasionally, a *M. marinum* infected patient will present only a sore finger joint, failing to mention that he cut his finger on an oyster shell or punctured it with a fish spine or crab carapace. Often, the sore joint will appear arthritic rather than infected. If the joint is injected with cortisone (this would be an acceptable treatment for an arthritic joint), there is a risk of worsening the *M. marinum* infection because cortisone depresses the body's immune response. The joint, or a larger area, may become red, tender and swollen. Cortisone should not be used if *M. marinum* is suspected. Uncomplicated infections may heal spontaneously or with the local application of heat (taking advantage of the organism's inability to grow well at higher tempera-

tures). Persistent infections or those causing discomfort are usually treated with antibiotics.

Tetracyclines (especially minocycline) are commonly used for treatment. Other antibiotics which may be helpful include trimethoprim/sulfamethoxazole and combinations of antituberculosis drugs (especially rifampin and ethambutol). In prolonged or complicated cases, it is best to confirm the antibiotic susceptibility of a culture taken from the lesion. Because these organisms grow so slowly, antibiotic sensitivity tests may not be available for a considerable length of time. It is therefore considered prudent to begin therapy using the drugs most likely to be effective as soon as possible. Drug therapy may be altered when the antibiotic sensitivity results are established.

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