

FIRST CASE REPORT OF PRIMARY ACTINOMYCOSIS OF THE BREAST DUE TO ACTINOMYCES ISRAELII FROM IRAN

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Abstract- Present paper reports a case of breast actinomycosis due to *Actinomyces israelii* in a 31-year-old female nurse from Shahrekord, in Iran. Diagnosis was based on the observation of short and very fine gram-positive filaments in direct examination of aspirates from fistulas, as well as isolation of organism in sodium thioglycolate and brain heart infusion blood agar (BHIB) culture media, under anaerobic conditions and complementary physiologic tests.

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INTRODUCTION

Actinomycosis is a chronic granulomatous or suppurative disease, caused by actinomyces species including *Actinomyces naeslundii*, *A. israelii*, *A. viscosus*, *A. meyeri* and rarely *A. odontolyticus* (1).

These agents are found as the normal flora of oral cavity, particularly in the periphery of decayed teeth, and in the grooves of tonsils, as well as female genital tract (2). Disease is characterized by development of abscesses, draining by multiple sinus tracts containing bloody suppurative discharges and sulfur granules which are composed of branched filaments. Usually, disease is classified clinically to the varieties of cervicofacial, thoracic and abdominal. Clinical signs of disease are different, depending on the site of infection.

In a study of 1330 cases, the infection has been localized in neck (63%), abdomen (23.3%), thorax (15%) and other areas of the body (5.9%). Also, rare forms of pathogenic agents have been isolated from central nervous system (CNS), lacrimal duct, prostate, breast, ovary, liver, kidney, bladder, joints, skin and bone as well as endocardium, and pericardium (1). Actinomycosis of the breast is very uncommon and only six cases have been recorded so far (3-8). Disease affliction does not require any predisposing disorder and it can be observed in healthy individuals.

Actinomycosis is seen in all age groups and regions globally, but occurs frequently between 15 to 35 yrs, and its reported frequency in men is two times that of

women (1). Direct inoculation of the agent into the skin resulting in mycetoma, an infection reported several times in Iran (9,10).

Primary infection of the skin has been the result of human bites, barbed wires, fist fights, hypodermic needles, insect stings and so forth (11,12).

According to latest information, this case of breast actinomycosis is the first reported case in Iran and believed to be the seventh case in the world up to now.

Case report:

A 31-year-old female nurse from Shahrekord with multiple fistulous tracts in her left breast was referred to the mycology laboratory in School of Public Health, Tehran University of Medical Sciences for mycological examinations. She gave a history of a hard mass of 5 months duration, which gradually takes a painful purple-red hue (Fig. 1).

Histopathological examination of biopsy was negative for neoplastic disease, and no organism was isolated from culture at that time. Following the biopsy and frequent aspirations, the number of sinus tracts with a purulent and bloody discharge increased. The patient was treated with cloxacillin, cephalexin and anti TB therapy included: streptomycin, ethambutol and isoniazid without any relief. She was otherwise in good physical condition and had no remarkable past history of underlying disease.

Considering the appearance of lesions, pus of a closed fistula was aspirated aseptically.

Direct examination with 10% KOH, gram and Kinyoun stained smear revealed very delicate and short branching gram positive, non-acid fast filaments (Fig. 2).

Rest of the sample was divided in two parts and one part was inoculated on sabouraud dextrose agar, (S) and Sabouraud containing chloramphenicol (0.05

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mg ml⁻¹) and cyclohexamide (0.5 mg ml⁻¹), (Sec) media for mycological study. The plates were incubated for 14 to 30 days at 25°C and 37°C. The other part was cultured anaerobically on thioglycolate and BH1B media and incubated for 10 days at 37°C, for bacterial examination. The culture was negative for fungal elements but gray-white molar shaped colonies on BH1B, and snowball colonies on thioglycolate medium were observed (Fig. 3 and 4).

For a definite diagnosis and differentiation of the actinomycet species, physiological tests such as fermentation, urea and gelatin hydrolysis, were performed. Since urea hydrolysis and gelatin liquefaction tests were negative, but acid production was positive (Fig. 5), the isolate was identified as *Actinomyces israelii* (2).

DISCUSSION

Breast actinomycosis is a rare case of actinomycosis throughout the world and only a few cases have been published so far (3-8). For instance an uncommon primary actinomycosis of the breast was reported in 40 year old woman, which clinically simulated malignancy (8). Brunner et al. (7), reported a catalase-negative strain of *Actinomyces neuii* as the possible causative agent of an infected mammary prosthesis. Mohammed in 1993 described a case of actinomycosis of the accessory breast (5).

In Iran, there have been several reports of infection caused by actinomycets. In 1972 Barokhian and Bahadory found 28 cases of actinomycosis in an investigation of 149872 biopsy specimens which had been sent to the pathology laboratories of Tehran Medical School and Pahlavi Medical Center. The infection was found to be located in foot and hand (11 cases), abdomen (8 cases), thorax (1 case), head and neck (8 cases) (10). Mobedi and coworkers (13) isolated *A. naeslundii* from 25 bone marrow and 5 blood samples from patients with Hodgkins disease, thrombocytopenia and aplastic anemia. Mirzaei in 1982 reported a case of pulmonary actinomycosis due to *A. israelii* in a patient with tuberculosis (14). Later in 1983 a case of thigh actinomycosis due to *A. israelii* in a housewife was reported by Nematian. In another investigation, 5 cases of canaliculitis due to *Actinomyces* spp. were described by Eshraghi et al. (15). Recently one case of thoracic actinomycosis has been reported in an 18-year-old student suspected of tuberculosis by Arab et al. (16).

The recent case of a breast actinomycosis, caused by *A. israelii* is believed to be the first one on its own in Iran and seventh case in the world up to now. Since the patient was in good physical condition and had no remarkable past history of an underlying disease, this infection seemed to be caused due to trauma in that area which was not remembered by her. Ten months after treatment by penicillin G (30 million units daily IV), all the clinical signs improved.

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