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Clinical presentation of breast tuberculosis in eastern Anatolia

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Aim: Breast tuberculosis is a very rare disease of the breast. This report aimed to review our clinical experience of 20 years and 7 cases of breast tuberculosis.

Materials and methods: The records of 7 patients with breast tuberculosis were reviewed retrospectively.

Results: The surgical procedure applied for breast tuberculosis comprised 1.3% of all surgical procedures of breast surgery. The mean age of the breast tuberculosis patients was 36 years, and all of the patients were female. The mean symptom duration was 12.8 months. The most common symptoms were painful breast mass in all the patients, 2 (28.6%) of whom had 8 cm or larger masses and sinus formation was observed in 5 (71.4%) patients. The diagnosis was confirmed by histopathological evaluation in all the patients. Five patients (71.4%) were treated with total excision of the breast mass, as well as the excision of sinus tracts, while abscess drainage with biopsy was applied in 2 patients (28.6%). All the patients were treated with triple or quadruple antituberculous drug regimens.

Conclusion: Tuberculosis is a rare disease of the breast, and the breasts are a rare location for tuberculosis. The clinical presentation of breast tuberculosis patients in eastern Anatolia is different from the clinical presentation of such patients reported in the literature because their mean symptom duration is 1 year or over, all have a breast mass, which may be in very large sizes, and they present a sinus formation rate of 71.4%.

Key words: Breast, tuberculosis

Doğu Anadolu'da meme tüberkülozunun klinik sunumu

Amaç: Meme tüberkülozu, memenin çok nadir bir hastalığıdır. Bu çalışma, 20 yıllık ve 7 olguluk meme tüberkülozu klinik deneyimimizi gözden geçirmek amacıyla yapıldı.

Yöntem ve gereç: Meme tüberkülozlu 7 hastanın kayıtları retrospektif olarak incelendi.

Bulgular: Meme tüberkülozu nedeniyle uygulanan cerrahi işlemler, tüm meme cerrahisi içinde % 1,3'ü oluşturmaktaydı. Meme tüberkülozlu 7 hastanın ortalama yaşı 36 olup tüm hastalar bayandı. Ortalama semptom süresi 12,8 aydı. En sık belirtiler, 2 hastada (% 28,6) 8 cm ve daha büyük çapta olmak üzere tüm hastalarda ağrılı meme kitlesi ve sinüs formasyonu (% 71,4) idi. Tanı tüm hastalarda histopatolojik inceleme ile doğrulandı. Beş hasta (% 71,4) kitlenin total eksizyonu ile birlikte sinüs traktlarının eksizyonu ile tedavi edildi, 2 hastada (% 28,6) ise abse drenajı ile birlikte biyopsi yapıldı. Tüm hastalar ek olarak üçlü veya dörtlü antitüberküloz ilaç ile tedavi edildi.

Sonuç: Tüberküloz memenin nadir görülen bir hastalığı, meme de tüberkülozun nadir görülen bir yerleşim yeridir. Ortalama 1 yılın üstündeki semptom süresi, hastaların hepsinde meme kitlesi olması, bazılarında bu kitlelerin büyük boyutlara ulaşması ve hastalarda % 71,4 gibi yüksek oranda sinüs formasyonu görülmesi nedeniyle Doğu Anadolu'da meme tüberkülozu literatür bilgilerinden farklılık göstermektedir.

Anahtar sözcükler: Meme, tüberküloz

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Introduction

Nearly 18% of tuberculosis cases have only extrapulmonary manifestations (1), and breast tuberculosis is a very rare type of extrapulmonary tuberculosis (1-5). It commonly affects women, and a mass in the breast with or without sinus is the most common clinical presentation (2,3). Radiologic findings are often nonspecific (2-5), and histopathologic examination generally reveals a granulomatous infection (3-5). Breast tuberculosis is treated with antituberculous drugs with or without surgical intervention (1-5).

The purpose of this report was to review the clinical experience of 20 years, presents 7 cases, and determine the clinical presentation of breast tuberculosis in eastern Anatolia.

