

An Unusual Case of a Cervical Mass Due to Nontuberculous *Mycobacterium Fortuitum* Infection

Hien Nguyen, MD
 Connie Le, MD
 Hanh Nguyen, MD

Abstract

Mycobacterium fortuitum, of the class of nontuberculous mycobacteria, rarely causes cervical lymphadenopathy and head and neck masses. However, we treated a woman with a neck mass that was indeed caused by a mycobacterial infection. Our case is unique in that prompt recognition of the infection and treatment with antimicrobials averted surgery. Generally, both antibiotics and surgery are recommended, and in rare instances, infections can resolve with antibiotics alone. Nontuberculous *M fortuitum* infection should be included in the differential diagnosis of cervical masses, particularly in immunocompromised patients or those for whom standard antibiotics are not effective for treating abscess or lymphadenitis.

Introduction

Atypical or nontuberculous mycobacterial (NTM) infections are drawing increased interest because of several trends, including the association of NTM infections with the AIDS epidemic and the varied presentations of NTM disease in immunocompetent patients. Nontuberculous mycobacteria cause infections of the lung, skin, soft tissue, bones, and, very rarely, the lymph nodes.¹ We describe here a case of an infected submandibular mass caused by *Mycobacterium fortuitum*. To our knowledge, this is the first case reported in the literature on adult patients that describes resolution of a cervical mass secondary to *M fortuitum* with antibiotics alone.

Case Report

A woman, age 60 years, presented with a one-month history of an enlarging right neck mass. She said that she had had no fever, throat or ear pain, hoarseness, difficulty with swallowing, night sweats, weight loss, or other constitutional symptoms. Her medical history included stage 1 breast cancer, diagnosed a year earlier, for which she had received radiation and chemotherapy. The patient did not smoke or drink alcohol, lived in the Mid-Atlantic Region of the US, and said that she had had no exposure to cats or aquariums. Her physical examination revealed a nontender, fixed 3 × 3 cm nonfluctuant submandibular mass but no other lesions of the head and

neck. With a history of penicillin allergy, she was given clarithromycin for presumptive cervical lymphadenitis.

There was no clinical improvement after ten days of antibiotics, at which time a computed tomography scan of the neck demonstrated a well-defined mass lateral to the right submandibular gland, two adjacent subcentimeter nodes, and mucosal thickening of the maxillary sinus. She had normal findings on a complete blood count, blood chemistries, purified protein derivative skin test, chest radiographs, HIV testing, and urine antigen for histoplasmosis. Needle aspirate from the mass showed no acid-fast bacilli, and she had negative findings on bacterial and fungal cultures. Histopathology included caseating granulomas and giant cells. A specialist in infectious diseases advised standard quadruple antituberculous therapy, which was begun. After cultures grew *M fortuitum*, ciprofloxacin was added to the clarithromycin that the patient was already taking. Subsequent in vitro testing confirmed appropriate susceptibilities. Possible open excision of

Hien Nguyen, MD, (left) is an Internist at the Camp Springs Medical Center in Temple Hills, MD, and an Attending Internist at the Washington Hospital Center in Washington, DC. E-mail: hientrinhnguyen@yahoo.com.

Connie Le, MD, (center) is an Attending Internist at the Fairfax Hospital in Fairfax, VA. E-mail: drconniele@aim.com.

Hanh Nguyen, MD, (right) is a Resident at the University of California Irvine Medical Center in Irvine, CA. E-mail: hanhnguyenmd@gmail.com.



the mass was considered, but the mass decreased rapidly to one half its original size in two weeks. After a total duration of three months of antibiotics, the mass resolved completely without surgery.

Discussion

Mycobacterial infections are classified as either tuberculous (*M tuberculosis* and *M bovis*) or atypical/nontuberculous (*M avium intracellulare*, *M chelonae*, *M abscessus*, *M fortuitum*, *M kansasii*, *M xenopi*, and others). Nontuberculous mycobacteria are nonmotile and nonspore-forming aerobic bacilli that are ubiquitous in soil, water, unpasteurized milk, and animals.¹⁻³ Nontuberculous mycobacteria affect immunocompromised and immunocompetent patients alike.¹⁻⁴ In pediatric patients, the most common manifestation of NTM infection is cervical adenitis, but in adults 90% of culture-proven mycobacterial cervical infection is due to *M tuberculosis*.^{1,5} In the absence of HIV infection in adult patients, cervical lymphadenitis is rarely due to NTM infection.⁴ Eighty percent of cases

of NTM infection of head and neck lymph nodes are the result of *M avium* complex, and the remaining are the result of *M scrofulaceum*, *M malmoense*, and *M haemophilum*.^{1,3} Isolated case reports have documented *M fortuitum* infections of the submandibular and submental lymph nodes, larynx, pharynx, ears, nasal and oral cavities, and salivary glands.¹⁻⁴

Nontuberculous Versus Tuberculous Infection

In contrast to tuberculosis, which may present with systemic disease,

infections with nontuberculous mycobacteria, including *M fortuitum*, are usually isolated. There are usually no constitutional symptoms.⁴ Unlike tuberculous infection, there is no exposure history to another person in nontuberculous infection because the latter is not transmitted person to person, and findings on chest radiographs in patients with *M fortuitum* infection are almost always normal.¹ The diagnosis of *M fortuitum* infection is confirmed by histopathology and bacteriology. Classic histopathologic changes include microabscesses, noncaseating granulomas, and giant cells.

Therapy

It is critical to distinguish tuberculous from nontuberculous infection because typical mycobacterial infections are treated as systemic diseases with antibiotics, whereas NTM infections are addressed as local infections and almost always require both antibiotics and surgery.⁵⁻¹¹ The distinction has obvious public health implications. A consensus statement issued by the American Thoracic Society states that generally both surgical and antimicrobial therapy are necessary for NTM infection because antimicrobial therapy alone is frequently associated with sinus tract formation, chronic drainage, and recurrence.¹ However, the current guidelines are largely based on anecdotal experiences and have not been subjected to clinical trials. In the pediatric literature, there are isolated case reports of NTM cervical adenitis that was successfully treated with antimicrobials alone (clarithromycin and rifabutin). In these cases, complete surgical excision was not possible or was refused by the patient, and therefore there were no surgical complications.^{5,12}

We believe that our patient's excellent clinical response was due to prompt, fortuitous antimicrobial therapy before the occurrence of suppurative or widespread involvement. Allergic to penicillin, the patient was immediately given clarithromycin, the cornerstone of therapy for NTM infection. The optimum duration and choice of antimicrobial therapy for NTM infection is unclear in the literature. Some experts recommend at least three months of antibiotics but suggest that treatment be tailored to each patient's immunologic status, depth of infection, and clinical response.⁵ Antimicrobial resistance to tetracyclines and rifampin is reported, whereas clarithromycin appears to be superior in efficacy. An additional agent should be given when there is deeper infection.⁵

The failure of cervical lymphadenopathy to respond to standard antibiotics should alert the clinician to the possibility of mycobacterial infection. Further studies are needed to elucidate the roles of surgical and antimicrobial therapy and the optimum duration of antimicrobial treatment. ♦

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

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Melt The Mass

Genius is present in every age,
but those carrying it within them
remain benumbed unless
extraordinary events occur to
heat up and melt the mass
so that it flows forth.

— Denis Diderot, 1713-1784, French philosopher and author