

# TUBERCULOSIS OF THE BREAST

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## SYNOPSIS

Tuberculosis of the breast is a rare condition. Its incidence in Singapore is estimated to be about 0.07% of all surgically treated breast diseases. It occurs mostly in women of child-bearing age and presents usually as a unilateral breast lump or an abscess. A recurrent breast abscess not responding to drainage and ordinary antibiotics should alert the surgeon to suspect a tuberculous origin. Another tuberculous focus elsewhere may or may not be present. Biopsy material should be sent not only for histological examination but also for culture of *Myc. tuberculosis*. Modern anti-tuberculous chemotherapy gives very good chances of a permanent cure.

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## INTRODUCTION

The first description of tuberculosis of the breast was the classic account in 1829 by Sir Astley Cooper who wrote of the "scrofulous swellings in the bosom" of young women with cervical lymph-adenopathy(1). Although about 700 cases have been reported since then(2), tuberculosis of the breast is now a rare condition in developed countries. Schaefer(1) documented 10 cases of breast tuberculosis seen at the New York Hospital-Cornell Medical Centre from 1933 to 1951. In 1971 Mukerjee et al(3) discovered 5 cases in Temple University Hospital, Philadelphia, USA, over a 20 year period. In India, however, the incidence of tuberculous mastitis amongst total number of mammary conditions has been reported to be between 0.64% and 3.59%(4).

Although tuberculosis of the human breast is a relatively rare condition, it is interesting to note that in the days when bovine tuberculosis was rampant, the disease very frequently affected the udders of cows, leading to contamination of milk with the bacilli and resulting in tuberculosis of the abdomen in young children.

## INCIDENCE IN SINGAPORE

8 cases of tuberculosis of the breast were notified to the Department of Tuberculosis Control over the last 5 years (1982 to 1986). Prior to 1982, it is not known from our Notification records whether there were any cases of tuberculosis of the breast because these, if any, were reported under tuberculosis of other unspecified organs. Histological examinations of 7 of the 8 cases were done by the Department of Pathology, Ministry of Health. The other one was done by a private pathology laboratory. Figures from the Department of Pathology(5) showed that during the 5-year period between 1982 to 1986 a total of 9,691 specimens of breast tissue were examined, of which 594 were diagnosed as of inflammatory in nature. Based on these denominators, the incidence of tuberculosis of the breast in Singapore is estimated to be in the region of 0.07% of all breast diseases, or 1.2% of all inflammatory conditions of the breast which had surgical intervention.

Table 1 shows that all the 8 cases were young women

of child-bearing age, between 20 and 43 years old (mean 31.4 years). 6 were Chinese, 1 Malay and 1 Pakistani. All except one were married and had children, and 3 gave a history of breast-feeding for various duration without any problem. Except for the 2 oldest patients (aged 35 and 43) all the rest had BCG scar. None of them gave a history of contact with tuberculosis patient. 2 of the patients had radiological evidence of pulmonary tuberculosis in addition to tuberculosis of the breast. Six out of the eight patients had significant past history of breast lump or abscess either on the same or the other breast, and five of them had surgical procedure done but were not diagnosed as tuberculosis at that time.

In Table 2, it is noted that the presenting symptom in all cases was either a lump or swelling with or without pain. The size of the lump ranged from 2 cm to 10 cm in diameter, and six of these showed signs of acute inflammation. Five of the cases involved the left breast and 3 the right breast. There were no bilateral involvement although two cases (No. 6 and 8) had a past history of breast abscess in the opposite side.

Regional lymph node involvement was seen in only one patient (No. 6) who had tender axillary lymphadenopathy.

Ziehl-Neelsen stain of the biopsy material for acid-fast bacilli yielded positive result in 3 cases, and although negative for the other 5 cases, the histological picture for all the specimens was highly suggestive of tuberculosis. Unfortunately, only 1 out of the 8 biopsy specimens was sent for culture for *Myc. tuberculosis*, and this turned out to be negative.

All the patients responded very well to anti-tuberculous treatment ranging from 6 to 12 months, and has remained well since.

## DISCUSSION

### Age and Sex:

The majority of the cases of tuberculous mastitis reported in the literature were in the child-bearing age, although Schaefer(1) and Mukerjee et al(3) had older patients in their series (oldest was 77 years). This ties in with the observation that, in general, extrapulmonary tuberculosis occurs in the younger age groups(6). Raw(7) and Morgen(8) documented some cases of tuberculous mastitis occurring in men, but the condition is rare in males.

