Painful Plaque on the Forearm

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A 30-year-old woman presented to the dermatology clinic with lesions on the right forearm of 2 years' duration. Her medical history was unremarkable. She reported working as a chef and caring for multiple pets in her home, including 3 cats, 6 fish tanks, 3 dogs, and 3 lizards. Physical examination revealed a painful, indurated, red-violaceous plaque on the right forearm with satellite pink nodules that had been slowly migrating proximally up the forearm. An outside excisional biopsy performed 1 year prior had shown suppurative granulomatous dermatitis with negative stains for infectious organisms and negative tissue cultures. At that time, the patient was diagnosed with ruptured folliculitis; however, a subsequent lack of clinical improvement prompted her to seek a second opinion at our clinic.

WHAT'S YOUR **DIAGNOSIS?**

a. cat scratch disease
b. cutaneous sarcoidosis
c. *Mycobacterium marinum* infection
d. sporotrichosis
e. vegetative pyoderma gangrenosum

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THE **DIAGNOSIS:** *Mycobacterium marinum* Infection

A repeat excisional biopsy showed suppurative granulomatous dermatitis with negative stains for infectious organisms; however, tissue culture grew *Mycobacterium marinum*. The patient had a history of exposure to fish tanks, which are a potential habitat for nontuberculous mycobacteria. These bacteria can enter the body through a minor laceration or cut in the skin, which was likely due to her occupation and pet care activities.[1] Her fish tank exposure combined with the cutaneous findings of a long-standing indurated plaque with proximal nodular lymphangitis made *M marinum* infection the most likely diagnosis.[2]

Due to the limited specificity and sensitivity of patient symptoms, histologic staining, and direct microscopy, the gold standard for diagnosing acid-fast bacilli is tissue culture.[3] Tissue polymerase chain reaction testing is most useful in identifying the species of mycobacteria when histologic stains identify acid-fast bacilli but repeated tissue cultures are negative.[4] With *M marinum*, a high clinical suspicion is needed to acquire a positive tissue culture because it needs to be grown for several weeks and at a temperature of 30 °C.[5] Therefore, the physician should inform the laboratory if there is any suspicion for *M marinum* to increase the likelihood of obtaining a positive culture.

The differential diagnosis for *M marinum* infection includes other skin diseases that can cause nodular lymphangitis (also known as sporotrichoid spread) such as sporotrichosis, leishmaniasis, and certain bacterial and fungal infections. Although cat scratch disease, which is caused by *Bartonella henselae*, can appear similar to *M marinum* on histopathology, it clinically manifests with a single papulovesicular lesion at the site of inoculation that then forms a central eschar and resolves within a few weeks. Cat scratch disease typically causes painful lymphadenopathy, but it does not cause nodular lymphangitis or sporotrichoid spread.[6] Sporotrichosis can have a similar clinical and histologic manifestation to *M marinum* infection, but the patient history typically includes exposure to *Sporothrix schenckii* through gardening or other contact with thorns, plants, or soil.[2] Cutaneous sarcoidosis can have a similar clinical appearance to *M marinum* infection, but nodular lymphangitis does not occur and histopathology would demonstrate noncaseating epithelioid cell granulomas.[7] Lastly, although vegetative pyoderma gangrenosum can have some of the same histologic findings as *M marinum*, it typically also demonstrates sinus tract formation, which was not present in our case. Additionally, vegetative pyoderma gangrenosum manifests with a verrucous and pustular plaque that would not have lymphocutaneous spread.[8]

Treatment of cutaneous *M marinum* infection is guided by antibiotic susceptibility testing. One regimen is clarithromycin (500 mg twice daily[9]) plus ethambutol.[10] Treatment often entails a multidrug combination due to the high rates of antibiotic resistance. Other antibiotics that potentially can be used include rifampin, trimethoprim-sulfamethoxazole, minocycline, and quinolones. The treatment duration typically is more than 3 months, and therapy is continued for 4 to 6 weeks after the skin lesions resolve.[11] Excision of the lesion is reserved for patients with *M marinum* infection that fails to respond to antibiotic therapy.[5]

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