

## Recurrent Breast Abscess Caused by *Corynebacterium amycolatum*: A Case Report

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**Abstract:** *Corynebacterium* species are an uncommon cause of breast abscess, and *Corynebacterium amycolatum* is rarely described in the literature. In the present case, we report recurrent breast abscess caused by *C. amycolatum* in a 39-year-old patient with normal immune function. Pathological diagnosis was granulomatous mastitis. The patient was treated with incision and drainage and ampicillin-sulbactam treatment. To our knowledge, this is the second report of breast abscess caused by *C. amycolatum*.

**Key Words:** *Corynebacterium amycolatum*, breast abscess, granulomatous mastitis

### *Corynebacterium amycolatum*'un Neden Olduğu Tekrarlayan Meme Apsesi: Bir Olgu Sunumu

**Özet:** *Corynebacterium* cinsi meme apsesine seyrek olarak neden olmakta ve *Corynebacterium amycolatum* literatürde nadiren bildirilmektedir. Bu vakada, biz immün fonksiyonları normal olan 39 yaşındaki bir hastada *Corynebacterium amycolatum*'un neden olduğu tekrarlayan meme apsesi olgusu bildiriyoruz. Patolojik olarak granülomatoz mastit tanısı konan hasta, insizyon, drenaj ve ampisilin-sulbaktam ile tedavi edildi. Bilgilerimize göre, bu *Corynebacterium amycolatum*' un neden olduğu ikinci meme apsesi raporudur.

**Anahtar Sözcükler:** *Corynebacterium amycolatum*, meme apsesi, granülomatoz mastit

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### Introduction

Breast infection most commonly affects women aged between 18 and 50 years. In this age group, it can be divided into lactational and non-lactational infection. The infection can affect the skin overlying the breast, when it can be a primary event, or it may occur secondary to a lesion in the skin, such as a sebaceous cyst, or to an underlying condition such as hidradenitis suppurativa. *Staphylococcus aureus*, enterococci, anaerobic streptococci, *Bacteroides* spp, and occasionally fungi are responsible for non-lactating breast infection (1).

Coryneform bacteria are commensals colonizing the skin and mucous membranes of humans and other animals. They are isolated frequently in clinical specimens, and are commonly considered as contaminants without clinical significance (2). Infections due to *Corynebacterium amycolatum* (*C. amycolatum*) are rarely described in the literature. Only a single case of breast abscess caused by this organism has been reported (3). Herein, we report a case of recurrent breast abscess due to *C. amycolatum* in a woman with normal immune function.

### Case Report

A 39-year-old female, who was a non-smoker and non-alcoholic, was admitted with the symptoms of local tenderness, pain and erythema over the left breast, which had been present for 20 days. She had a left breast abscess, which had been drained twice at another hospital.

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On admission, her temperature was 36.5°C, blood pressure 130/80 mmHg, pulse rate 72 beats/min, and respiratory rate 22/min. Remarkable findings on physical examination included tenderness, erythema and edema over the left breast. Laboratory examinations revealed a white blood cell count of  $7.39 \times 10^9/L$ , with 51.7% neutrophils, a hemoglobin level of 10.7 g/dl, and a platelet count of  $287 \times 10^9/L$ . Serum chemistry results revealed the following values: glucose, 108 mg/dl; blood urea nitrogen, 10.21 mg/dl; creatinine, 0.91 mg/dl; aspartate aminotransferase, 15 IU/L; and alanine aminotransferase, 19 U/L. The C-reactive protein concentration was 16.3 mg/dl (normal: < 0.5 mg/dl). Erythrocyte sedimentation rate was 85 mm/h. Ultrasonographic examination showed cutaneous thickening, subareolar edema and multiple fluid collections in the left breast (Figure). Based on these results, the abscess was drained surgically. Ampicillin-sulbactam treatment was administered at 4 g/day and the therapy was continued for 14 days. In the direct microscopic examination of smears, coryneform bacteria were seen in Gram stain. Ehrlich-Ziehl-Neelsen-stained smears were negative. The specimens were cultured using blood agar (Oxoid, Basingstoke, United Kingdom), eosin-methylene blue agar (EMB, Difco, Detroit, MI, USA), Sabouraud dextrose agar (SDA, Difco, Detroit, MI, USA)

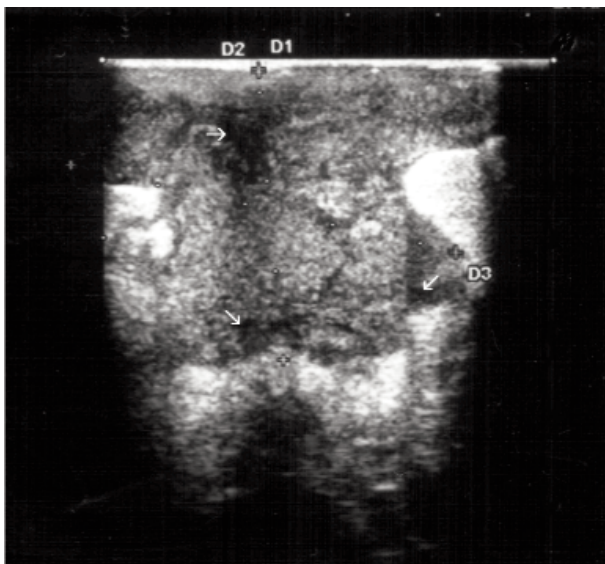


Figure. Ultrasonographic examination shows cutaneous thickening, subareolar edema and multiple fluid collections in the left breast (arrows).