Materials and methods

Records of 7 patients with breast tuberculosis, who underwent operative and/or antituberculous treatment in the Department of General Surgery, School of Medicine, Atatürk University, in a 20-year period between January 1988 and December 2007, were reviewed retrospectively. The age, gender, associated problems, symptoms, signs, laboratory, radiological and histopathologic examinations, and treatment options of the patients were evaluated.

Results

Five hundred and forty four patients with breast problems were operated while under general anesthesia within the period stated above, and 7 cases of breast tuberculosis comprised 1.3% of the total number of the cases. The mean age of the breast tuberculosis patients was 36 years, and all of the patients were female. Some characteristics of the patients are summarized in Table 1. Of the 7 patients, 5 (71.4%) were from the countryside and 4 patients (57.1 %) had a low socioeconomic status.

Two patients (28.6%) had previously undergone surgical drainage of the breast lesion, and 1 patient (14.3%) with pulmonary tuberculosis had undergone

Table 1. The characteristics of the patients with breast tuberculosis.

Age	Symptom period	Symptoms	Signs					Ultrasonography	Mammography
			Breast	Quadrant	Mass	Sinus	Axillary mass		
32	1 month	Breast mass, axillary mass	Right	Lower	4 cm	–	0.5-3 cm	Lactation adenoma	–
45	15 days	Breast mass, sinus, fever	Left	Lower-inner	3 cm	One	–	Hypoechoic heterogeneous lesion, sinus tract	Generalized radioopacity increase
45	6 months	Breast mass, sinus, drainage	Right	Upper-outer	10 cm	Three	–	Hypoechoic heterogeneous lesion, abscess formation, sinus tract	Normal
39	4 years	Breast mass, sinus, axillary mass, fever	Left	Upper-inner	2 cm	One	2 cm	Hypoechoic heterogeneous lesion	Localized radioopacity increase
32	6 months	Breast mass, sinus, axillary mass	Left	Lower-outer	8 cm	One	1 cm	Hypoechoic heterogeneous lesion, sinus tract	Localized radioopacity increase
30	4 months	Breast mass, fever	Right	Upper-inner	4 cm	–	–	Abscess formation	–
29	2 years	Breast mass, sinus, drainage, axillary mass	Right	Upper-inner	4 cm	One	0.5-2 cm	Hypoechoic heterogeneous lesion, abscess formation	Localized radioopacity increase

double antituberculous treatment. The mean symptom duration was 12.8 months. The major symptom was unilateral painful breast mass in all the patients. The other symptoms were sinus formation in 5 patients (71.4%), 2 of whom had purulent drainage; axillary mass in 4 patients (57.1%), and low-grade fever in 3 patients (42.9%). Physical examination revealed a tender breast mass in all the patients; sinus in 5 patients (71.4%), 1 had 3 sinuses, and axillary lymphadenopathy was observed in 4 patients (57.1%), and 1 had bilateral lymphadenopathy.

Five patients (71.4%) had an elevated erythrocyte sedimentation rate of 20 mm/h. The diameter of tuberculin skin test was greater than 15 mm at the end of 72 h in 4 (80.0%) of 5 patients. The purulent drainage materials proved negative for acid-fast bacilli on staging, and negative on Lowenstein culture in 2 patients. Fine needle aspiration revealed inflammatory cells, including neutrophils, lymphocytes, and macrophages in 5 patients (71.4%), while there were macroscopic purulent material in 2 patients (28.6%).

Plain chest radiography of all the patients was normal, except the one with pulmonary tuberculosis. Breast ultrasound revealed a hypoechoic, heterogeneous lesion in 5 patients (71.4%), abscess formation in 3 patients (42.9%), sinus tract in 3 patients (42.9%), and lactation adenoma in 1 patient (14.3%). Mammography results obtained from the records of 5 patients showed localized or generalized increased radio-opacity in 4 patients (80.0%), while it was normal in 1 patient (20.0%).

