

## ATYPICAL MYCOBACTERIA: AN UNUSUAL CAUSE OF BREAST ABSCESS

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*Staphylococcus aureus* is the most common causative organism of peripherally situated breast abscesses. A high proportion of anaerobic bacteria are isolated in subareolar breast abscesses, especially in the presence of underlying duct ectasia.<sup>1</sup> Other causative organisms include *enterococci*, *streptococci*, fungi and *Mycobacterium tuberculosis*. Any other causative organisms are extremely rare. A case of disseminated soft tissue infection, including breast abscess due to *Mycobacterium chelonae*, has been reported in an immunocompromised patient.<sup>2</sup> We report a case of an isolated breast abscess caused by this atypical mycobacterium in an apparently immuno-competent patient. We believe this is the first report of its kind in the Saudi literature.

### Case Report

A 35-year-old, lactating, non-insulin-dependent diabetic Saudi female was admitted with a painful right breast lump of 12 days' duration. On examination, she was febrile with an 8 × 10 cm tender fluctuant subareolar mass with surrounding cellulitis. Her random blood sugar and white cell count were 323 mg% and 14,500/mm<sup>3</sup>, respectively. Incision and drainage was performed and pus culture showed *Staphylococcus aureus*. Therefore, she was given a course of flucloxacillin and made an uneventful recovery.

The patient presented five months later with a 2.5 × 2.5 cm slightly tender lump at the upper inner quadrant of the same breast. The site of the previous incision and drainage was completely healed and there was no tenderness or axillary lymphadenopathy. Fine-needle aspiration of this lump revealed thick pus and cytological examination showed features consistent with breast abscess but no evidence of malignancy. Pus culture for acid-fast bacilli

revealed *Mycobacterium chelonae* (Figure 1). She was started on intravenous amikacin 1 g daily.

One month later, the patient developed a recurrent abscess at the same site and further aspiration revealed 10 mL of thick pus which turned orange within 10 minutes upon exposure to light. Repeat culture isolated *M. chelonae* sensitive to ciprofloxacin and amikacin but resistant to all other antibiotics. Treatment with amikacin was continued with partial resolution of the abscess. Gallium-67 scan revealed no other hidden abscesses in the body. However, failure of the abscess to resolve completely after a month of daily intravenous amikacin and the development of mammillary fistula as a result of repeated aspiration, necessitated surgical excision and primary closure. Histological examination of the excised specimen revealed numerous granulomas made up of epithelioid cells and Langhan's giant cells (Figure 2). The patient remained well with no recurrence at three and six months follow-up.

### Microbiology

The aspirated specimen was directly inoculated (without decontamination) into two types of media: 1) 7 H2 middle brook (Bactec 460) and 2) Lowerstein-Jensen (LJ) slant. Both media recovered growth in five days and acid-fast smear was positive from both. The bacilli were quite pleomorphic and cord formation from 7 H2 middle brook medium was absent. Colonies from LJ slant were smooth, moist and non-pigmented, and did not exhibit the extensive network of filaments commonly associated with

TABLE 1. The tests which were carried out for identification of *M. chelonae* and their results.

Test	Results
Growth after subculture on LJ* and blood agar plate	Growth in two days
Pigment production	Non-chromogenic
Growth on MacConkey (without crystal violet)	Positive
Reduction of tellurite	Positive
Reduction of nitrate	Negative
Susceptibility to polymixin	Resistant

\*LJ=Lowerstein-Jensen plate.

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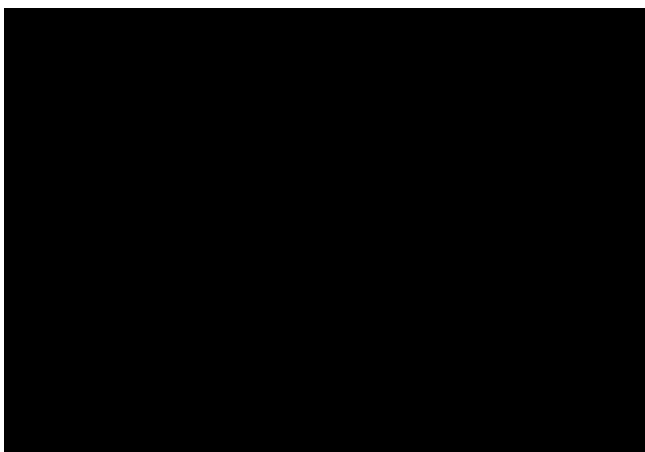


FIGURE 1. Acid-fast bacilli (Ziehl-Neelsen stain) under 10x100 high-power magnification. The acid-fast bacilli were identified as *Mycobacterium chelonae*.

*M. fortuitum* on prolonged inoculation. The tests that were carried out for identification are listed in Table 1. The isolate was not subspeciatiated due to the lack of facilities. The isolate was tested against erythromycin (a macrolide) and found to be resistant.

