

Tuberculous Mastitis: A Continuing Problem

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Eighteen patients with tuberculosis of the breast are presented. The disease was prevalent in young female patients. The most common presentation was a lump, with or without sinuses, in the upper, outer quadrant of the breast, with matted axillary lymphadenopathy. One-third of the patients were lactating at the time of presentation. In 1 patient the disease was associated with carcinoma of the breast. The majority were treated by excision biopsy of the mass or a biopsy from a sinus for histological confirmation of the diagnosis, followed by standard antituberculous chemotherapy. Two patients required a sector mastectomy and 1 patient required a radical mastectomy for associated malignancy.

This article stresses the need for a high index of suspicion in making the diagnosis (especially in developing countries), in establishing the diagnostic criteria, and in the overlapping of clinical presentation with malignancy of the breast as well as the possibility of a coexisting carcinoma. The role of surgery is mentioned both in diagnosis and for treatment of residual masses.

Tuberculosis of the mammary gland is a rare disorder often mistaken for other benign and malignant lesions of the breast. Although the majority of reported cases of tuberculous mastitis have appeared from Western countries, the disease is extremely uncommon among them due to the infrequency of pulmonary and other forms of tuberculosis. Schaefer [1] was able to detect only 2 cases in 2,141 breast specimens received for histopathological examination while, in another study, only 5 cases were found in a population of 500,000 during a 15-year period [2]. In India, the incidence of tuberculous mastitis has been reported to be between 1 and 4.5% [3-5]. Although 9-10 million people are estimated to suffer from pulmonary tuberculosis in India [6], fewer than 100 cases of mammary gland tuberculosis have been reported, probably because of lack of awareness of the manifestations of the disease which often escape detection or are misdiagnosed and mistreated.

We present a series of 18 cases of tuberculosis of the mammary gland seen during a 6-year period, from 1978 to 1984. We also review the published literature regarding incidence, clinical manifestations, mode of spread, pathological types, and treatment in order to highlight the salient features in the clinical spectrum of this lesion as well as steps in management.

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Material and Methods

Eighteen patients with tuberculosis of the breast were seen from 1978 to 1984 comprising 1.06% of all breast lesions, both benign and malignant, seen at this hospital. The clinical features of this disease were noted in detail. The patients were investigated for evidence of tuberculosis elsewhere. The association with pregnancy, lactation, and other relevant conditions was also recorded. Mammographic examination of the breast was carried out in 3 patients. In all patients, the diagnosis was confirmed histologically. The patients were started on the standard first-line antituberculous chemotherapy after confirmation of the diagnosis and they were followed up at regular intervals. Details of surgical measures required are reported.

Results

All 18 patients were females. The ages ranged from 16 to 60 years with a mean of 32 years (Table 1). Fifteen patients (82.5%) were of childbearing age, i.e., 16-40 years. The duration of symptoms was less than 6 months in 11 patients and 6 months to 1 year in 5 patients. Two patients had symptoms for longer than 1 year.

The clinical presentation of the disease is depicted in Table 2. The breast lump was located in the upper, outer quadrant in 12 patients; the lower outer and inner quadrants in 2 patients each; the upper, inner quadrant in 1 patient; and retroareolarly in 1 patient. Bilateral disease was seen in 1 patient. Axillary lymph nodes were palpably involved in 17 patients, the nodes being matted in 10 of them and discrete in the remaining 7. Six patients (33%) were lactating at the time of presentation. None of the patients were pregnant. One patient had coexisting carcinoma of the breast with axillary lymph node involvement. In 8 of the 18 patients (3 with lump alone, 3 with nipple retraction, and 2 with peau d'orange), a presumptive clinical diagnosis of carcinoma was made before histological data were available. In the remaining 10 patients, the presence of sinuses or classical undermined ulcer indicated the clinical probability of mammary tuberculosis (Fig. 1).

