

Diagnosis

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CASE PRESENTATION

A healthy 26-year-old, right-handed male from rural Manitoba was seen in consultation because of a large, crusted, erythematous papule overlying his right ulnar styloid (Figure 1). Associated with this lesion were four other raised, yet smaller lesions along the length of the right forearm. Over the past few years the patient worked in agricultural related jobs. During the three months before presentation, the patient worked in a poultry processing plant where his job entailed stocking supplies. He rarely had contact with the chicken carcasses. The lesions appeared three weeks after he started to work in the plant. Before working in the poultry processing plant he had worked in a chicken raising facility, where he collected eggs and fed the chickens. He did not wear protective gloves. When he retrieved the eggs, his right hand was pecked and scratched by the chickens, and frequently the skin on his right hand was broken.

The patient was married and had no risk factors for infection with the human immunodeficiency virus. His wife and two-and-a-half month old son were both well. They all lived in an apartment, and he did not do any gardening nor did he have a history of travel to areas endemic for mycosis. He

sought medical attention at the insistence of his wife after the lesions were present for one month and had not responded to topical antimicrobial agents. He denied any systemic complaints.

When initially assessed he had five raised lesions of various sizes on his right forearm. The first lesion to appear was located overlying the ulnar styloid. It had an erythematous base with a thick white crust overlying the surface, and was 2 cm in diameter. This lesion was firm with a fluctuant centre. Other lesions appeared over the next three weeks. Two other lesions were located along the lateral aspect of the forearm midway between the wrist and elbow. They were 1 cm and 2 cm in diameter, respectively. Both were firm and erythematous. There was an erythematous streak connecting the wrist lesion to the two proximal lesions. Another erythematous raised lesion overlay the olecranon; it was 3 cm in diameter and fluctuant. A similar lesion was situated medially, involving the epitrochlear node, and was 3 cm in diameter, fluctuant and erythematous. All these lesions were nontender and cool to touch.

The olecranon lesion was incised and drained. Routine bacterial cultures of the caseous contents were negative. On histological examination, caseating granulomata were noted. The patient was subsequently referred to an infectious disease consultant.

What is the most likely diagnosis and what further action should be taken?

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DIAGNOSIS

Mycobacterium marinum abscess (swimming pool or fish tank granuloma) is the diagnosis.

When the patient was interviewed again, additional history was elicited. Over the previous two years, the patient kept fish in aquarium, and he cleaned the tank with his bare hands. The first lesion appeared two-and-a-half months after he last cleaned the fish tank. The fluctuant epitrochlear node was aspirated, and its contents were sent to the microbiology laboratory for mycobacterial stain and culture. The auramine-rhodamine stain did not reveal any acid-fast organisms but *M marinum* was recovered on culture. Based upon the organism's antibiogram, the patient was treated with tetracycline (250 mg by mouth qid) and ethambutol (1000 mg/day by mouth) for six weeks with resolution of the lesions.

DISCUSSION

M marinum was first isolated by Aronson (1) in 1926 in salt-water fish that had died in the Philadelphia Aquarium. In 1951, Norden and Linell (2) recognized it as a cause of human disease after isolating the organism from cutaneous lesions on swimmers who acquired this mycobacterium from a contaminated swimming pool. The term 'swimming pool granuloma' was coined. It was not until 1977 that Brown et al (3) first described *M marinum* infection in Canada.

M marinum is a photochromogenic, acid-fast mycobacterium associated with both fresh and salt water. The infection is commonly acquired from contaminated swimming pools, fish tanks and brackish water. The organism requires temperatures of 30 to 32°C to grow and flourish. Thus, because the body temperature of fish is dictated by ambient temperature, they are particularly susceptible to this mycobacterium. In humans, the organism usually infects the extremities, where body temperature is lower. Local trauma is also an important predisposing factor in infection establishment, with infection most often occurring on the dominant hand (4). Our patient was particularly at risk because of the local trauma to his right hand from the pecking and scratching of chickens.

The incubation period ranges from one to 12 weeks. The clinical picture is of two main types. More commonly, an erythematous, painless or mildly tender papule develops at the site of inoculation. This is followed by the development of multiple similar lesions in a sporotrichoid pattern along the course of the efferent lymphatic vessels; the lesions enlarge and become nodular and/or pustular, and may become crusted or ulcerated. Less commonly, a solitary nodule develops at the site of inoculation (4). Patients usually feel systemically well. Infections of the tendon sheaths and periarticular tissue, and sclerokeratitis have been described. Dissemination is rare (5).

When faced with a patient who has a nodular lymphangitis (sporotrichoid pattern), *M marinum* must be distinguished from other etiological causes. In addition to *M marinum* the most common causes include *Sporothrix schenckii*, *Leishmania* species, *Nocardia* species, rapidly growing mycobacteria and *Francisella tularensis* (6).

Histological findings on biopsy often reveal the following features: acute or chronic inflammation; granulomatous infiltrates; hyperkeratosis with acanthosis; and abscess formation. Acid-fast organisms are often sparse or absent (3).

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It should be emphasized that *M marinum* will be detected only if a thorough history is obtained, and tissue and/or fluids are submitted for appropriate analysis, including mycobacterial culture and staining techniques. The possibility of other infectious causes of a nodular lymphangitis must also be entertained, if there is a suitable history of exposure.

Successful treatment of *M marinum* has been achieved with combinations of the following: ethambutol, rifampin, doxycycline, trimethoprim/sulfamethoxazole, ciprofloxacin and streptomycin. Additionally, deep-seated infections may necessitate surgical debridement (7).

REFERENCES

1. Aronson JD. Spontaneous tuberculosis in salt water fish. *J Infect Dis* 1926;39:315-20.
2. Norden A, Linell F. A new type of pathogenic mycobacterium. *Nature* 1951;168:826.
3. Brown J, Kelm M, Bryan LE. Infection of the skin by *Mycobacterium marinum*: Report of five cases. *Can Med Assoc J* 1977;117:912-4.
4. Huminer D, Pitlik SD, Block C, Kaufman L, Amit S, Rosenfeld JB. Aquarium-borne *Mycobacterium marinum* skin infection. *Arch Dermatol* 1986;122:698-703.
5. Horowitz EA, Sanders WE. Other mycobacteria species. In: Mandell GL, Bennett JE, Dolin R, eds. *Principles and Practice of Infectious Diseases*, 4th edn. New York: Churchill Livingstone, 1995:2264-8.
6. Kostman JR, DiNubile MJ. Nodular lymphangitis: A distinctive but often unrecognized syndrome. *Ann Intern Med* 1993;118:883-8.
7. Wolinsky E. Mycobacterial diseases other than tuberculosis. *Clin Infect Dis* 1992;15:1-10.