### Discussion

*Mycobacterium chelonae* are rapidly growing mycobacterium which are defined as AFB that form visible colonies from a dilute inoculum on a solid medium within five to seven days.<sup>3</sup> Three species of atypical mycobacteria—*chelonae*, *abscessus* and *fortuitum*—are important causes of cutaneous, pulmonary and nosocomial infections in humans, especially after augmentation mammoplasty and cardiac bypass surgery.<sup>3</sup> They are also responsible for a number of different infections, such as osteomyelitis, cellulitis, disseminated disease with multiple nodular soft tissue abscesses, surgical and post-traumatic wound infections, otitis media, corneal ulcers and chronic pulmonary disease.<sup>4</sup> The majority of soft and skeletal infections may result from direct inoculation of contaminating materials via injections, surgery and penetrating trauma. This method of direct inoculation of contaminated material is believed to have been the source of infection at the time of incision and drainage for the initial abscess. *M. chelonae* is an environmental organism that rarely infects or causes disease. However, it has been implicated as a cause of outbreaks of nosocomial infection in dialysis patients.<sup>5</sup> Disseminated disease is rare, but may occur in immunocompromised patients.<sup>2,6</sup> Our patient was HIV-negative and her diabetes was well controlled. Interestingly, the abscess was isolated to the breast, with no evidence of dissemination, as indicated by the Gallium-67 citrate scan. It is apparent that even patients with

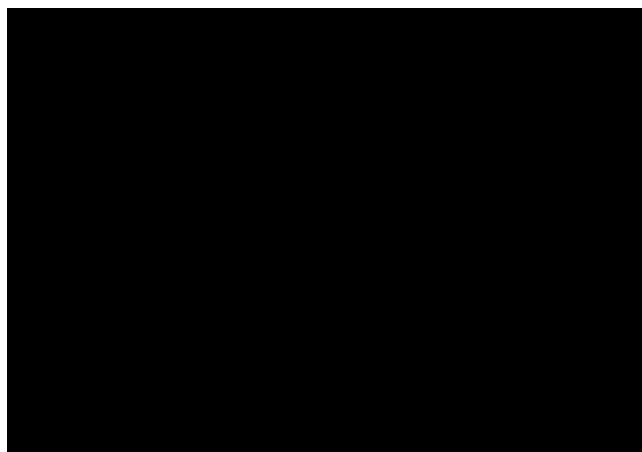


FIGURE 2. Cut section of the excised specimen, showing numerous granulomas made up of epithelioid cells and Langhans' type of giant cells. Necrosis is not evident in this field (H&E, 40x).

“normal” immunity or relatively trivial defects in the host defences, such as those with diabetes, with chronic renal and liver failure, and those on steroid therapy, are predisposed to mycobacterium infections.<sup>7</sup>

Atypical rapidly growing mycobacteria are resistant to conventional antimycobacterial therapy, except aminoglycosides. New drugs such as clarithromycin, an erythromycin derivative with slightly greater activity than the parent compound and causing fewer side effects than erythromycin, have proven to be effective in treating *M. chelonae* infections. However, our isolate was found to be resistant to macrolides. Surgical debridements of the infected tissues are often necessary adjuncts to antimicrobial therapy, although 20% of cutaneous infections are likely to resolve spontaneously without surgery or antimicrobial therapy.<sup>8</sup> In our case, there was initially an apparent response to aspiration and antimicrobial therapy, and this was felt adequate enough to defer surgical intervention. Successful treatment of non-lactational breast abscesses by aspiration and antibiotics has been reported.<sup>9,10,11</sup> However, repeated aspiration is advocated to achieve complete resolution for lactational<sup>1</sup> as well as non-lactational breast abscesses<sup>10,11</sup> in approximately two weeks.<sup>11</sup> In our case, complete resolution was achieved only by surgical excision and adjuvant amikacin for two weeks postoperatively. As the prevalence of tuberculous cold abscesses is increasing, we routinely subject any pus for culture and AFB staining. Without the latter, the diagnosis in this case might have been missed. Therefore, in diabetic and immunocompromised patients, we recommend routine testing of any drained pus for AFB, especially if no growth is visualized on routine cultures. We also recommend outpatient repeated aspirations and long-term (four to six weeks) parenteral aminoglycoside for the initial treatment

of atypical mycobacterial breast sepsis. Although surgical excision is the mainstay of treatment for soft tissue infections caused by *M. chelonae*,<sup>12</sup> it is indicated for abscesses failing to respond to medical treatment and repeated aspiration, poor patient compliance to antimycobacterial therapy and if mammillary fistula develops. In the absence of viable mycobacteria, the majority of fistulae, if they occur, will close spontaneously and a period of conservative treatment is justified. Nevertheless, in the presence of viable mycobacteria, surgical excision with long-term antimycobacterial therapy is recommended.

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