

CASE REPORTS

A Rare Case of Primary Actinomycosis of the Breast Caused by *Actinomyces viscosus*: Diagnosis by Fine-needle Aspiration Cytology under Ultrasound Guidance

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■ **Abstract:** We report the case of a 27-year-old woman with primary actinomycosis of the breast. Diagnosis was established by culture examination of specimen recovered by fine-needle aspiration cytology (FNAC) under ultrasound guidance. To our knowledge, this is the first description in the literature of a case of primary actinomycosis of the breast caused by *Actinomyces viscosus*. Twenty-nine previous cases of primary actinomycosis of the breast have been published, but these were caused by the more common species *Actinomyces israelii*. Targeted antibiotic therapy did not ameliorate the condition, thus drainage and excision of the mass were carried out. No other medical therapy was administered. Six years after surgery, no recurrence has been observed on both ultrasonographic and mammographic examinations. ■

Key Words: breast, fine-needle aspiration cytology, primary actinomycosis

Primary actinomycosis of the breast is a rare disease. Jain et al. (1), in a 1994 clinical review, wrote that since its first description by Ammentorp in 1893, 28 cases have been reported and the details of 19 women are available in the English-language literature. Later de Barros et al. (2) reported the first case of primary actinomycosis in a postmenopausal woman. All these rare cases of primary actinomycosis were caused by *Actinomyces israelii*, the most common actinomyces associated with human infection (3).

Actinomycosis of the breast is primary when inoculation of the bacterium occurs through the nipple; the secondary form in the breast results from the spread of a pulmonary process through the thoracic wall (2,4). Actinomyces are constituents of the normal oral flora and have been associated with dental caries and oral abscesses. Actinomyces consists of a heterogeneous group of gram-positive, mainly facultatively anaerobic and microaerophilic rods with various degrees of branching (5).

Actinomyces viscosus is a gram-positive, catalase-positive, non-acid-fast bacterium that is usually seen in the tonsillar crypts (4,5).

Clinical presentation makes it difficult to distinguish primary actinomycosis from mastitis and inflammatory carcinoma. Imaging techniques such as ultrasonography (4) and/or mammography (2) provide a good diagnostic orientation.

We report the first case in literature of primary actinomycosis of the breast caused by *A. viscosus* that was correctly diagnosed by culture examination of a specimen recovered by fine-needle aspiration cytology (FNAC) under ultrasound guidance.

CASE REPORT

A 27-year-old Caucasian woman presented to her general practitioner with complaints of pain and tenderness in the right breast. No history of fever, tooth problems, tonsillitis, or lung disease was found. A breast physical examination done by her general practitioner suggested a unilateral right mastitis because the breast was edematous, hyperemic, and warm to palpation, without signs of palpable adenopathy, nipple discharge, or skin fistulas. The patient was given wide-spectrum antibiotics and

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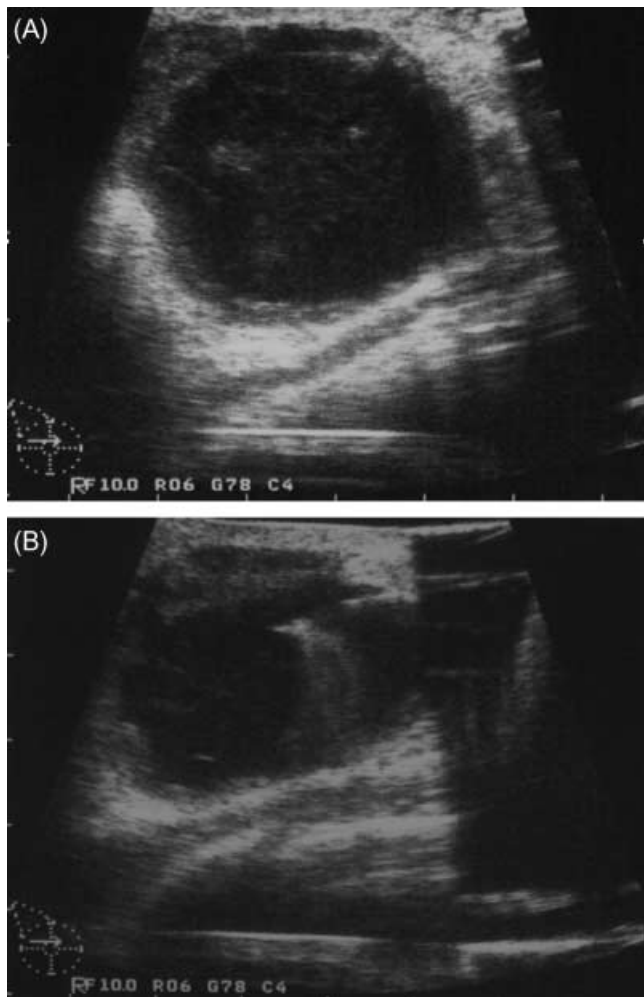


Figure 1. Ultrasonographic examination of the right breast demonstrates a lesion due to primary actinomycosis. (A) An irregular subareolar hypoechoic mass, 4.8 cm × 5 cm, with thickened walls and multiple fluid pockets. (B) Ultrasonographic appearance of the needle within the lesion shows a decrease in the size of the lesion after aspiration of fluid.

anti-inflammatory drugs for 1 week, but there was no change.

