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Tuberculosis of the Breast Masquerading as Carcinoma: A Study of 100 Patients

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Abstract. One hundred patients with tuberculous mastitis were referred to the Tata Memorial Hospital, a cancer center, with a clinical diagnosis of malignancy. This study identifies the possible causes of misdiagnosis and reviews the management of these patients. A lump in the breast with or without ulceration was the commonest presentation, the others being diffuse nodularity and multiple sinuses. Concomitant axillary lymph nodes were found in one-third of the patients. Tuberculosis lesions such as nodular mastitis, disseminated mastitis, and sclerosing lesions clinically mimicked a fibroadenoma, carcinoma, and fibrocystic mastitis depending on the mode of presentation. A young, multiparous, lactating woman with a lesion should arouse the suspicion of tuberculous mastitis, although pretherapeutic pathologic confirmation of a benign disease is mandatory. Mammography, fine-needle aspiration cytology, and excision biopsy for this purpose are successful in 14%, 12%, and 60% of cases, respectively. Acid-fast bacilli were identified in 12% patients. All patients received antituberculous chemotherapy, and 14% patients required simple mastectomy, due to either lack of response to chemotherapy (10%) or large painful, ulcerative lesions involving the entire breast (4%). Axillary dissection was performed in only 8% patients with large ulcerated axillary nodes. All patients, followed for a minimum of 2 years, were free of disease after therapy.

Tuberculous mastitis is a rare occurrence, with an overall incidence of less than 0.1% of all breast lesions [1]. In developing nations the incidence is higher, where approximately 3.0% to 4.5% of surgically treated breast disease is tuberculous in origin [2]. In some patients it is difficult to differentiate clinically between carcinoma and a granulomatous lesion. Routine imaging techniques, such as mammography and ultrasonography, are of limited value. Even fine-needle aspiration cytology (FNAC) cannot positively diagnose the pathology. The far-reaching implications of a clinical misdiagnosis has prompted us to study this group of patients so as to identify effective methods of diagnosis and review therapeutic options.

Materials and Methods

One hundred patients were referred to the Tata Memorial Hospital with a clinical diagnosis of malignancy. A retrospective study was performed comprising a detailed history, clinical findings, and routine investigations including a complete blood count (CBC), erythrocyte sedimentation rate (ESR), and a posteroanterior chest radiograph. Mammography was performed in 20 patients (this investigation was available only after 1984). For histopathologic confirmation FNAC was performed on 60 patients, incision biopsy in 40, and excision biopsy in 21 patients. Fifteen patients underwent incision and drainage of the abscess with scooping of the walls. Ziel-Neelson staining was used for all patients, and cultures were prepared for eight patients. Initially, all patients were given a trial using antituberculous chemotherapy. Those who showed no response within 4 weeks or had large ulcerative lesions involving the entire breast were subjected to a simple mastectomy. Axillary node dissection was undertaken in patients presenting with large ulcerative nodes with an extensive lesion in the breast. Chemotherapeutic management was continued for a full course following surgery. All patients were closely followed for a minimum of 2 years or such time as they were free of disease.

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Results

There were 3 men and 97 women (Table 1), the commonest age group being 20 to 40 years (range 17–60 years). Of the 97 women, 90 were married, and 76 were multiparous. Seven were lactating and four were pregnant at the time of diagnosis. Constitutional symptoms such as fever, weight loss, night sweats, and failing general health were present in 20 patients only. Symptoms suggestive of pulmonary affectation, such as persistent cough with expectoration, were found in two patients. The modes of presentation are summarized in Table 2. Seventy patients presented with a lump in the breast: painful (n = 15), freely mobile (n = 26), tethered to the skin (n = 14), fixed to the pectoralis major muscle (n = 15), or fixed to the chest wall (n = 15). Nine patients had discharging sinuses. Five patients presented with a classical peau d'orange appearance of the overlying skin, ten had an abscess, and six had an ulcer on the skin of the breast. Four patients had a tender ill-defined diffuse mass with thickening of the overlying skin of the breast. Bilateral lesions were seen in two patients. The chest radiograph was normal in 94 patients, old calcific tuberculosis was evident in 4, and 2 patients had active pulmonary tuberculosis. The CBC showed a lyphocytosis in 40 patients, and the ESR was elevated in 90 patients.

