

## Corynebacterium amycolatum Causing Breast Abscess: An Infecting Diphtheroid with A Difference

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### ABSTRACT

*Corynebacterium amycolatum* has been rarely reported from cases of breast abscess/mastitis. We describe a case of *Corynebacterium amycolatum* causing breast abscess with fistula formation. The identification of the organism was done by MALDI-TOF (Matrix assisted Laser Desorption Ionization Time of Flight) Vitek MS (Mass spectrometry) [Biomérieux, France] and Vitek-2 (Biomérieux, France). The clinical significance of the organism was ascertained in view of presence of many polymorphonuclear cells along with Gram positive bacilli on Gram stain examination. The patient was successfully managed with surgical treatment followed by antimicrobial therapy.

**Keywords:** *Corynebacterium amycolatum*, Breast Abscess, Diphtheroid

### Introduction

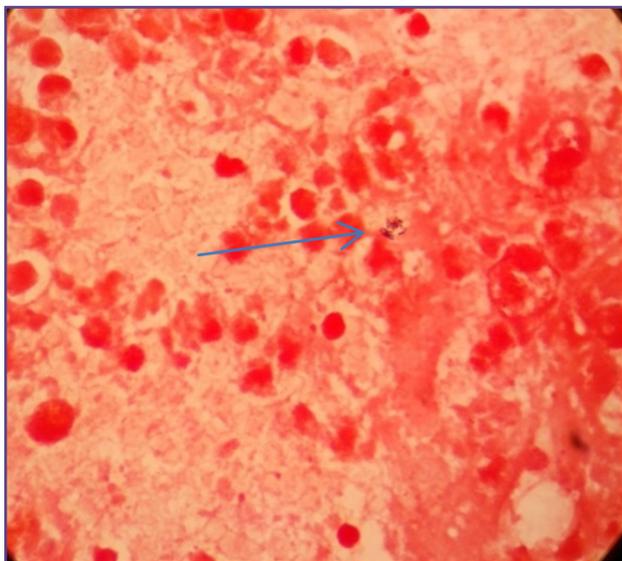
Non diphtheriae *Corynebacterium* species (Diphtheroids) constitute the normal flora of skin and upper respiratory tract and are commonly isolated as colonizer or contaminant but have also been isolated as opportunistic pathogens. The commonly isolated species in clinical microbiology laboratory are *C. jeikeium*, *C. glucuronolyticum*, *C. aurimucosum*, *C. amycolatum*, *C. striatum*, *C. pseudodiphtheriticum*, *C. urealyticum*, and *C. tuberculostearicum*.<sup>[1]</sup> The identification of these organisms to species level is difficult in a routine clinical Microbiology laboratory and thus they may be regarded as contaminants even if clinically significant. Although *Corynebacterium* species have been found to be isolated from patients with inflammatory breast disease particularly from cases of Granulomatous lobular mastitis but the reports of *Corynebacterium amycolatum* causing breast infections are scarce or under-reported.<sup>[2,3]</sup> Here, we report a case of breast abscess due to non diphtheriae *Corynebacterium* which was identified as *C. amycolatum* by MALDI-TOF (Matrix Assisted Laser Desorption Ionization-Time of Flight) Vitek MS (Mass Spectrometry) [Biomérieux, France] and Vitek-2 (Biomérieux, France).

### Case Report

A 35 years old female, resident of Bangladesh, presented with purulent discharge from left nipple and hardness of breast. Patient had a history of lactational mastitis followed by left breast abscess for which she was operated there one year back. The patient was non-diabetic and otherwise