Only 3 patients had radiological evidence of pulmonary tuberculosis and all of them were found to be sputum negative for mycobacteria. The erythrocyte sedimentation rate was

Table 1. Age distribution in 18 patients with tuberculous mastitis.

| Age (years) | No. |
|-------------|-----|
| 11-20 | 4 |
| 21-30 | 8 |
| 31-40 | 3 |
| 41-50 | 2 |
| 51-60 | 1 |
| Total | 18 |

Table 2. Clinical presentation of mammary tuberculosis.

| Clinical feature | No. |
|-----------------------------|-----|
| Lump alone | 8 |
| Lump with sinuses | 8 |
| Lump with ulcer | 2 |
| Lump with nipple retraction | 3 |
| Peau d'orange | 2 |
| Bilateral involvement | 1 |
| Axillary lymphadenopathy | 17 |

elevated in 10 patients. Mantoux test done in 12 patients was found to be positive in 10. Mammographic examination done in 3 patients showed a soft tissue mass involving the skin, with no evidence of calcification and no features to differentiate it from a carcinoma.

The surgical procedures carried out are listed in Table 3. After confirmation of diagnosis by wedge or excision biopsy of the mass, patients were put on antituberculous drugs. After chemotherapy with streptomycin, INH (isonicotine hydrazine), and thiacetazone (or para-amino salicylic acid, in 3 cases) for 18 months, there was complete resolution of the disease in 16 patients. In 2 patients with large lumps, sector mastectomy was carried out for residual mass and 1 patient with coexisting malignancy had a radical mastectomy.

Discussion

Incidence

The first description of mammary tuberculosis was by Sir Astley Cooper in 1829 [7]. He said, "In young women who have enlargement of the cervical absorbent glands, I have sometimes, though rarely, seen tumors of a scrofulous nature form in their bosoms." Early reviews by British and American surgeons put the incidence at about 1.5% of breast lesions [8]. Reports from India revealed an incidence with respect to other breast disease of 3-4.5% [3, 4]. More recent articles, however, indicate a lower incidence rate of about 1-1.2% [5, 9]. At present, the disease is extremely rare in Western countries and is often confined to the immigrant population [10]. The disease has also been reported from Africa in recent years [11-13]. The low incidence of breast lesions when compared to other foci of tuberculosis may be a result of the high resistance offered by mammary gland tissue to the survival and multiplication of the tubercle bacillus, a resistance similar to that offered by spleen and skeletal muscles [5].

**Fig. 1.** Clinical photograph showing classical appearance of mammary gland tuberculosis with lump, ulcer, sinuses, and axillary and cervical lymph nodes.**Table 3.** Surgical procedures in mammary tuberculosis.

| Surgical procedure | No. |
|--|-----|
| Wedge biopsy of mass | 10 |
| Excision biopsy | 8 |
| Lump and axillary lymph node biopsy | 2 |
| Biopsy from a sinus | 4 |
| Drainage of cold abscess | 1 |
| Sector mastectomy | 2 |
| Radical mastectomy (with coexisting carcinoma) | 1 |

Age and Sex

The disease, although almost exclusively a prerogative of the female, is not limited to females. In 1 series of 439 patients, as many as 4% were males [14]. In female patients, the disease has been reported from the age of 6 months to 84 years [3, 10]. Women in the reproductive age group, however, especially during the lactational period, are more susceptible [2, 5, 14] since the lactating breast is more vascular and predisposed to trauma. In our study, 15 patients (82.5%) were in the reproductive age group and 6 patients (33%) were lactating at the time of presentation.

Clinical Presentation

Both breasts are reported to be involved with equal frequency [4]. Bilateral disease is rare, occurring in 3% of patients [2]. The

duration of symptoms varies from a few months to several years, but in most instances is less than a year [4, 5, 14, 15].

The most common symptom is a lump in the breast [3, 9, 15, 16]. Multiple lumps [3] are less frequent. The classical presentation with multiple sinuses, ulcers, matted nodes, and a breast mass is, unfortunately, less common, making clinical diagnosis difficult at times. Such a presentation is seen in less than 50% of all cases. Other uncommon presentations include a typical undermined tuberculous ulcer [2], purulent discharge from the nipple [16] or with a fluctuant swelling which, if inadvertently incised, produces a discharging ulcer.

The lump in the breast in tuberculous mastitis is usually ill-defined, irregular, occasionally hard, and indistinguishable from a carcinoma as was seen in 8 patients in this series. Pain in the lesion is present more frequently than in a carcinoma, often being a dull, constant, nondescript ache [4]. Involvement of the nipple and areola, unless direct, is rare in tuberculous. Two patients in this series presented with nipple retraction, 1 of which was due to an associated carcinoma. Fixation to skin is frequent [2], however, the breast remains mobile unless breast involvement is secondary to tuberculosis of the underlying ribs. Regional lymph node involvement was seen in 17 of the 18 patients in this series, a figure higher than the one-third reported in the literature [3].

