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Primary Actinomycosis of the Breast Presenting as a Breast Mass

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Key Words
Actinomycosis · Breast · *Actinomyces israelii* · Breast mass

Schlüsselwörter
Aktinomykose · Brust · *Actinomyces israelii* · Brusttumor

Summary
Background: Primary actinomycosis of the breast is a rare disease which may present as sinus tract or with mass-like features mimicking malignancy. Clinical presentation makes it difficult to distinguish primary actinomycosis from mastitis and inflammatory carcinoma. **Case Report:** A 48-year-old woman presented with a mass in the left breast of 2 months duration. Physical examination was significant for a non-tender mass in the left breast. Histopathologic examination of the excisional biopsy of the mass showed granulomatous inflammation with grains of *Actinomyces israelii*. **Conclusions:** Actinomycosis of the breast usually presents as a recurrent abscess with fistulas. It may sometimes present as a breast lump, which is difficult to distinguish from inflammatory carcinoma. The diagnosis is made by histopathologic examination of the specimen, in which we can see the characteristic sulfur granules representing the bacterial colonies. Prolonged antibiotic therapy with penicillin is the treatment of choice.

Zusammenfassung
Hintergrund: Eine primäre Aktimomykose in der Brust ist eine seltene Krankheit, die in Form eines Sinustraktes oder mit tumorartigen Eigenschaften, die einer malignen Erkrankung ähneln, auftreten kann. Ihre klinische Erscheinung erschwert die Unterscheidung der primären Aktinomykose von einer Mastitis oder einem entzündlichen Karzinom. **Fallbericht:** Eine 48-jährige Frau stellte sich mit einem Tumor in der linken Brust vor, der 2 Monate zuvor bemerkt worden war. Die einleitende körperliche Untersuchung zeigte deutlich eine nicht schmerzhafte Wucherung in der linken Brust. Die histopathologische Analyse des Exzisionsbiopsates zeigte eine granulomatöse Entzündung mit Körnchen von *Actinomyces israelii*. **Schlussfolgerungen:** Eine Aktinomykose der Brust zeigt sich gewöhnlich als wiederkehrender Abszess mit Fisteln. Manchmal kann sie auch als Knoten in der Brust auftreten, der nur schwer von einem entzündlichen Karzinom zu unterscheiden ist. Die Diagnose wird aufgrund der histopatholoschen Analyse der Biopsieprobe gestellt, bei der die charakteristischen Schwefelkörnchen entdeckt werden können, die die bakteriellen Kolonien repräsentieren. Eine ausgedehnte Antibiotikatherapie mit Penicillin ist die Behandlung der Wahl.

Introduction

Actinomycosis is an indolent, slowly progressive infection caused by anaerobic or micro-aerophilic bacteria, primarily from the genus *Actinomyces*, which normally colonize the mouth, colon and vagina [1]. The disease is characterized by the development of abscesses draining by multiple sinus tracts containing bloody suppurative discharges and sulfur granules which are composed of branched filaments [2].

Primary actinomycosis of the breast is a rare disease, which was first described by Ammentrop in 1893. Breast actinomycosis is primary when inoculation occurs through the nipple.

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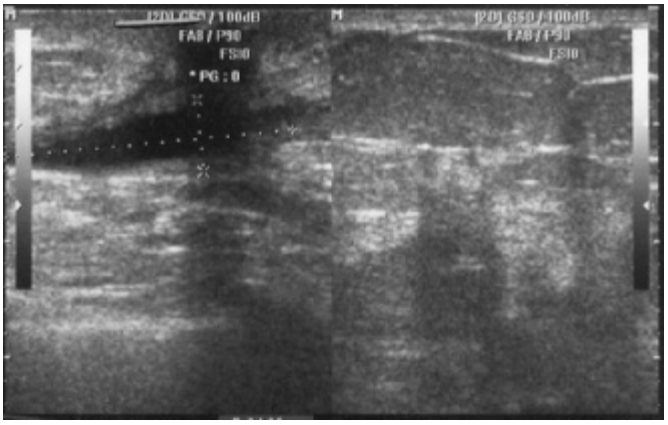

Fig. 1. Ultrasonography of the left breast shows no mass in the region of the palpable lump.

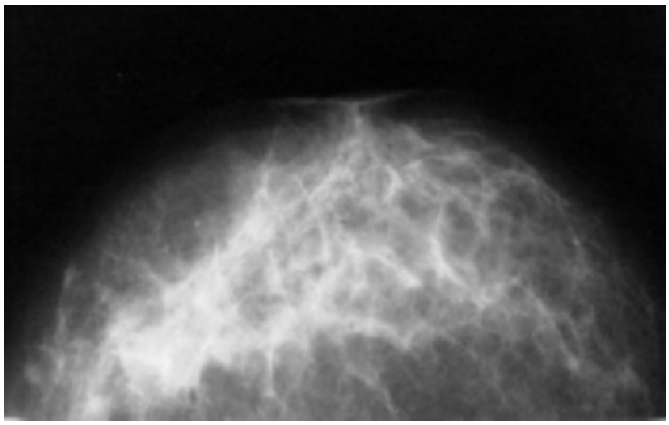

Fig. 2. Mammography shows distortion of the breast architecture.