Mammographic findings varied according to the type of tuber-

Table 1. Pattern of symptomatology and presentation.

Clinical data	No. of patients
Age	
10–20 years	2
20–30 years	40
30–40 years	38
40–50 years	16
50–60 years	4
Parity	
Nulliparous	21
Multiparous	76
Sex	
Male	3
Female	97
Lactation	
Present	7
Absent	90
Constitutional symptoms	
Present	20
Absent	80
Pulmonary complaints	
Present	2
Absent	98

Table 2. Clinical symptomatology and presentation.

Clinical presentation	No.
Lump (70 patients)	
Painful	15
Mobile	26
Skin fixity	14
Muscle fixity	15
Chest wall fixity	15
Sinus formation	9
Peau d'orange	5
Abscess	10
Ulcer	16
Ill-defined mass	4

Some patients had combinations of modes of presentation, and so the number of symptoms appears to be in excess of the number of patients.

culous lesion. In most cases it revealed a well defined lump (14 of 20) accompanied with thickening of the overlying skin, increased vascularity, ragged edges. No calcification was found. In six patients mammography showed a diffuse mastitic pattern with a few septa and thickened overlying skin of the nipple. Retraction was seen in three patients. FNAC revealed a granulomatous suppurative lesion in 21 patients. An open biopsy was needed for 61 patients of whom 40 underwent an incision biopsy and 21 an excision biopsy. Acid-fast bacilli were isolated in only 12 patients.

In four patients a simple mastectomy with axillary clearance was performed per primum as the lesion was extensive, comprising a large, painful, ulcerative mass involving the entire breast and rendering organ preservation impossible. All patients were given antituberculous chemotherapy for 18 months. Ten patients showed no response and underwent simple mastectomy followed by continuation of the chemotherapy. These patients had large, long-standing lesions with extensive thickening and fibrosis as seen on histopathology. Culture was attempted in nine patients but was positive in only six. All patients were free of disease from a variable period of 12 to 24 months. There were no recurrences.

Discussion

In 1829 Sir Astley Cooper reported the first case of mammary tuberculosis and called it "scrofulous swelling of the bosom" [3]. Commoner in developing nations, reports suggest that it is often misdiagnosed as a carcinoma [1, 4–6]. It usually affects young women between the ages 20 and 40 years; it is relatively uncommon in older women or prepubescent girls. Lactating multiparous women have a slightly higher incidence [2, 7, 8]. Our study included 3 men, 12 perimenopausal women, and 76 multiparous women of whom 7 were lactating. There were no prepubescent girls, the youngest patient being 17 years.

Tuberculous mastitis is either of primary etiology, when no demonstrable tuberculous focus exists [9], or secondary to pulmonary tuberculosis [10]. Clinical examination usually fails to differentiate carcinoma from tuberculosis, and a high index of suspicion is necessary. Differentiating factors in favor of tuberculosis are a young age, married, multiparity, and lactation. Interestingly, lactation, thought to protect the breast from carcinoma, increases susceptibility to tuberculosis especially in the presence of poor general health and the stress of child-bearing. Increased organ vascularity during lactation facilitates dissemination of the organism.

The clinicoradiologic appearance depends on the type of tuberculous manifestation.

1. *Nodular tuberculosis*: In the early stages, nodular tuberculosis presents as a well circumscribed, slowly growing, painless mass that progresses to involve overlying skin; it may ulcerate or form sinuses and become painful. This course makes differentiation from carcinoma difficult [11, 12]. Mammography reveals a dense, well defined spherical tumor shadow without the classic halo seen with fibroadenoma. Rarely, a few infiltrating strands, skin thickening, and micocalcification are present. The only differentiating feature is that, unlike carcinoma, the mammographic size of a tuberculous lesion correlates well with its clinical size.

2. *Disseminated tuberculosis*: The diffuse nature of disseminated tuberculosis relates to the confluence of multiple foci, which later caseate leading to sinus formation. The overlying skin is thickened and stretched out; and painful ulcers may be present. Concomitant axillary nodes are enlarged and matted. Mammography shows a picture similar to that of inflammatory carcinoma.

