Primary Actinomycosis of the Breast Presenting as a Breast Mass

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Key Words
Actinomycosis · Breast · Actinomyces israelii · Breast mass

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 actinomyosis 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.

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.
Treatment consisted of 4 weeks of $24 \times 10^6$ 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. Ac- tinomycosis 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 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 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 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 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.

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.

References