Fifteen days later, the woman came to our Breast Center because of persistent right breast pain. Physical examination showed a palpable nodular lump just beside the right areola. Thoracic radiographs showed no abnormalities.

Ultrasonography of the right breast revealed an irregular subareolar hypoechoic mass, 4.8 cm × 5 cm, with thickened walls and multiple fluid pockets (Fig. 1A). FNAC was performed on the right breast using a 22-gauge needle and a 10 ml syringe (Fig. 1B). The aspirated material showed evidence of gray pus; culture examination with sensitivity test to antibiotics and cytologic examination were performed to rule out an inflammatory carcinoma.

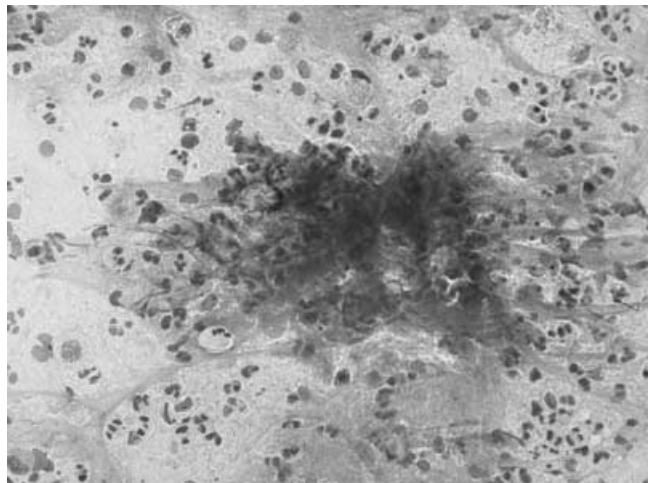


Figure 2. Fine-needle aspirate cell block section shows branching filaments (Papanicolaou; magnification ×40).

The culture grew *A. viscosus*, a gram-positive bacterium that is positive to catalase (biochemical key for its identification), reduced nitrates, fermented sucrose, and hydrolyzed urea, and is CAMP test negative (5). The sensitivity test to antibiotics reported that the *A. viscosus* was sensitive to penicillin and cephalosporin, but resistant to metronidazole. Cytology was positive for inflammatory cells and negative for neoplastic cells; the Papanicolaou-stained sections from aspirated material demonstrated branching filaments (Fig. 2).

The patient was administered amoxicillin and clavulanic acid (2 g/day for 10 days by mouth). Follow-up ultrasonography showed only a mild decrease in size. The same day, we performed mammography that revealed an irregular lesion with soft contours with no calcifications inside; there was no other mass in the remaining breast tissue bilaterally. Because of its persistence, we decided to surgically drain and excise the lesion. Subsequent culture of the specimen confirmed again the growth of *A. viscosus*. Histology of the excised breast tissue revealed the presence of marked inflammation with numerous large multinucleate histiocytes and polymorphonuclear leukocytes with no neoplastic cells.

The patient had no further therapy. Ultrasonographic and mammographic follow-up showed no breast mass bilaterally. Now, 6 years after surgery, the patient is asymptomatic and ultrasonography is negative.

DISCUSSION

Actinomycosis is an infection caused by a gram-positive bacterium that is found as a saprophyte in the mouth (6). Reports of *A. viscosus* infections are very rare (3).

Primary forms directly affect the breast, but their cause is unknown; perhaps because of infections of the lactic ducts due to trauma of the nipple during the breast feeding or erotic play (kissing) (7). Primary actinomycosis of the breast caused by *A. viscosus* has never been published to date. In fact, our study represents the first description in the literature of a case of primary actinomycosis of the breast caused by *A. viscosus*.

All the reported cases of actinomycosis of the breast involved premenopausal women (1), except one case described by de Barros et al. (2) in a 66-year-old postmenopausal woman. Two-thirds of cases presented as persistent/recurrent breast abscesses with or without sinuses. In the remaining one-third, the clinical presentation was a breast lump that was very difficult to distinguish from inflammatory carcinoma, and nipple involvement, often retropapillary, was not rare (1,2,8,9). Mohammed and Derm (10) reported a case of a multiparous woman who had a painful lump in the axilla which, on histopathologic examination, was actinomycosis caused by *A. israelii* within the accessory breast tissue.

Certain diagnosis is obtained by recovery of a cytologic specimen under ultrasound guidance in order to perform a bacterial culture and to rule out a malignant form such as inflammatory carcinoma of the breast. However, the culture achieves positive results in only 50% of patients who have a clinically suspected diagnosis. In fact, in the remaining cases that do not grow the bacterium in culture, a gram-positive finding and catalase positivity allow establishment of the diagnosis (1,2,5).

Targeted antibiotic therapy is the first treatment choice. But in cases that are not responsive (with no sig-

nificant decrease in the size of lesion, as in our case), draining and excision of the mass is required (2).

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