Marriage and parity may be predisposing factors. 7 out of the 8 cases (87.5%) were married and had children whereas the 1980 Population Census(13) showed that only about 63% of women above 15 years of age were married. Wilson and MacGregor(12) proposed that the lac-

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TABLE 1  
BIODATA OF 8 CASES OF TUBERCULOSIS OF THE BREAST

No.	Year	Race	Age	Marital Status	Parity	Past History	BCG	CXR
1	1982	Chinese	28	Married	1(3yr)	1975 had right breast lump removed. ?diagnosis Scar right upper outer quadrant	1 scar	Normal
2	1984	Chinese	43	Married	2(9yr)	Left breast abscess	nil	Normal
3	1984	Chinese	20	Married	1(1yr)	nil	1 scar	Normal
4	1985	Chinese	34	Single	—	Feb. 1984 noticed small lump in left breast. No action taken.	1 scar	Minimal PTB left upper zone
5	1985	Chinese	30	Married	1(2yr)	nil	1 scar	Normal
6	1986	Pakistani	28	Married	2(5yr) (4yr)	Jan. 1985 left breast abscess	1 scar	Normal
7	1986	Chinese	35	Married	2(6yr) (5yr)	Nov. 1985 right breast abscess drained.	nil	Minimal PTB right upper zone.
8	1986	Malay	33	Married	4(15yr) (14yr) (13yr) (5yr)	Mar. 1985 right breast	1 scar	Normal

tating breast predisposes it to tuberculosis. However, none of the patients reported here were lactating at the time when they were seen.

#### Signs and Symptoms:

The most common presenting symptom seems to be a lump, associated with pain and signs of acute inflammation, unilateral and more often in the upper outer quadrant. None of the cases had any nipple discharge, nor was any nipple retraction noted.

Some literature mentioned pain as an infrequent symptom(8,9), and purulent nipple discharge as common(10) and others described the presence of skin and nipple retraction(9,11,12) which can simulate a carcinoma.

Antecedent breast abscess and trauma are said to be common and postulated to be the cause of lowered tissue resistance leading to the development of the tuberculous

infection(9). Schaefer(1) quoted Scudder's series in which 18.8% of the cases had a previous attack of mastitis. In the 6 cases reported here with history of previous breast pathology, 4 were breast abscesses which were drained as pyogenic in origin. The fact that they recurred soon after the drainage could mean that they were in fact tuberculous in the first place, and not necessarily a purely pyogenic infection predisposing it to a subsequent tuberculous infection as postulated by Gilbert et al(9).

#### Mode of Spread:

Direct Spread - Gupta et al(4) suggested that the high incidence of faucial tonsillar tuberculosis in suckling infants is linked to the development of tuberculous mastitis. In developed countries where tuberculosis in infants is extremely rare, this cannot be an important mode of spread.

**TABLE 2  
CLINICAL DATA OF 8 CASES OF TUBERCULOSIS OF THE BREAST**

No.	Symptoms	Signs	Size	Location	Histological Diagnosis	Lymph node Involvement	Z-N stain for AFB	Culture for TB	Treatment*
1	Lump	No signs of infection	not stated	Right lower outer quadrant	Granuloma consistent with TB	R. cervical lymph node 1 cm	Positive	not done	SHE x 3/52 HE x 6/12
2	Progressive swelling, redness and pain	Acute infection	2 cm diam.	Left medial to nipple	Granulomatous abscess highly consistent with tuberculosis	NIL	Negative	not done	RHE x 1/12 HE x 6/12
3	Swelling and pain	Fluctuant tender abscess	4 x 6 cm	Left upper outer quadrant	Tuberculosis breast mastitis	not stated	Positive	not done	RHE x 2/12 HE x 4/12
4	Swelling and pain	Acute infection	not stated	Left	Tuberculosis breast abscess	not stated	Positive	not done	SHRZ x 1/12 H <sub>3</sub> R <sub>3</sub> x 5/12
5	Swelling and pain	Acute infection	8 x 10cm	Left upper half	Breast tissue suggestive of tuberculosis	not stated	Negative	not done	RHE x 2/12 RH x 7/12
6	Swelling and pain	Acute infection	2 x 3 cm	Right upper outer quadrant	Consistent with tuberculosis of the breast	Tender axillary lymph node	Negative	not done	RHZ x 2/12 H <sub>3</sub> R <sub>3</sub> x 7/12
7	Lump	Firm mobile. Chronic infection	8cm diam.	Right upper outer quadrant	Consistent with tuberculosis of the breast	Nil	Negative	not done	RHZ x 3/12 H <sub>3</sub> R <sub>3</sub> x 7/12
8	Swelling and pain	Acute infection	not stated	Left upper outer quadrant	Granuloma consistent with TB	Nil	Negative	Negative	RHZ x 3/12 H <sub>3</sub> R <sub>3</sub> x 7/12

\*S = Inj Streptomycin    H = Isoniazid    E = Ethambutol    R = Rifampicin    Z = Pyrazinamide

**Contiguous Spread** - Tuberculous focus in contiguous structures like rib, chest wall and sternum may spread to the breast. However, these structures are themselves very rarely affected by tuberculosis.