Secondary actinomycosis of the breast refers to the extension of a pulmonary infection through the thoracic cage in a process that can affect the ribs, muscles and finally the breast [3].

Breast actinomycosis may present as sinus tract or with mass-like features mimicking malignancy. The clinical presentation makes it difficult to distinguish primary actinomycosis from mastitis and inflammatory carcinoma [4]. Disease affliction does not require any predisposing disorder and it can be observed in healthy individuals [2]. Gogas et al. stated that the diagnosis is frequently made after surgery [5].

We report a case of primary actinomycosis of the breast caused by *Actinomycis israelii* that was diagnosed by histopathologic study of a specimen obtained by excisional biopsy.

Case Report

A 48-year-old postmenopausal woman presented at our breast clinic with the complaint of a mass in the left breast of 2 months duration. No history of fever, lung disease, tooth problem, facial skin lesion, tonsillitis, gingivitis or breast trauma was found.

The past medical history was significant for a psychiatric problem treated with ritalin, clozapin, chlorodiazpoxid and propranolol for 20 years.

Physical examination was significant for a breast mass in the medial aspect of the left breast (between the 8 and 11 o'clock position) measuring about 5 × 3 cm. No redness, hotness or fistula occurred, but the nipple was retracted. No palpable adenopathy was found. Examination of the oral cavity, face and neck for detecting any skin lesion or mass was unremarkable. Blood check-up showed mild leukocytosis (white blood cell count (WBC) 11,200) and an erythrocyte sedimentation rate of 55. The rest of the laboratory data was unremarkable. A chest X-ray revealed no abnormalities.

Ultrasonography of the left breast showed no mass in the region of the palpable lump in the left breast (fig. 1). Mammography showed distortion of the breast architecture (fig. 2). Fine-needle aspiration biopsy was undiagnosed, so excisional biopsy was done which, upon histopathologic examination, showed granulomatous inflammation with grains of *A. israelii*. Cytology was positive for inflammatory cells and negative for neoplastic cells. Cell culture was negative for any other agents.

Treatment consisted of 4 weeks of 24×10^6 U/day of intravenous (i.v.) penicillin, to be followed by the administration of amoxicillin 500 mg 4 times a day for another 4 months.

Mammographic and ultrasonographic follow-up showed no significant abnormalities. Now, 2 years after treatment, the patient is symptom free.

Discussion

Actinomycosis is a subacute to chronic, suppurative, granulomatous disease that tends to produce draining sinus tracts [6]. It has been called 'the most misdiagnosed disease', and it has been stated that 'no disease is so often missed by experienced clinicians' [1]. Primary actinomycosis of the breast is an unusual condition where the most commonly isolated pathogen has been *A. israelii* [7]. Possible causes of this condition include trauma, lactation and kissing [8]. Most of the reported cases of primary actinomycosis of the breast were caused by *A. israelii*. In recent years, other strains have been found as well. Capobianco et al. [4] reported primary actinomycosis of the breast caused by *A. viscosus*. Attar et al. [7] reported cases of breast infection caused by *A. turicensis* and *A. radingae*. All cases of breast actinomycosis involved premenopausal women, except for 1 case described by de Barros et al. [3]. Our patient was also in the early postmenopausal period. Actinomycosis of the breast usually presents as a recurrent abscess with fistulas. It may sometimes present as a breast lump that is difficult to distinguish from inflammatory carcinoma. Jain et al. [9] reported primary actinomycosis of the breast in a 40-year-old woman which clinically simulated malignancy. Mohammed [10] reported a case of primary actinomycosis of the accessory breast who presented with a painful lump in the axilla. Brunner et al. [11] described a case of infected mammary prosthesis by *A. neuii*.

The diagnosis is made by histopathologic examination of the biopsy or mastectomy specimen, in which we can see the characteristic sulfur granules representing the bacterial colonies [3]. Cytological study should be performed to rule out a

malignant form. The agents of actinomycosis are exceedingly sensitive to a wide variety of agents, and even a single dose can interfere with their isolation. Other problems of culturing are the provision of anaerobic media and harboring of the agents of actinomycosis by any other specimens. A Gram's stain of the specimen is usually more sensitive than cell culture, especially if the patient has received prior antibiotics treatment [1]. Although the role that companion microbes may play in actinomycosis is unclear, many of the isolates are pathogens in their own right. Designing a therapeutic regimen that includes coverage for these organisms during the initial treatment course is reasonable [1]. As cell culture for other agents was negative, we did not add any antibiotic to cover concomitant bacteria.

Prolonged antibiotic therapy with penicillin is the treatment of choice. Alternative antibiotics are doxycycline, erythromycin or clindamycin. In the setting of actinomycosis presenting as a well-defined abscess, percutaneous drainage in combination with medical therapy is a reasonable approach. In a patient with disease in a critical location (e.g. epidural space, selected central nervous system disease), or in whom suitable medical therapy fails, surgical intervention may be appropriate [1].

Conflict of Interest

There has been no sponsorship or funding arrangement. There is also no conflict of interest.

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