immunocompetent with no past history of any other illness or long term medication. On local examination, there was purulent discharge from periareolar area with hard lump in central and left upper outer quadrant. The systemic examination was within normal limits. Total leucocyte count was 15,500/mm<sup>3</sup> with 73% neutrophils and 22% lymphocytes. Excision of fistulous tract and chronic inflamed tissue was done under general anaesthesia and pus and tissue specimens were sent for microbiological and histopathological examination respectively. The histopathologic examination was suggestive of duct ectasia with dense acute on chronic mastitis, and foci of suppurative inflammation. It showed several large neutrophilic micro abscesses and collections of foamy histiocytes and foreign body type multinucleated histiocytic giant cells within the background inflammatory infiltrate. Occasional small loosely formed epithelioid cell granulomas with Langhan's type giant cells and devoid of central necrosis were also seen immediately around the ducts. Associated pathology like epithelial hyperplasia, ductal carcinoma in situ (DCIS), malignancy or tuberculosis was not seen. On Gram stain examination of pus, Gram positive bacilli and plenty of polymorphonuclear cells (PMNs) were seen (Figure-1). AFB (Acid fast bacilli) stain and fungal smear (KOH) examination were negative. Aerobic bacterial culture showed growth of dry, white opaque colonies on Columbia sheep blood agar and these were identified as *Corynebacterium amycolatum* by both MALDI TOF Vitek MS and Vitek-2 ANC card (Biomérieux, France). The antimicrobial susceptibility testing was done by disc diffusion

method on 5% sheep blood agar and interpretation was done using CLSI guidelines applicable to *Staphylococcus aureus* ATCC25923. The organism was found to be susceptible to Amoxicillin + clavulanic acid, tetracycline, ciprofloxacin, vancomycin and chloramphenicol. Patient was initially put on oral Cefuroxime 500mg BD which was changed to Amoxicillin + clavulanic acid 1000mg (875/125mg) BD and Doxycycline 200 mg OD for seven days following the culture report. Patient showed good response to treatment and recovered completely.



**Fig. 1: Gram stain examination (1000X)- showing many pus cells and Gram positive bacilli lying in palisade.**

## Discussion

We have isolated clinically significant *C. amycolatum* from a case of breast abscess with fistula which was successfully treated with surgical drainage and excision of fistula tract followed by antimicrobial therapy. *C. amycolatum* is an aerobic or facultative anaerobic non spore forming, Gram positive bacilli and is amongst the few *Corynebacterium* species which lack mycolic acid in their cell wall.<sup>[4]</sup> It was first isolated from clinical specimens in 1988 and has been found to be distantly related to other *Corynebacteria*.<sup>[5]</sup> *C. amycolatum* has been isolated from significant human infections like surgical wound infections, pilonidal sinus, mastitis, native valve and nosocomial endocarditis and septic arthritis.<sup>[6]</sup> The case reports of breast infections due to *Corynebacterium amycolatum* are scarce. It may be because of the fact that Diphtheroids commonly exists as natural flora on skin and mucous membranes and their identification is difficult. So, these are not speciated further and are recognized as colonizer or contaminant. In an

Indian study by Reddy *et al*, *C. amycolatum* was found to be the most commonly occurring *Corynebacterium* amongst clinically significant Non diphtheria *Corynebacterium*.<sup>[4]</sup> Ojaydin I *et al* reported a case of recurrent breast abscess by *C. amycolatum*.<sup>[7]</sup> Paviour S *et al* in their retrospective study found maximum isolation of *C. kroppenstedtii*<sup>[14]</sup> followed by *C. amycolatum* (Three) from breast tissue, pus or deep wound swabs of 24 women. In literature, breast tissue infections due to *C. kroppenstedtii* has been reported more frequently in comparison to *C. amycolatum*.<sup>[2,8]</sup> This may be because of the lipophilic nature of *C. kroppenstedtii*. *C. accolens* which is also lipophilic has also been reported from case of breast abscess associated with granulomatous mastitis.<sup>[2,9]</sup> It has been stated that the significance of *Corynebacteria* can be determined by the presence of Gram positive bacilli along with PMNs in the clinical sample.<sup>[10]</sup> The occurrence of Gram positive bacilli along with many PMNs and pure growth of *Corynebacterium amycolatum* in our case strongly signifies this organism to be the only causative pathogen for the infection. It is also interesting to note that female gender can also be a risk factor in infections due to *C. amycolatum*. Female gender has also been reported as a statistically significant species specific risk factor for *C. amycolatum* endocardial infections.<sup>[11]</sup>

## Conclusion

We appraise *Corynebacterium amycolatum* as a significant cause of breast abscess even in immunocompetent patient. Direct microscopic examination of the clinical specimen and accurate identification of the isolate along with clinical details is very crucial for the correct diagnosis, appropriate antimicrobial treatment and thus optimum management of infections caused by these bacteria. MALDI TOF Vitek MS is a very useful tool for the rapid identification of these isolates.

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