Purpose

Primary tuberculosis of the breast is a rare disease. It is uncommon in western countries but has higher incidence in developing countries. Tuberculosis primary involves the lungs, but any organ in the body can be involved. Some organs or tissues like the breast, skeletal muscles and spleen are usually resistance to tuberculosis (1-2-3-4). Mammary tuberculosis is extremely rare. The overall incidence of tuberculosis mastitis is reported to be 0/1% of all breast lesions, while in developing countries it constituted approximately 3.3% of surgically treated breast disease (2-3-4-5). In this paper we review our experience of breast tuberculosis in 15 patients in order to determine the different modes of clinical and mammographic presentation.

Methods and Materials

Over a 15 year period from 1994 to 2009 a total of 15 patients were diagnosed as suffering from mammary tuberculosis in two university hospitals in Mashhad. In this study, we evaluated 15 cases of proved breast tuberculosis aged 22-50 years old. The tuberculose diagnosis was confirmed by pathological examination after fine needle aspiration cytology, needle biopsy, and surgical biopsy. Age, sex , clinical presentaion and duration of clinical symptoms were recorded. The mamographies of the patients were studied to find any abnormality, mamographic findings such as mass, calcificatin, architectural distorsion skin retraction , skin thickening, nipple retraction and axillary lymph adenopathy were marked by radiologist if present in magnography. chest x-ray was done for all patients and breast ultrasound was performed in 7 cases.

Results

In our patients breast tuberculosis was considered to be primary form because another tuberculosis lesion can not detected by physical examination or radiological study, and the patients had no prior history of tuberculose in other organs. In our study . All patients were female. The mean age of the patients was 32 years, (range 22-25 years) and the mean duration of symptoms was 5 months. Two patients were lactating at the time of diagnosis. The right breast was involved in 9 patients and the left breast in 6 cases. All patients have primary breast tuberculosis and there was no evidence of tuberculosis in other organs of the body in these patients. General symptoms of tuberculosis in the form of fever, weight loss, night sweats and falling general health were found in 3 patients. The predominant clinical presentation was a breast lump, most commonly in the central portion of the breast (10 patients). Three patients with breast lump had
multiple discharging sinus. One patient has skin scar from a previous breast abscess. One patient had a considerable breast deformity with multiple and extensive axillary sinuses. Among our patients 2 were lactating at the time of diagnosis. In our patients the duration of clinical symptoms was between 2 months to 4 years. In our patients the disease presented as a lump in 10 cases. The lesions were central in 7 Patients. Bilateral involvement is infrequent. In our study, the lesion was unilateral in all patients. Multiple lumps are infrequent. We detected multiple lumps in 3 of 15 cases.

In our patients mammography suggested breast carcinoma in 5 cases. Malignancy is usually suspected in all three forms of breast tuberculosis. Breast retraction and atrophy favors tuberculous mastitis rather than malignancy.

In our study ultrasound was performed in only 7 cases. Two of the patients showed a mass with mobile internal echoes and suggest a breast abscess. In five patients ultrasound revealed an irregular hypoechoic and heterogeneous mass. In two patients a mass with sinus formation were seen.

Table-1

**The clinical presentation of the breast tuberculosis in 15 patients**

<table>
<thead>
<tr>
<th>Symptom</th>
<th>No ( % )</th>
</tr>
</thead>
<tbody>
<tr>
<td>General symptoms</td>
<td>3(20%)</td>
</tr>
<tr>
<td>Breast lump</td>
<td>10 (66.6%)</td>
</tr>
<tr>
<td>Breast lump with sinus</td>
<td>3 (20%)</td>
</tr>
<tr>
<td>Sinus tracts and skin lesions</td>
<td>1 (6.6%)</td>
</tr>
<tr>
<td>Breast modularity with pain</td>
<td>3 (20%)</td>
</tr>
<tr>
<td>Axillary lymphadenopathy</td>
<td>8 (53.3%)</td>
</tr>
<tr>
<td>Extensive breast involvement with axillary sinus and fistulization</td>
<td>1 (6.6%)</td>
</tr>
</tbody>
</table>

Table-2

**Mammographic findings in 15 patients with breast tuberculosis**

<table>
<thead>
<tr>
<th>Finding</th>
<th>No(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solitary mass</td>
<td>7(46.6%)</td>
</tr>
<tr>
<td>Multiple masses</td>
<td>3(20%)</td>
</tr>
<tr>
<td>Mass with sinus</td>
<td>5(33.3%)</td>
</tr>
<tr>
<td>Condition</td>
<td>Count (Percentage)</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Struma coarsening and parenchyma edema</td>
<td>3 (20%)</td>
</tr>
<tr>
<td>Reduction and retraction of the breast</td>
<td>1 (6.6%)</td>
</tr>
<tr>
<td>Skin thickening</td>
<td>3 (20%)</td>
</tr>
<tr>
<td>Skin retraction</td>
<td>3 (20%)</td>
</tr>
<tr>
<td>Nipple retraction</td>
<td>4 (26.6%)</td>
</tr>
</tbody>
</table>

