'Fish Tank Granuloma' Can Mimic Staph Infection

BY SHERRY BOSCHERT
San Francisco Bureau

SAN FRANCISCO — A water-borne mycobacterium that infects humans through breaks in the skin causes lesions that easily are mistaken for staphylococcal infection, Dr. Peggy Weintrub said at the annual meeting of the American Academy of Pediatrics.

Mycobacterium marinum infection causes what's commonly known as "fish tank granuloma," said Dr. Weintrub, chief of pediatric infectious diseases at the University of California, San Francisco. Lesions typically appear 1-4 weeks after exposure and start out as little papules and nodules that can be misdiagnosed as a staph infection. Later, however, they become verrucous, plaquelike lesions that start spreading up the skin along lymphatic tracts.

She described a case in a 3-year-old boy who presented with mild eczema and some other long-standing, crusting lesions on his hand and arm that were spreading up the arm lymphocutaneously. The lesions had not responded to previous treatment with cephalexin. A previous culture from the lesions did grow some staphylococcal organisms, but two additional courses of antibiotics did not affect the lesions.

The boy was afebrile and systemically well, and had an infant sibling at home with no lesions.

The patient's history helped point clinicians toward *M. marinum*. The boy liked to be helpful, assisting his mother with the baby and helping his father with anything and everything, including gardening and cleaning the family's fish tank. *M. marinum* infects fish and amphibians. "You can sometimes get a history of a fish tank, but you also can get this infection from swimming in pools and in natural bodies of water—any kind of significant water exposure," she said.

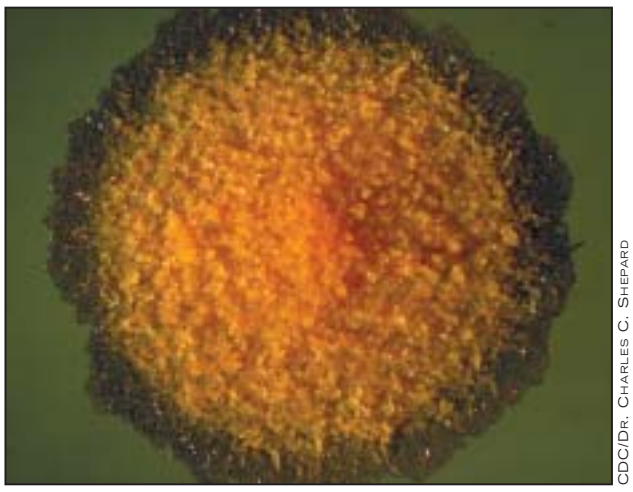
In rare cases, immunocompetent patients can develop disseminated *M. marinum* infection, affecting bones or joint tendon sheaths. "Particularly on the hand, it's a very worrisome diagnosis," Dr. Weintrub said.

If a lesion is oozing, the secretions can be cultured for *M. marinum*. A skin biopsy from the boy grew the organism. Histopathology will show granulomas. Patients with the infection often are purified protein derivative (PPD) positive.

Patient history also can help sort through the differential diagnoses. A history of gardening raises the possibility of *Sporothrix schenckii* infection, which produces lesions that look very similar to *M. marinum* lesions, with a lymphocutaneous spread. *S. schenckii* resides in decaying vegetation, moss, soil, wood, and hay. It is more a disease of adults (typically farmers, gardeners, and forestry workers) than of children, with a history of skin trauma in 10%-60% of cases. A history of travel may suggest *Leishmania*, a parasite.

Usually two or three drugs are used to treat *M. marinum* infection, although no controlled studies back these strategies. "There aren't really good guidelines" on which drugs to use or for how long, she said. Regimens may include clarithromycin or azithromycin, ethambutol, rifampin, and/or minocycline or doxycycline (for older patients).

In general, 1-2 months of treatment may suffice, but 3 months of therapy was needed for the boy's lesions to clear completely. Localized infection is more likely to clear up than is deep infection. In rare cases, surgery may be needed to remove infected tissue. ■



CDC/DR. CHARLES C. SHEPARD

This *Mycobacterium marinum* culture shows a colony of granular growth containing fine red pigment deposits.

Mumps Can Occur Even Among the Vaccinated, Recent Outbreak Proves

BY TIMOTHY F. KIRN
Sacramento Bureau

Mumps outbreaks can occur even among highly vaccinated populations, according to a report on a summer camp outbreak in 2005.

The outbreak had 31 confirmed cases, and 55% were known to have had two doses of mumps vaccine. Analysis indicated two doses of mumps vaccine were 92% effective in preventing mumps. A single dose was 80% effective (Pediatrics 2007;120:doi:10.1542/ peds.2006-3451).

