

Breast Cancer or a Rear Diagnosis

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Abstract

Introduction: Tuberculosis (TB) and its diagnosis are of great importance in the middle-east, according to the increasing burden of this disease and the large number of unreported cases. Less than 20% of all TB cases only have extra-pulmonary manifestations and breast TB is a rare form of extra-pulmonary TB. It includes about 1% of all breast lesions.

Case Presentation: This study presents an 83 year-old breast TB female case with the complaints of fatigue, lethargy, and fever. In the physical examination, the patient had a discharging abscess in upper outer quadrant of her right breast associated with edema and erythema, accompanied with multiple axillary and supraclavicular adenopathies. Imaging showed multiple cervical, axillary, and abdominal adenopathies. Clinical manifestations were highly suggestive of inflammatory breast carcinoma. Further investigations, including lymph node biopsy and Polymerase Chain Reaction (PCR) helped with the diagnosis of TB in the patient. The patient was treated with quadruple therapy of TB.

Conclusion: Because of its nonspecific clinical features, TB mastitis is often being misdiagnosed and underreported. Early diagnosis of breast TB could reduce patients' morbidity and also facilitate an effective treatment of patients with inflammatory breast lesions. TB should be the first differential diagnosis of granulomatous mastitis.

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INTRODUCTION

Tuberculosis (TB) is of great importance in the middle east, as it is not yet under control [1]. Also, about 30% of TB cases are being underreported in the middle-east [1, 2]. About 18% of tuberculosis cases only have extra-pulmonary manifestations. Breast TB is an extremely rare form of extra-pulmonary TB with prevalence of 1% of all breast lesions. It's prevalence is higher in endemic areas (4%) [3]. TB mastitis most commonly presents itself with pain and as breast masses particularly in a woman [3]. Although it has been reported in men as well [4]. Thus, breast TB is a differential diagnosis for breast masses as well as breast carcinoma [5, 6].

CASE PRESENTATION

The case was an 83 year-old woman presented with fatigue, lethargy, fever, and axillary and supraclavicular adenopathies from several months ago. In physical examination, both breasts were edematous and erythematous and the skin was thickened in both breasts. There was an abscess in the upper outer quadrant of the right breast with a discharging sinus. In the past medical history, the patient had chronic kidney

disease, ischemic heart disease, and hypertension, and she was under treatment with 50 mg Losartan daily. Laboratory findings included hemoglobin = 9.5, creatinine=1.3, erythrocyte sedimentation rate (ESR = 146), C-reactive protein (CRP = 74), lactic acid dehydrogenase (LDH = 533), and creatine phosphokinase (CPK = 449), which increased to 860. Echocardiography and chest X-ray only revealed cardiomegaly. Sonography revealed multiple adenopathies with cystic changes in jugular and supraclavicular chains and multiple significant hypoechoic adenopathies in both axillas plus multiple hypoechoic masses with necrotic changes in upper outer quadrant of the right breast up to 4*3*2.5cm due to abscess. In the mammography, there was bilateral skin thickening plus bilateral axillary adenopathies. Thoracoabdominal CT-scan showed infiltration in upper lobe of the left lung and paraaortic and internal and external iliac adenopathies. Spine and brain magnetic resonance imaging (MRI) were normal. Core-needle biopsy (CNB) from the abscess wall showed non-specific inflammatory reaction. The diagnosis was finally established by histopathology of axillary lymph node biopsy, which showed necrotizing lymphadenitis and acid fast stain-

ing of the specimen was positive. Also, Polymerase Chain Reaction (PCR) was positive for TB bacilli. The patient was treated with quadruple therapy of TB with isoniazid, rifampin, pyrazinamide and ethambutol.



Figure 1: Hypoechoic Shadowing Irregular Border Mass

DISCUSSION

Clinical manifestations of breast TB are clinically and radiologically nonspecific, making it difficult to be diagnosed [7]. The main clinical features of TB mastitis include pain, lump, ulcer, abscess and less frequently Peau d'orange appearance and nipple purulent discharge. Lumps are usually solitary and located in the central or upper outer quadrant of the breast and abscesses could have discharging sinuses [8]. These clinical findings are similar to those of inflammatory breast carcinoma [5]. Inflammatory breast carcinoma distinctly presents itself with tenderness, warmth, and enlargement of involved breast; dermatologic manifestations include palpable masses, erythema, edema, induration, and Peau d'orange appearance [9]. TB mastitis is classified to 5 categories, including nodular tubercular mastitis, disseminated or confluent tubercular mastitis, sclerosing tubercular mastitis, tuberculous mastitis obliterans, and acute miliary tubercular mastitis [10]. About 35% of lesions in TB mastitis are compatible with malignancy in the physical examination; while about 45% of them have radiological features suggesting malignancy diagnosis [6]. Several methods are available to evaluate breast TB. Since patients with TB mastitis are usually being misdiagnosed and undergo numerous investigations, the most specific and sensitive modality to establish the diagnosis should be chosen. Mantoux test is not useful as it is usually positive in adults, especially in endemic areas [8]. None of the radiological investigations, such as mammography, CT-scan and MRI, are useful in the diagnosis [8]. Mammography cannot differentiate between TB and carcinoma; yet it may help reduce the number of false positive cases of carcinoma, if the degree of density and trabecular thickening is evaluated carefully [11]. Mammogram in TB mastitis reveals lesions that are equal to their clinical size, unlike in breast carcinoma [12]. Disseminated variety of TB mastitis mimics inflammatory carcinoma and the radiographs show dense breast with