Images for this section:
Fig. 1: A 39-year-old women with complains of breast swelling, breast lump, erythema of the skin, skin sinus and nipple retraction in her right breast, which appeared 6 months earlier. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN

Fig. 2: A 24-year-old woman presented with nipple retraction and nipple discharge in her left breast which appear 3 months earlier. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN
Fig. 3: A 50 year old woman presented to the surgery department with a history of a lump in the left breast for 6 months, skin lesion and an associated nipple discharge. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN
Fig. 4: A 24-year-old woman with multiple sinuses in her right breast which appeared 6 months earlier, was admitted to the hospital. Department of Radiology, Imam Reza Hospital, Mashhad Medical University, Mashhad, IRAN
Fig. 5: A 36-year-old woman with breast swelling, erythema of the skin and nipple retraction in her right breast which appear 2 months earlier, was admitted to the hospital. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN
**Fig. 6:** Mammogram taken in the craniocaudal view shows a speculated mass with nipple retraction and thickening of the skin. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN

![Mammogram](image1.png)

**Fig. 7:** The mammogram shows edema and increased density in central region of the breast with ill defined margins. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN
**Fig. 8:** Mammogram taken in the craniocaudal view shows breast deformity, irregular mass with skin thickening and skin retraction. The lesion simulated carcinoma on mammogram. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN
**Fig. 9:** Mammogram taken in the mediolateral oblique shows a speculated mass associated with the retraction of the nipple and skin thickening. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN

![Mammogram taken in the mediolateral oblique](image)

**Fig. 10:** Mammogram taken in the craniocaudal view shows edema and multiple breast mass. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN

![Mammogram taken in the craniocaudal view](image)
Fig. 11: The mammogram taken in the craniocaudal view shows a lobulated mass lesion in the retroareolar region of the breast. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN
**Fig. 12:** Mammogram taken in the craniocaudal view shows an irregular mass lesion in the upper portion of the breast. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN

![Fig. 12](image)

**Fig. 13:** Mammogram taken in the craniocaudal view shows a speculated mass with increased density in the sabareolar region and skin thickening. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN

![Fig. 13](image)
**Fig. 14:** Mammogram taken in the craniocaudal view shows a speculated mass associated with the retraction of the nipple. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN
Fig. 15: Mammogram taken in the craniocaudal view shows a mass with irregular margins in the breast. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN
Fig. 16: Mammogram taken in the craniocaudal view shows edema and diffuse dense appearance of the breast associated with skin thickening. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN
**Fig. 17:** Mammogram taken in the mediolateral oblique shows a speculated mass in the inferior region of the breast associated with sinus tract and skin thickening. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN

![Mammogram](image17.png)

**Fig. 18:** Mammogram taken in the craniocaudal view shows increased density in the central region of the breast with ill defined margins. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN

![Mammogram](image18.png)
Fig. 19: Ultrasound shows an irregularly bordered heterogeneous hypoechoic mass. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN
**Fig. 20:** Ultrasound image shows a heterogeneous mass with necrotic area and internal debris due to the breast abscess. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN
**Fig. 21:** ultrasound image of the breast shows a hypoechoic lesion with irregular margins and internal echoes. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN
Fig. 22: Ultrasound shows a heterogeneous hypoechoic mass. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN
**Fig. 23:** Ultrasound shows an irregularly bordered heterogeneous hypoechoic mass. Department of Radiology, Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN
Fig. 24: Ultrasonography shows a hypoechoic mass with lobulated margins. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN
Fig. 25: Ultrasound shows an irregularly hypoechoic mass with sinus tract extend to the skin. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN.

Fig. 26: Ultrasonography shows an irregularly hypoechoic lesion due to sinus tract that extend to the skin. Department of Radiology. Imam Reza Hospital. Mashhad Medical University. Mashhad. IRAN.
Fig. 27: Figure 27: A view of Emam Reza Hospital, Mashhad, Iran
Conclusion

Despite the rarity of breast tuberculosis, it should be included in the differential diagnosis of breast masses particularly in endemic areas. The significance of breast tuberculosis is due to mistaken identity with breast cancer, and pyogenic abscess. Breast tuberculosis has a wide spectrum of imaging findings. Awareness of the variable imaging features helps in its diagnosis and avoids the misinterpretation of malignancy. Precise diagnosis, must be based on histopathological examination. The disease is usually curable with antitubercular chemotherapy and surgery is rarely required.

References


Personal Information

Authors:

1. D.Farrokh, associate professor of radiology, Mashhad University of Medical Sciences, department of Radiology.

2. B.zandi, professor of radiology, Mashhad University of Medical Sciences, department of Radiology.