and Lowenstein-Jensen agar (Merck, Darmstadt, Germany). The cultures were incubated at 37°C for 24 hours in aerobic conditions. Isolated strain of *C. amycolatum* typically produced dry colonies of glucose-fermenting coryneforms about 1 to 1.5 mm in diameter. Gram stains showed gram-positive pleomorphic coryneform rods with single cells, V forms, or Chinese letters. The strain was identified as *C. amycolatum* according to the results of Gram stain, colony morphology and numerous biochemical tests including API CORYNE kit (bioMerieux, France) (7). All the cultured specimens of operation were culture-negative for acid-fast bacilli, other bacteria or fungus. Anaerobic cultures of clinical specimens were negative. Pathological examination of the operation specimens showed granulomas composed of epithelioid histiocytes with giant cells, and the nature of the background inflammatory cells, with necrosis, lobulitis and vasculitis. Lymphocytes accounted for the majority of the inflammatory cells (> 60%). In contrast, the proportion of neutrophils was lower, accounting for less than 40% of the inflammatory cells. Pathological diagnosis was granulomatous mastitis according to these results.

## Discussion

Non-lactating infections can be separated into those occurring centrally in the periareolar region and those affecting the peripheral breast tissue. Periareolar infection is most commonly seen in young women with a mean age of 32. Histologically, there is active inflammation around non-dilated subareolar breast ducts - a condition termed periductal mastitis. Peripheral non-lactating breast abscesses are less common than periareolar abscesses and are often associated with an underlying condition such as diabetes, rheumatoid arthritis, steroid treatment, granulomatous lobular mastitis, and trauma. Infection associated with granulomatous lobular mastitis can be a particular problem. This condition affects young parous women, who may develop large areas of infection with multiple simultaneous peripheral abscesses. There is a strong tendency for this condition to persist and recur after surgery (1).

The fact that granulomatous mastitis can be associated with corynebacteria infection was shown in a clinicopathological review of 34 cases of inflammatory breast disease (4). Ang and Brown (5) described a case of *C. accolens* isolated from a breast abscess in a patient

previously diagnosed with granulomatous mastitis. Kieffer et al. (6) also reported a case of granulomatous mastitis caused simultaneously by *C. kroppenstedtii* in a 26-year-old young woman.

Defined as a new species in 1988 by Collins, *C. amycolatum* was first isolated from the skin of healthy humans (2). These bacteria have characteristics compatible with an assignment to the genus *Corynebacterium* (meso-diamino pimelic acid as the diamino acid of the cell wall, arabinose and galactose as cell wall sugars, and a G+C content in DNA of 61 mol%) except for the lack of detectable mycolic acids, which at that time was considered a prerequisite for an assignment to the genus *Corynebacterium*. However, it is now evident from phylogenetic analysis applying 16S rRNA gene sequencing that *C. amycolatum* clusters within the genus *Corynebacterium* (7). Recent reports with reliable information on organism identification include recurrent peritonitis, nosocomial endocarditis, septic arthritis, and a case of native valve endocarditis with aorta-to-left atrial fistula (8-11). In the study by Paviour et al. (3), 19 *Corynebacterium* isolates recovered from 15 patients with mastitis were available for full species identification. Fourteen isolates recovered from 13 patients were identified as *C. kroppenstedtii*. Two isolates were

identified as *C. tuberculostearicum*, both of which were recovered from patients from whom *C. kroppenstedtii* had also been isolated. Three isolates recovered from 3 patients were identified as *C. amycolatum*, one of which was recovered from a patient from whom *C. kroppenstedtii* had also been isolated. In the present case, the organism caused a recurrent breast abscess in a woman with normal immune function.

There are four guiding principles in treating breast infection: (a) appropriate antibiotics should be given early to reduce formation of abscesses; (b) hospital referral is indicated if the infection does not settle rapidly with antibiotics; (c) if an abscess is suspected, it should be confirmed by aspiration before it is drained surgically; and (d) breast cancer should be excluded in patients with an inflammatory lesion that is solid on aspiration or which does not settle despite apparently adequate treatment (1). Our patient was treated by incision and drainage and consequent ampicillin-sulbactam treatment.

In conclusion, *Corynebacterium* species are an uncommon cause of breast abscess. To our knowledge, this is the second report of breast abscess caused by *C. amycolatum*. Clinicians should be aware of the recurrent breast abscess that may be caused by *Corynebacterium* species in a patient with normal immune function.

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