thickened skin. These pictures lack the classic halo sign, which is found in fibroadenoma of the breast [13]. Disseminated variety mimics inflammatory carcinoma and the radiographs show dense breast with thickened skin [13]. Ultrasonography in tubercular mastitis mimics malignant tumors in 30% of cases [14]. Ultrasonography helps in differentiating cystic from solid lesions [18]. It reveals ill-defined hypoechoic masses in diffuse breast tuberculosis and increased echogenicity of the breast parenchyma is often with no definite mass in sclerosing breast tuberculosis [13, 15]. CT-scan is not very useful for diagnosis; yet it can show the extent of disease and the involvement of the lungs. Also, it can help with planning of the surgery and response to treatment assessment [8].

MRI of the breast reveals nonspecific features such as breast abscess. As well as CT-scan, MRI could be useful in determining extra-mammary involvement of the infection [8]. Furthermore, fine-needle aspiration cytology (FNAC) and CNB can be used for the diagnosis.

FNAC of inflammatory breast lesions is useful for diagnosis of TB mastitis. Its performance is higher when it is performed by a pathologist and is accompanied with further workups, such as microbiologic culture [16]. The FNACs sensitivity for breast tuberculosis is 73% when epithelioid cell granulomas and necrosis are seen [17], as a result FNAC may be inconclusive in a tubercular breast abscess and absence of acid fast bacilli cannot exclude TB mastitis [8]. Culture seems to be the gold standard for breast TB diagnosis; yet there are limitations, including the long duration required and frequent negative results [8]. PCR is highly sensitive, especially when the specimen is negative in culture. In the case of TB mastitis, PCR could help diagnose 50% of cases, which had been reported as granulomatous inflammation on cytology [18]. Thus, PCR is not absolute in diagnosing breast TB, because of the large number of false negative cases [19]. Histopathologic studies on specimen, which are obtained through open biopsy of breast lesions (lump, ulcer, sinus or from wall of the suspected tubercular breast abscess) almost always establishes the diagnosis of tuberculosis [12, 17]. Histological feature of TB mastitis is granulomatous inflammation [8]. Differential diagnosis of granulomatous inflammation of breast are tuberculosis, sarcoidosis, Wegner's granulomatous, and idiopathic granulomatous mastitis [5].

Breast TB is mostly misdiagnosed due to its nonspecific manifestations and patients mostly undergo several investigations before the diagnosis is established. Since treatment of TB differs from other inflammatory lesions of the breast and also maltreatment may cause more morbidity than the disease itself, a high index of suspicion is required for timely diagnosis [8]. Furthermore, TB should be the first differential diagnosis of granulomatous mastitis if it is in an endemic area [20] and/or when a breast abscess resists against adequate drainage and treatment with antibiotics, and if there is persistent discharging sinuses, the most appropriate modalities for diagnosing breast TB are histopathologic evaluation of abscess wall biopsy and culture [8].

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Not applicable.

CONFLICT OF INTEREST

The authors declare that they had no competing interests.

ETHICS APPROVAL

The ethics committee of Breast Cancer Research Center of ACECR approved the study.