Five patients (71.4%) were treated with total excision of the breast lesion while the patient was under general anesthesia, as well as with the excision of sinus tracts. However, abscess drainage with biopsy was performed in 2 patients (28.6%). Axillary lymphadenopathy was also excised in 2 patients (28.6%). The histopathologic evaluation of the breast specimens revealed granulomas that display epithelioid histiocytes, Langhans'-type giant cells, and caseation, and may disrupt the ductal and lobular architecture (Figure 1). Similar findings were noted in the axillary lymphadenopathy of a patient, who was considered to have secondary breast tuberculosis. Additionally, the organism was isolated with polymerase chain reaction in 3 patients. Five of the patients (71.4%) were treated with quadruple-antituberculous treatment (rifampicin 450 mg per day, isoniazid 300 mg per day, pyrazinamide 1500 mg per day, and ethambutol 800 mg per day), while 2 patients (28.6%) were treated with triple-treatment (rifampicin 600 mg per day, isoniazid 300 mg per day, and ethambutol 1500 mg per day).

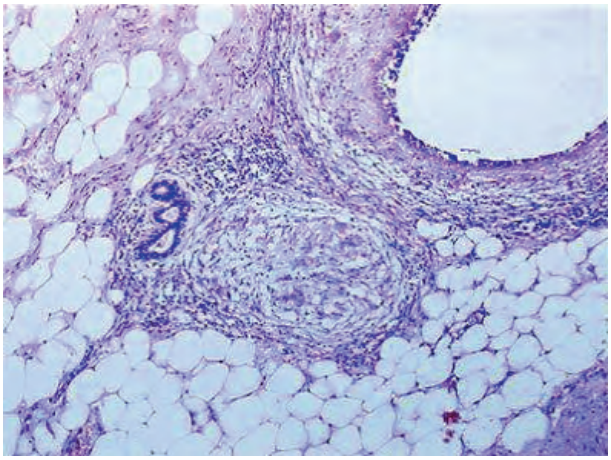

Figure 1. The granulomas distort lobules and epithelioid histiocytes, Langhans'-type giant cells, and caseation (H&E ×100).

The patients were clinically and radiologically followed-up at the end of the antituberculous treatment periods, and they had no evidence of residual or recurrent disease.

Discussion

Breast tuberculosis is a very rare form of tuberculosis (1-5). The first case was described in 1892 (2), and only 500 cases were documented until 1982 (5). The incidence of the disease varies from 0.025% to 0.1% of surgically treated breast diseases in western countries, while from 3% to 4.5% in developing countries (3). Breast tuberculosis commonly affects women and it is generally seen in 3rd and 4th decades (4-6), as was determined in the present study.

Breast tuberculosis may be in a primary or secondary form (2,3,5). In the primary form, it is limited to the breast, and no other tuberculosis focus is demonstrated (3), as was seen in 5 of our patients.

In the secondary breast tuberculosis, the most common spread modes are hematogenous way from the lungs and lymphatic way from axillary lymph nodes (2,3,5), as was in 2 of our patients, and rarely direct way.

Although late presentation is generally a problem in patients with breast tuberculosis, the mean symptom duration is reported as a few weeks or months, and it is generally less than a year (2,3,5,7-9). The mean duration of the symptoms was 6.5 months in the series of Harris et al. (2); 8.5 months in the report of Khanna et al. (8), and 9.4 months in the study by Tiwari et al. (9), while it was 12.8 months in the present study. In our opinion, the longer symptom duration than reported in the literature and late presentation in our patients may have been due to the low socioeconomic level and misdiagnosis of the patients in their previous application.

The predominant clinical presentation of the breast tuberculosis is a breast mass with or without sinus (2,5,6,8,9). In a 37-patient series, Harris et al. (2) reported an isolated breast mass in 52% of the cases, a breast mass with sinus in 34%, and sinus without breast mass in 23%, while 26% of their cases had no breast mass. Similarly, Khanna et al. (8) showed breast mass in 23% of the cases, mass with sinus in 39%, sinus without mass in 12% in their 52-case group. In another report, Tewari and Shukla (5) found the percentage of only breast mass as 23% and mass with sinus, as 13% in their 30-patient series. Similarly, Tiwari et al. (9) reported these percentages as 33.3% and 33.3% in a 75-case series. In breast tuberculosis cases, the breast or the mass may or may not be painful, and may be ulcerous (2,5,6,8,9). In our series, the mass of all the patients (100%) was painful, and 71.4% of the patients had sinus formation. These rates are higher than those reported in the literature. On the other hand, although the size of the breast mass is generally reported to be between 1 cm and 6 cm in the literature (3,7,10), strikingly, 2 patients had masses of nearly 8 cm and 10 cm each. The higher rate and size of the masses and a higher rate of sinus formation in our series compared to those in the literature may have been due to late presentation of the patients. Another clinical presentation of breast tuberculosis is associated with axillary and/or cervical lymphadeno-pathy (2,5,8,9). Axillary lymphadenopathy was seen in 36% of the patients reported by Harris et al. (2); in 60%, by Tewari and Shukla (5); in 41%, by Khanna et al. (8), and in 60% by Tiwari et al. (9), while this rate was 57.1% in our series. On the other hand, the constitutional signs and symptoms of tuberculosis such as systemic fever, anorexia, weight loss, fatigue, cough and night sweats were reported to be 16% by Harris et al. (2), 21% by Khanna et al. (8), 6.6% by Tiwari et al. (9), while it was 42.9% in the present series.