3. *Sclerosing tuberculosis*: This form involves greater degrees of fibrosis than caseation, usually affecting older women. It is slow-growing, and suppuration is rare. Clinically, there is a hard, painless lump with nipple retraction, and it is thereby misdiagnosed as a carcinoma [13]. Mammography reveals a homogeneous dense mass with fibrous septa, nipple retraction, and an absence of microcalcification.

Nodular tuberculosis of the breast resembles fibroadenoma or carcinoma, whereas disseminated tuberculosis may be misdiagnosed as an inflammatory carcinoma and sclerosing tuberculosis as a scirrotic carcinoma. Mammography is unreliable [14]. Histologic confirmation using FNAC may reveal suppuration or a granulomatous lesion. A specific microbiologic diagnosis is not possible in most cases. Open biopsy is the most reliable examination. An excision biopsy followed by a full course of antituberculous chemotherapy is suitable for small lesions, whereas large lesions necessitate simple mastectomy. All patients must receive

antituberculous chemotherapy for at least 6 months following surgical extirpation [15].

Résumé

Cent patients ayant une mastite tuberculeuse ont été adressées au Tata Memorial Hospital, un centre anticancéreux, avec le diagnostic de tumeur maligne. Cette étude cherche à identifier les causes possibles d'erreurs diagnostiques et revoit la prise en charge de ces patients. Un nodule du sein avec ou sans ulcération a été le signe le plus souvent retrouvé; viennent ensuite des nodules diffus et de multiples crevasses. Des adénopathies axillaires ont été découvertes simultanément chez un tiers des patients. Des lésions tuberculeuses telles que la mastite nodulaire, la mastite disséminée et des lésions sclérosantes pouvant évoquer un fibroadénome, un cancer ou une mastite fibrokystique étaient les autres formes de présentation. Des femmes jeunes, multipares en période de lactation, avec une telle lésion devrait suggérer le diagnostic de mastite tuberculeuse. La confirmation d'une maladie maligne ou bénigne est cependant obligatoire avant d'entreprendre toute thérapeutique. La mammographie, la cytologie à l'aiguille fine et l'exérèse à visée biopsique sont couronnés de succès dans 14%, 12% et 60% des cas, respectivement. Des bacilles acidorésistants ont été identifiés chez 12% des patients. Toutes les patientes ont été traitées par des antituberculeux et 14% ont nécessité une simple mastectomie, soit parce qu'elles n'ont pas répondu au traitement antituberculeux, soit parce que la lésion était ulcérée, et intéressait le sein en entier (4%). Une dissection axillaire a été effectuée chez seulement 8% des patients qui avaient d'importantes adénopathies axillaires ulcérées. Aucune des patientes n'avaient récidivé à 2 ans, période de suivie minimum.

Resumen

Cien pacientes con mastitis tuberculosa fueron referidos al Hospital Tata Memorial, un centro de cáncer, con el diagnóstico clínico de neoplasia maligna. El presente estudio estuvo orientado a identificar las posibles causas de error en el diagnóstico y a revisar el manejo de estos pacientes. Una masa en el seno con o sin ulceración fue el hallazgo de presentación más común, siendo los otros más comunes la nodularidad difusa y las fístulas múltiples. Se hallaron ganglios linfáticos concomitantes en una tercera parte de los pacientes. Las lesiones tuberculares tales como mastitis nodular, mastitis diseminada y lesiones escleróticas simulan clínicamente un fibroadenoma, un carcinoma o una mastitis fibroquística, dependiendo de los nodos de presentación. Las mujeres más jóvenes, multíparas o lactantes, que presenten una lesión de esta naturaleza deben hacer sospechar una mastitis tuberculosa; sin embargo, la confirmación patológica pre-tratamiento de una enfermedad benigna es obligatoria. La mamografía, la citología por aspiración con aguja fina y la biopsia de excisión son procedimientos exitosos en el 14%, 12% y 60% respectivamente. Se identificó bacilo ácido-resistente en 12% de las pacientes. Todas las pacientes recibieron quimioterapia antituberculosa y 14% requirieron mastectomía simple, bien por falta de respuesta a la quimioterapia (10%) o por la presencia de grandes lesiones ulcerosas y dolorosas que afectaban la totalidad del seno (4%). Se realizó disección axilar sólo en 8% de las pacientes, aquellas con grandes ganglios axilares ulcerados. Todas las pacientes, seguidas por un mínimo de 2 años, aparecen libres de enfermedad luego de su tratamiento.

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