In earlier reports, evidence of an active or a healed lesion in the lungs on radiographic examination was noticed in about half the patients [5]. This is now rare. Only 3 patients in the present series had radiological evidence of pulmonary tuberculosis. Mammography is of limited use since the findings are often indistinguishable from a malignancy, especially when the disseminated and sclerosing forms of tuberculous mastitis are concerned [17, 18].

Coexisting tuberculosis and carcinoma of the breast was found in 1 patient in this series. This patient had nipple retraction, peau d'orange, and involvement of axillary lymph nodes. This association has been described in other reports [19, 20].

Mode of Infection

Although it was initially believed that as much as 60% of breast tuberculosis was primary [2], it is now accepted that mammary tuberculosis is almost invariably secondary to a lesion elsewhere in the body [3]. Primary infection of the breast, however, through abrasions in the skin or through the duct openings on the nipple is a possibility [2]. The most common mode of infection is thought to be retrograde lymphatic spread from the cervical or axillary lymph nodes, or less commonly from a pulmonary focus through the paratracheal and internal mammary lymph nodes [3]. In 1 of our patients, the matted axillary lymph nodes preceded the lump in the breast by almost a year, thus substantiating the above hypothesis.

Hematogenous spread and direct extension from contiguous structures are other modes of infection. One interesting hypothesis from a series in India correlates a prevalence of tuberculosis in the faucial tonsils of suckling infants with the higher incidence of tuberculosis of the breast in lactating women [9].

Pathological Classification

McKeown and Wilkinson [21] have classified breast tuberculosis into the following categories: (a) acute miliary type due to blood-borne infection in miliary tuberculosis—rare, usually seen in autopsy series of patients who have died of acute fulminant tuberculosis; (b) nodular type—the most common type, which presents as a localized lump with or without sinuses in 1 quadrant of the breast [5]; (c) disseminated type—the second most common variety, involving the entire breast, with multiple sinuses; (d) sclerosing type—minimal caseation and extensive hyalinization of the stroma, shrinkage of the breast tissue with early skin retraction and late sinus formation; clinically, this type is indistinguishable from carcinoma; and (e) tuberculous mastitis obliterans—a rare form due to intraductal infection with fibrosis and obliteration of the ductal system; sinus formation is infrequent.

Diagnostic Criteria

The demonstration of acid-fast bacilli from the lesions is usually difficult and the presence of caseation, epithelioid cell granulomata, and evidence of tuberculosis of the draining lymph nodes (histopathologically) are usually sufficient for diagnosis. Detailed histological evaluation is, however, mandatory to rule out a coexisting carcinoma. Recently, fine-needle aspiration cytology (FNAC) is proving very useful in characterizing breast lumps with or without nodes but lacking in the classical clinical features.

Differential Diagnosis

A correct preoperative diagnosis can only be made if there is a high index of suspicion. In the presence of sinuses, tuberculous mastitis can be differentiated from actinomycosis by the absence of sulfur granules in the discharge and by fungal culture.

Chronic mastitis or mammary dysplasia may mimic tuberculous mastitis and may require a drill biopsy for diagnosis [13]. Similarly, chronic breast abscess, fat necrosis, and periductal or plasma cell mastitis, which clinically mimic tuberculosis of the breast, can be diagnosed only by histopathological examination.

The presence of pain, constitutional symptoms, a purulent discharge, lack of hardness or fixation to deeper structures, the presence of multiple sinuses, and an intact nipple and areola serve to distinguish the disease from carcinoma of the breast. These features, although classical, are not universal. Besides, which carcinoma of the breast can coexist with tuberculosis. Features such as nipple retraction and peau d'orange, which are normally associated with malignancy, may be present in tuberculous mastitis. A mantoux test is usually positive in adults in endemic areas and is of no diagnostic value. It is, therefore, emphasized that, even in clinically obvious cases, a biopsy is mandatory. In case of undue hardness, nipple retraction, or skin edema, an excision biopsy is preferred to rule out coexisting carcinoma. All residual masses persisting after adequate chemotherapy or showing no regression within 2 or 3 months after start of antituberculous drugs must be excised for histological evaluation. Although we have not used FNAC in the diagnosis of these lesions, it is a promising technique in expert hands.