**Haematogenous Spread** - This is unlikely. In the present series, besides the two patients with minimal pulmonary tuberculosis, none of the others manifested any evidence of disseminated tuberculosis. In fact, Schaefer(1) mentioned that Nagashima, who performed 34 autopsies on patients who had died of miliary tuberculosis, showed the presence of tuberculosis in practically all the organs of the body except the breast.

**Lymphatic Spread** - This is probably the most common mode of spread. Retrograde lymphatic extension may occur from the axillary, cervical or mediastinal nodes. Involvement of the axillary nodes had been reported to be between 50% to 75% of the cases of tuberculous mastitis(1,8). Of the 8 cases reported here, only 1 had definite

painful axillary lymphadenitis, and another had a small non-tender cervical node. No mention of lymph node involvement was made in 3 cases.

**Pathogenesis:**

Breast tuberculosis can either be primary or secondary. Primary disease is not merely the absence of tuberculosis elsewhere, but as Schaefer(1) correctly pointed out, the term should be reserved for cases where direct spread has occurred. In most instances, tuberculosis of the breast must be secondary to a focus elsewhere which may or may not be apparent. In high prevalence country like India, Gupta(4) showed that 7 out of 18 cases (40%) of tuberculous mastitis had either active or healed pulmonary tuberculosis, and Apps et al(14) reported 5 cases in Asian women, 4 of whom had evidence of previous tuberculosis with calcified hilar nodes. In the present series, only 2

cases (25%) showed evidence of pulmonary tuberculosis.

Three main types of tuberculous mastitis have been described.

**Nodular type** (discrete, disseminated or confluent). Most of the cases are of the discrete nodular type. The skin is unaffected and the mass is freely mobile. Progression of the disease may lead to varying degree of liquefaction and subsequent abscess formation. In the disseminated type, numerous foci of infection are present in the whole breast, and this may ultimately lead to a confluent large mass or several masses, and, in the late stages, often breaking down the skin to form multiple sinuses.

**Sclerosing type.** The main feature of this type of tuberculous mastitis is the slow progressive dense sclerosing reaction, causing shrinkage of the skin and retraction of the nipple. Abscess and sinus formation is rare. This type of tuberculous mastitis occurs in older patients, and therefore most often mistaken for a carcinoma.

**Tuberculous mastitis obliterans.** In this rare type, the inflammation is confined to the ductal system and periacinous connective tissue. Necrosis and peri-ductal fibrosis leading to obliteration of the ducts are the end results.

#### **Diagnostic Criteria:**

The multi-faceted manifestations of tuberculosis have caused some controversy in the criteria for diagnosing tuberculous mastitis. Wilson and MacGregor(12) considered that the diagnosis of tuberculosis of the breast applied to many cases in the world literature had been a misnomer. They labelled most of these cases as "comedomastitis" - a syndrome consisting of dilated ducts with intra-ductal toothpaste-like material, a peri-ductal foreign-body reaction, and even abscess formation. They considered a definite diagnosis only on bacteriological proof of positive tuberculous culture and guinea-pig inoculation.

Symmers(15) takes the same position. He reviewed 44 cases of caseating granulomatous mastitis reported from all over the world, and pointed out that only 6 cases were proven to be tuberculous by the isolation of *Myc. tuberculosis* on culture. Another 5 cases where acid-fast bacilli were seen on histological sections but *Myc. tuberculosis* was not isolated on cultures were considered as presumptive tuberculosis only. 24 cases were finally diagnosed as due to other obscure fungal, traumatic or iatrogenic causes, and the rest of the 9 cases with histological appearance consistent with tuberculosis were labelled as of uncertain origin. In the absence of a definitive cause, the failure to isolate *Myc. tuberculosis* from a caseating granulomatous tissue on culture does not necessarily rule out a tuberculous origin. The specimen taken for the culture may have missed the portion harbouring the organism.

There is no doubt that a great variety of granulomatous processes produce histological pictures indistinguishable from tuberculosis, but such stringent criteria for diagnosis seem merely academic. The management and therapeutic response of the patient must surely be the major consideration. All the 8 patients in the present series responded very well to anti-tuberculous therapy and have remained well. However, although tuberculosis mastitis is a relatively rare condition, surgeons must be aware that it still exists, and as part of the diagnostic work-up for mastitis, it is prudent to send part of the biopsy material for culture for *Myc. tuberculosis*. A missed diagnosis of tuberculous mastitis is likely to cause unnecessary prolonged anguish and pain to the patient because she is denied the definitive anti-tuberculous treatment which we know to be simple and effective.

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