REFERENCES

1. Al-Hajoj S, Varghese B. Tuberculosis in Saudi Arabia: the journey across time. *J Infect Dev Ctries.* 2015;9(3):222-31. DOI: [10.3855/jidc.5296](https://doi.org/10.3855/jidc.5296) PMID: [25771458](https://pubmed.ncbi.nlm.nih.gov/25771458/)
2. Huseynova S, Hashim DS, Tbeni MR, Harris R, Bassili A, Abubakar I, et al. Estimating tuberculosis burden and reporting in resource-limited countries: a capture-recapture study in Iraq. *Int J Tuberc Lung Dis.* 2013;17(4):462-7. DOI: [10.5588/ijtld.12.0209](https://doi.org/10.5588/ijtld.12.0209) PMID: [23485379](https://pubmed.ncbi.nlm.nih.gov/23485379/)
3. Marinopoulos S, Lourantou D, Gatzionis T, Dimitrakakis C, Papaspyrou I, Antsaklis A. Breast tuberculosis: Diagnosis, management and treatment. *Int J Surg Case Rep.* 2012;3(11):548-50. DOI: [10.1016/j.ijscr.2012.07.003](https://doi.org/10.1016/j.ijscr.2012.07.003) PMID: [22918083](https://pubmed.ncbi.nlm.nih.gov/22918083/)
4. Cantisani C, Lazic T, Salvi M, Richetta AG, Frascani F, De Gado F, et al. Male tuberculous mastitis: a rare entity. *Clin Ter.* 2013;164(4):e293-5. DOI: [10.7417/CT.2013.1591](https://doi.org/10.7417/CT.2013.1591) PMID: [24045526](https://pubmed.ncbi.nlm.nih.gov/24045526/)
5. Brouwer A, Degrieck N, Rasschaert M, Lockefeer F, Huizing M, Tjalma W. Tuberculous mastitis presenting as a lump: a mimicking disease in a pregnant woman case report and review of literature. *Acta Clin Belg.* 2014;69(5):389-94. DOI: [10.1179/2295333714Y.0000000048](https://doi.org/10.1179/2295333714Y.0000000048) PMID: [25056489](https://pubmed.ncbi.nlm.nih.gov/25056489/)
6. Kilic MO, Saglam C, Agca FD, Terzioglu SG. Clinical, diagnostic and therapeutic management of patients with breast tuberculosis: Analysis of 46 Cases. *Kaohsiung J Med Sci.* 2016;32(1):27-31. DOI: [10.1016/j.kjms.2015.12.005](https://doi.org/10.1016/j.kjms.2015.12.005) PMID: [26853172](https://pubmed.ncbi.nlm.nih.gov/26853172/)
7. Kumar M, Chand G, Nag VL, Maurya AK, Rao RN, Agarwal S, et al. Breast tuberculosis in immunocompetent patients at tertiary care center: A case series. *Journal of Research in Medical Sciences : The Official Journal of Isfahan University of Medical Sciences.* 2012;17(2):199-202. PMID: [PMC3525043](https://pubmed.ncbi.nlm.nih.gov/PMC3525043/)
8. Tewari M, Shukla HS. Breast tuberculosis: diagnosis, clinical features & management. *Indian J Med Res.* 2005;122(2):103-10. PMID: [16177466](https://pubmed.ncbi.nlm.nih.gov/16177466/)
9. Bussolati G, Badve S. WHO Classification of Tumours of the Breast: World Health Organization; 2012.
10. Vassilakos P. Tuberculosis of the breast: cytologic findings with fine-needle aspiration. A case clinically and radiologically mimicking carcinoma. *Acta Cytol.* 1973;17(2):160-5. PMID: [4511405](https://pubmed.ncbi.nlm.nih.gov/4511405/)
11. Al-Marri MR, Aref E, Omar AJ. Mammographic features of isolated tuberculous mastitis. *Saudi Med J.* 2005;26(4):646-50. PMID: [15900377](https://pubmed.ncbi.nlm.nih.gov/15900377/)
12. Shinde SR, Chandawarkar RY, Deshmukh SP. Tuberculosis of the breast masquerading as carcinoma: a study of 100 patients. *World J Surg.* 1995;19(3):379-81. PMID: [7638992](https://pubmed.ncbi.nlm.nih.gov/7638992/)
13. Popli M. Pictorial essay :Tuberculosis of the breast. *Indian J Radiol Image.* 1999;9(3):127-32.
14. Sakr AA, Fawzy RK, Fadaly G, Baky MA. Mammographic and sonographic features of tuberculous mastitis. *Eur J Radiol.* 2004;51(1):54-60. DOI: [10.1016/S0720-048X\(03\)00230-4](https://doi.org/10.1016/S0720-048X(03)00230-4) PMID: [15186885](https://pubmed.ncbi.nlm.nih.gov/15186885/)
15. Oh KK, Kim JH, Kook SH. Imaging of tuberculous disease involving breast. *Eur Radiol.* 1998;8(8):1475-80. DOI: [10.1007/s003300050578](https://doi.org/10.1007/s003300050578) PMID: [9853240](https://pubmed.ncbi.nlm.nih.gov/9853240/)
16. Nemenqani D, Yaqoob N. Fine needle aspiration cytology of inflammatory breast lesions. *J Pak Med Assoc.* 2009;59(3):167-70. PMID: [19288945](https://pubmed.ncbi.nlm.nih.gov/19288945/)
17. Kakkar S, Kapila K, Singh MK, Verma K. Tuberculosis of the breast. A cytomorphologic study. *Acta Cytol.* 2000;44(3):292-6. PMID: [10833980](https://pubmed.ncbi.nlm.nih.gov/10833980/)
18. Nalini G, Kusum S, Barwad A, Gurpreet S, Arvind R. Role of polymerase chain reaction in breast tuberculosis. *Breast Dis.* 2015;35(2):129-32. DOI: [10.3233/BD-140390](https://doi.org/10.3233/BD-140390) PMID: [25267370](https://pubmed.ncbi.nlm.nih.gov/25267370/)
19. Katoch VM. Newer diagnostic techniques for tuberculosis. *Indian J Med Res.* 2004;120(4):418-28. PMID: [15520490](https://pubmed.ncbi.nlm.nih.gov/15520490/)
20. Mirsaedi SM, Masjedi MR, Mansouri SD, Velayati AA. Tuberculosis of the breast: report of 4 clinical cases and literature review. *East Mediterr Health J.* 2007;13(3):670-6. PMID: [17687841](https://pubmed.ncbi.nlm.nih.gov/17687841/)