

RESEARCH ARTICLE

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Breast tuberculosis in Northeast Iran: review of 22 cases

Behnaz Khodabakhshi¹ and Fatemeh Mehravar^{2*}**Abstract**

Background: Breast tuberculosis (breast TB) is an extremely rare disease, so case reviews are also rare.

Methods: This study is a retrospective review of patients with breast TB who were treated between 2002 and 2012 at the Health Center of Gorgan City.

Results: All 22 patients were females, their mean age was 32.4 years, and all were new cases. Patients presented with swelling of the breast (22%), lump (55%) and excretion from the involved breast (27%), and breast pain (55%). The highest rate of breast TB occurred in 2011 (27%). All patients received the DOTS regimen for a mean duration of 7.3 ± 0.7 months; in addition, segmental resection was performed on 11 patients (50%).

Conclusions: The findings confirmed that breast TB in Iran should be considered as a differential diagnosis of breast masses. All patients in our study received the daily and 'Directly Observed Treatment Short-course' (DOTS) regimens. Anti-tubercular therapy for six months with or without minimal surgical intervention currently is the main treatment.

Keywords: Breast tuberculosis, Mammary tuberculosis, Tuberculosis treatment, IRAN

Background

The World Health Organization (WHO) estimated that there were 8.7 million cases of tuberculosis (TB) in the world in 2011, a rate of 125 cases per 100,000 people. It also was estimated that there were 12 million prevalent tuberculosis cases [1]. Breast TB was first defined by Sir Astley Cooper in 1829 as a rare form of extrapulmonary TB [2]. Breast TB is a very rare disease [3-5] and constitutes only 0.025-1.04% of all breast diseases [6]. Its prevalence has been estimated to be 0.1% of breast lesions examined histologically, and it constitutes about 3-4.5% of surgically-treated breast diseases in developing countries [7]. Despite the high prevalence of tuberculosis, mammary cells offer great resistance to the survival and multiplication of mycobacterium tuberculosis [8]. The disease may be of primary etiology when infection affects only the breast, or it may result from other foci in the body, which is termed as secondary breast TB. Presentation of breast TB is variable and may

be confused with other disorders [9,10]. Fine Needle Aspiration Cytology (FNAC) is the most extensively used initial invasive method for diagnosis of breast TB [11,12], and the 'gold standard' diagnostic tool for breast TB is bacteriological culture of breast tissue or the Ziehl-Neelsen stain [10]. Breast TB is often misdiagnosed as a pyogenic abscess or carcinoma of breast, both clinically as well as radiologically, especially if well-defined clinical features are absent [13]. In the present study, our aim was to evaluate demographic data, diagnostic methods, and therapeutic regimens in 22 breast TB patients treated at the Tuberculosis Control Health Center in Gorgan, Iran over a period of 10 years.

Methods

Over the 10-year period from 2002 through 2011, 22 patients were diagnosed with breast TB, and the patients were referred to health centers in Gorgan City for the 'Directly Observed Treatment Short-course' (DOTS). Gorgan is in the center of Golestan state in northern Iran, just southeast of the Caspian Sea. Demographic data, such as age, gender, weight at diagnosis, ethnicity, location, occupation, marital status, educational status,

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the family's and the patient's TB history, complaints, and physical examination findings of the patient records were documented.

The cytological findings of epithelioid cell granulomas, Langhans' giant cells, and lymphohistiocytic aggregates confirmed the diagnosis. The discharge from the sinus was subjected to Ziehl-Neelson staining and cultured for acid fast bacilli. Sonography was performed for 77.2% of the patients. Mammography was performed on three patients (13.6%), and non-specific stromal coarsening existed in all three patients. The chest radiographs of the 22 patients were normal. The diagnosis of breast TB was confirmed by a combination of clinical suspicion and biopsy findings. After primary diagnosis of patients by our doctor, they were referred to a health center in Gorgan and continued treatment as planned.

In 1978, according to the World Health Organization's (WHO's) guideline [1], the Ministry of Health and Medical Education of Iran effectively implemented the DOTS strategy to fight tuberculosis. Based on the national strategy of DOTS, new patients were treated with a short-term diet for six months, followed by re-treatment with a regimen of eight months. Both regimens consisted of two phases, i.e., attack and maintenance.

The DOTS regimen was put into practice in Gorgan in June 1998. The records of the breast TB cases that were treated between January 2002 and June 2012 were reviewed. The breast TB regimens used in the health centers in Gorgan City are presented in Table 1. In this study, standard six-month anti-TB therapy (isoniazid, rifampicin, pyrazinamide, and ethambutol) was commenced with good clinical response. The continuation phase lasted four months with isoniazid and rifampin on a daily basis and the regime's maintenance phase continued for another three months.

Some patients had breast lumps that were potentially malignant, and they also underwent segmental mastectomy. Residual lumps after anti-tubercular therapy (ATT) may require surgical removal. Minimal surgical intervention was required for drainage of abscesses of the breast or taking biopsies from the wall of the abscess, scraping of sinuses in the breast, and incisional or excisional biopsy.

This study obtained ethics approval and was approved by Ethical Committee of Golestan University of Medical Science.

Statistical analysis

Data relating to the duration of therapy and to whether DOTS was administered were recorded with SPSS version 16.0. Descriptive analyses were performed to detect differences between subgroups.

Results

In this study, 22 known breast TB cases were identified, and all the patients were female. The mean age of the patients was 32.4 (range 23–66). All of the patients were new cases. Among the patients, 15 were of reproductive age, and one of the 15 was pregnant at the time of diagnosis.

Patients presented with swelling of the breast (22%), lump (55%) and excretion from the involved breast (27%), and breast pain (55%). The left side of the breast was involved in 16 cases, and the right side of the breast was involved in 4 cases. The disease was bilateral in two patients. Most of the patients (59.09%) were from urban areas, and most were of Persian ethnicity (68.18%), as summarized in Table 2. The highest rate of breast TB was seen in 2011 (27%).

Sonography was conducted for 17 patients, and a defined breast lump was found in 13 patients (55%); defined ipsilateral auxiliary lymph node involvement was observed in seven patients (31.8%); defined non-specific findings were made in five patients (18.5%), including hypoechoic masses, internal echoes, and irregular borders; and bilateral auxiliary lymph node involvement was observed in one patient (3.7%). Mammography was performed on three patients (13.6%), and the results showed non-specific stromal coarsening in all three patients. The most frequently used diagnostic tool was excisional biopsy (81.81%) and positive TB culture (9.09%). The breast TB diagnostic criteria for this study were based on biopsy and clinical response. Histopathology of the specimen (lump) findings included epithelioid cell granulomas without caseous necrosis.

Eleven patients underwent segmental mastectomy and anti-tuberculosis drug therapy, and another eleven patients underwent just anti-tuberculosis drug therapy after fine-needle aspiration. All patients completed therapy with a full recovery. Our treatment success rate was 100%. A six-month treatment regimen was administered to all patients, but for some patients ($n = 4$) that had a fistula and abscess, the regime was nine months. Twenty-two patients received the DOTS regimen for a mean duration of 7.3 ± 0.7 months; in addition, segmental resection was performed on 11 patients (50%), and two patients underwent complementary surgery for drainage of abscesses.

Table 1 Breast TB treatment regimens [11]

Treatment time	Initial phase regimens	Continuation phase regimens
6 months	2 months of isoniazid, rifampycine, pyrazinamide, ethambutol or streptomycin	4 months of isoniazid and rifampycine
9 months	2 months of isoniazid, rifampycine, pyrazinamide, ethambutol or streptomycin	7 months of Isoniazid and rifampycine