Treatment

A biopsy is mandatory for confirmation of diagnosis. All patients should have adequate systemic chemotherapy. Local streptomycin has been claimed to be useful [3]. After adequate chemotherapy, residual lumps localized to a quadrant should be removed via a segmental or sector mastectomy [2]. In instances in which the disease is more extensive, however, a simple mastectomy has been advocated [2, 4]. Radical mastectomy is best avoided unless there is a coexisting malignancy. In this series, only 2 patients required sector mastectomy. All patients demonstrated good results with adequate medical treatment.

Conclusion

The aim of this report is to draw attention to certain salient facts. The age of the population involved largely overlaps the age group commonly involved by cancer of the breast. The presentation as a lump in the upper, outer quadrant (where carcinoma is also most frequent) without sinuses or evidence of pulmonary disease is becoming more common. This, associated with the fact that the disease in developing countries is still frequent enough to constitute more than 1% of all breast problems, necessitates a high index of suspicion in the treating physician. This is especially relevant since features such as skin tethering, matted axillary nodes, and peau d'orange may be present in tuberculous mastitis. Preoperative investigations other than a biopsy are of little use in ruling out malignancy with any degree of certainty. Even in clinically obvious cases, a biopsy is mandatory since carcinoma can coexist with tuberculous mastitis. Therapy with antituberculous treatment is very rewarding and extensive surgery is almost never required.

Résumé

La série présentée fait état de 18 cas de tuberculose mammaire. L'affection est l'apanage de la femme jeune. Elle se présente, le plus souvent, sous la forme d'une protubérance qui s'accompagne ou non d'une fistule située au niveau du quadrant supéro-externe du sein, protubérance associée à une adénopathie axillaire. Un tiers des malades allaitaient lorsque le diagnostic fut porté. Chez 1 d'entre elles la tuberculose était associée à un cancer. La majorité fut traitée par excision-biopsie de la masse ou par biopsie de la fistule pour porter le diagnostic histologique avant d'avoir recours à la chimiothérapie anti-tuberculeuse. Deux des malades durent être traitées par une mastectomie segmentaire, 1 dut subir une mastectomie radicale en raison de l'association de la tuberculose et du néoplasme.

Cet article souligne la nécessité de soupçonner le diagnostic, spécialement dans les pays en voie de développement en se basant sur des critères bien définis, évitant ainsi de confondre la tuberculose avec le cancer encore que l'association du cancer et de la tuberculose soit possible. Le rôle de la chirurgie aussi bien pour reconnaître que pour traiter la lésion est discutée par les auteurs.

Resumen

Se presentan 18 pacientes con tuberculosis mamaria. La enfermedad es prevalente en mujeres jóvenes; el promedio de edad

(16-60 años) fue 32 años. La forma clínica de presentación más común fue una masa, con o sin tractos de drenaje, sobre el cuadrante superior externo del seno, con adenopatía axilar en forma de conglomerado no móvil. Una tercera parte de las pacientes estaba lactando en el momento de la presentación. Sólo 3 pacientes presentaron evidencia radiológica de tuberculosis pulmonar, y las 3 exhibieron esputo negativo para micobacteria. En una paciente la enfermedad apareció asociada con carcinoma del seno. La mayoría fue tratada mediante resección-biopsia de la masa o biopsia de uno de los tractos, para efectos de confirmación histológica del diagnóstico, seguida de quimioterapia antituberculosa estandar. Dos pacientes requirieron mastectomía segmentaria y 1 paciente requirió mastectomía radical modificada para neoplasia maligna asociada.

Este artículo da énfasis a la necesidad de mantener un alto índice de sospecha al hacer el diagnóstico (especialmente en países en vía de desarrollo), a establecer criterios de diagnóstico diferencial por la superposición de la presentación clínica con la neoplasia maligna, así como a la posibilidad de un carcinoma coexistente. Se discute el papel de la cirugía en el diagnóstico y en el tratamiento de masas residuales.

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