Diagnosis of the breast tuberculosis is difficult and from time to time it is misdiagnosed (3,5), as in 2 patients in the present series. Its diagnosis continues to be a challenge on both clinical examination and imaging (2,3,5,7-9). Tuberculin test is usually positive in endemic areas for pulmonary tuberculosis, but it has no diagnostic value for breast tuberculosis (5). Acid-fast bacilli may be seen in some cases (6). Although mycobacterial culture is the gold standard for the diagnosis of tuberculosis, it is not always helpful in the diagnosis of breast tuberculosis (3,5). Polymerase chain reaction may show mycobacterium DNA, but is not used routinely because of its high cost (5,10).

Chest X-ray may show tuberculous lesion in the lungs and may also reveal calcifications in the axilla in a few cases (5,11). Three patterns of breast tuberculosis have been described as nodular, diffuse, and sclerosing types (2). Ultrasonography generally demonstrates hypoechoic or complex cystic masses in nodular form of the disease, but ill-defined hypoechoic masses in the diffuse form (3,5,7,8). On mammography, the nodular form appears as a localized dense mass that mimics carcinoma. The diffuse form appears as a dense breast with skin thickening and surrounding edema that mimics inflammatory carcinoma, while the sclerosing type appears as a homogenous dense mass with fibrous septae with nipple retraction (2,3,5-8,12). Computed tomography scan and magnetic resonance imaging usually demonstrate a cystic lesion with peripheral enhancement on contrast (2,5,8). PET-CT may demonstrate multiple focal areas of intense uptake (13). All of these procedures are non-specific modalities for the diagnosis of breast tuberculosis and may help in differential diagnosis (2,3,5-8,11-13).

Histopathological evidence of caseating granulomas, epithelioid cells, Langhans' cells, and aggregates of lymphohistiocytosis readily establish a diagnosis of breast tuberculosis (2,8). More than 70% of the patients can be diagnosed by fine needle aspiration cytology (8). An imaging-guided fine needle aspiration decreases the failure rate and obviates the need for multiple punctures (5,14). The diagnosis is generally based on the pathological examination (2,4), as was in the present series. Khanna et al. (8) could diagnose all of their cases with fine needle aspiration cytology or histology.

Breast masses without sinuses mimic carcinoma. Differentiation is also needed from pyogenic abscess, fibroadenoma, acute and chronic mastitis, fungal infections, sarcoidosis, actinomycosis, and idiopathic granulomatous mastitis (1,2,5-7,10,15).

Medical treatment with different drug regimens of antituberculous drugs forms the main modality of treatment in breast tuberculosis, surgery being reserved for diagnostic procedures, drainage of abscess, excision of residual mass and sinuses (2,3,8).

In conclusion, based on our 20-year experience, breast tuberculosis encountered in eastern Anatolia region somewhat differs from its description in the literature in the following aspects: 1. Our patients present very late, and thus, the mean symptom duration is more than 1 year; 2. All of our patients present with a breast mass and in some, the size of the mass can be as large as 8-10 cm; 3. The rate of sinus formation in our patients is 71.4%, which is higher than reported in the literature. The most important reasons for these differences may be the low socioeconomic level of the region and difficulties in the diagnosis of breast tuberculosis.

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