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Cutaneous *Mycobacterium chelonae* in a 95-year-old woman

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Abstract

We present an interesting case of cutaneous *Mycobacterium chelonae* in a 95-year-old woman. The lesion in question was localized to her right arm; subsequent biopsy and culture studies were consistent with a mycobacterial infection. Historically, these infections are treated based on the immunologic state of the patient. In this case, taking into account the age of our otherwise immunocompetent patient, a course of oral antibiotics was initiated. The patient was unable to tolerate any oral regimens for longer than several weeks. Remarkably, even in the absence of recommended antibiotic therapy, the lesion clinically cleared over a course of 8 months.

Keywords: cutaneous *Mycobacterium chelonae*

Case Synopsis

A 95-year-old woman presented with a mildly pruritic rash on her right arm for 2-3 weeks prior to presentation. She had been seen by her family physician and given two weeks of clarithromycin with minimal improvement. On physical examination, multiple hyperkeratotic papules, nodules, and pustules coalescing into plaque were noted over a large portion of the patient's right extensor forearm (**Figure 1**). Her social, family, and surgical history were non-contributory. No recent trauma was reported, though the patient had recalled working in her garden. The patient was otherwise healthy, except for long standing hypertension, hyperlipidemia, and hypothyroidism, all of which were well controlled on medication. A shave biopsy was performed, as well as tissue cultures. Histopathology revealed pseudoepitheliomatous epidermal hyperplasia, with



Figure 1. Multiple hyperkeratotic papules, nodules, and pustules coalescing into plaque on the right extensor forearm.

suppurative and granulomatous inflammation of the dermis, which suggested an infectious etiology. Mycobacterial culture ultimately came back positive for *Mycobacterium chelonae* and *fortuitum*. Bacterial culture and stain were negative, as were the fungal culture, acid fast stain, and *Actinomyces* spp culture. Owing to the confirmed presence of *Mycobacterium chelonae* over such a widespread area, multiple diagnostic tests were performed to rule out systemic involvement, or an immunocompromised state. Basic metabolic panel, complete blood count, HIV antibody screen, chest X-ray, and soft tissue X-ray of the patient's right arm were all negative. Though prescribed oral clarithromycin and minocycline, because of stomach upset, the patient was unable to comply or complete therapy any longer than 1-2 weeks. However, approximately eight months after initial presentation, and despite senescent immunity, clinical clearance was observed.

Discussion

The organisms of the *Mycobacterium fortuitum* and *Mycobacterium chelonae/abscessus* group are considered rapid-growing mycobacteria. They are named for their relatively accelerated in vitro growth time as compared to other species of mycobacteria, typically appearing within seven days [1]. These organisms have been isolated from a diverse array of environments, from city water supplies to nail salon foot baths [2,3,4]. However, despite its prevalence, it is not completely understood what exactly determines virulence. Infection is seen in both immunocompetent and immunocompromised hosts. Trauma plays an important role. Infection secondary to direct inoculation, such as simple cuts from household bottle openers are important in introducing the organism. Cosmetic procedures, such as liposuction, breast reconstruction, and Botox® and filler injections, have all been reported to introduce infection [5,6,7,8]. Clinicians should also be aware that surgical laparoscopic sites, insertion sites for peritoneal dialysis catheters, and Hickman lines have also been implicated. Therefore, asking patients about any recent invasive procedures is important [9,10]. Clusters of cases are also common and these include: patients from nail salons following pedicures/foot bath use, patrons from tattoo salons following use of contaminated tattoo ink, and patients after bronchoscopy using a contaminated cleaning water reservoir [2,5,11]. Therapeutic use of biologics may also be considered a risk factor, as infection has also been associated with the use of adalimumab in one patient [12].

Cutaneous manifestations are extremely diverse and clinicians must remember to keep these organisms in mind when forming their differential diagnosis. Although solitary, self-healing papules are most common, ulcerations, subcutaneous nodules, cellulitis, and abscesses are all possible presentations. Involvement of other organ systems can also occur, making a good review of systems essential when considering mycobacterial infection. Keratitis, corneal ulcers (secondary to LASIK procedures), endocarditis, pneumonia, and peritonitis have all been reported [1]. Histopathology examination can certainly offer clues to an infectious etiology, but tissue culture and appropriate stains are essential to rule in/rule out a diagnosis of rapid growing mycobacterium. Whereas

tissue culture is most commonly used to identify these species and provide susceptibilities, RNA probes and PCR-based techniques are also available [13].

Treatment is guided by the patient's immune status, as well as extent of disease. In a patient like ours' with localized cutaneous disease, six months of clarithromycin is the treatment of choice [1,6,14]. Based on susceptibilities, or in severe cases, double coverage may be warranted. Surgical approaches have also been successful in those cases which did not clear with oral therapies [14]. Although spontaneous clearing can occur, greater success is achieved with antibiotic treatment and is recommended. It is interesting that given our patient's senescent immunity, large area of involvement, and inability to adhere to therapy, spontaneous clearing was still observed.

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