Nine cases occurred in individuals who had never been vaccinated, said Dr. Joshua K. Schaffzin of the New York State Department of Health, Albany, and his colleagues.

Of 368 campers, all had received at least one vaccination and all but two had received two.

According to a previous report on the outbreak, the index case was a 20-year-old male camp counselor from the United Kingdom who had never been vaccinated against mumps.

On June 30, 2005, about 11 days after his arrival, he was evaluated in the camp infirmary for a left-sided parotitis, sore throat, and a low-grade fever.

At the time, a mumps epidemic was occurring in the United Kingdom. But mumps was not considered, and the counselor continued work. During July 15-23, an additional 25 cases of parotitis were seen. On July 26, the New York State Department of Health became aware of the outbreak, cases were isolated, and the camp was quarantined.

According to the new report, 541 persons were at the camp that summer, including 368 campers, whose median age was 12, and 173 staff members, whose median age was 21. Of the campers, all had received at least one mumps vaccination, and all but two had two doses. Of the staff, 21 had never been vaccinated.

Thirty-one cases of mumps were identified in the camp. Twenty-six met case definitions for mumps, and six were tested for mumps IgG and IgM. Five of those six were positive for both. Only one of the six had been vaccinated, and that person had received two doses.

Twelve of the patients were campers and the rest were staff.

Of the 29 cases with certain vaccine history, 16 were individuals who had received two doses of mumps vaccine. Four had received one dose. Nine had never been vaccinated. The investigators determined that the attack rate for those who had never been vaccinated was 43%.

For those who had received one vaccine, it was 9%. Among those who had been vaccinated twice, it was 4%. The investigators also found that, among those who had been vaccinated twice, the attack rates were lowest for those who had been vaccinated within 6 years (none of 72 individuals), and those who had been vaccinated more than 15 years before the outbreak (none of 3).

Among those in the middle, the attack rate was 4% for those vaccinated 6-10 years before the outbreak, and 7% for those vaccinated 11-15 years before the outbreak.

While that finding might suggest waning immunity was playing a role in who contracted mumps, a regression analysis did not demonstrate any linearity in the attack rates by the years since last vaccination, Dr. Schaffzin said.

There was no difference in the clinical manifestations or in the duration of illness between those who had been vaccinated and those who had not, he added. ■

Two-Hour Blood Test for MRSA Approved by FDA

BY ROBERT FINN
San Francisco Bureau

The Food and Drug Administration has recently approved the first rapid blood test for methicillin-resistant *Staphylococcus aureus*.

The test, which is called the BD GeneOhm Staph SR, can detect both methicillin-resistant *S. aureus* (MRSA) and more common and less dangerous strains of the staph bacterium in just 2 hours.

Manufactured by BD Diagnostics, a subsidiary of BD of Franklin Lakes, N.J., the test uses polymerase chain reaction techniques to detect a gene sequence that is unique to the drug-resistant strain of *S. aureus*. Traditional microbiology-based cultures require 24-72 hours to return results.

In 2005, BD received approval for a similar test, the BD GeneOhm MRSA Assay, which can detect MRSA in nasal specimens. That test is used primarily to screen for the presence of asymptomatic MRSA in patients who are about to enter the hospital so that preventive measures can be taken.

The new blood test will be used primarily to choose among treatment options for patients who are already suspected of having an invasive staph infection.

According to BD spokesperson Barbara Kalavik, the company plans to begin marketing the BD GeneOhm Staph SR as soon as next week in the United States. Marketing began in Europe in late December 2007.

Both versions of the test require the use of a specialized instrument, called a PCR-thermocycler, which costs about $35,000. Not counting the capital cost of this equipment, the new BD GeneOhm Staph SR blood test is expected to cost about $35 per patient, compared with about $25 for the older BD GeneOhm MRSA Assay.

The approval was based on the results of a multicenter clinical trial that demonstrated that the BD GeneOhm Staph SR correctly identified 100% of the MRSA-positive specimens and more than 98% of other staph infections.

According to the FDA statement, "in order to preserve the integrity of positive test results, this test should be used only in patients suspected of a staph infection. The test should not be used to monitor treatment for staph infections because it cannot quantify a patient's response to treatment."

In addition, the FDA warned that the test results should not be used as the sole basis for diagnosis, since positive results may reflect the bacteria's presence in patients who have already been successfully treated for staph infections.

Furthermore, the agency cautioned, the test will not rule out other complicating conditions or infections. ■