

A Rare Case of Tuberculous Nodular Breast Abscess in an Immunocompetent Indian Female

Sankalp Yadav ¹

1. Medicine, Shri Madan Lal Khurana Chest Clinic, New Delhi, IND

Corresponding author: Sankalp Yadav, drsankalpyadav@gmail.com

Review began 09/16/2023

Review ended 09/21/2023

Published 09/26/2023

© Copyright 2023

Yadav. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

In underdeveloped countries, *Mycobacterium tuberculosis* infection is common and typically manifests as pulmonary tuberculosis. Nevertheless, reports of tuberculous extrapulmonary involvement are also documented. Tuberculous breast abscess is a rare presentation, especially in immunocompetent hosts. Herein, a case of primary tuberculous breast abscess is presented. The patient came with complaints of pain in her right breast and a discharging sinus. A thorough diagnostic workup resulted in the establishment of a diagnosis with the detection of *Mycobacterium tuberculosis* on smear microscopy of pus, a cartridge-based nucleic acid amplification test, a line probe assay, and culture. Ultimately, she was put on anti-tubercular treatment.

Categories: Internal Medicine, Infectious Disease, Pulmonology

Keywords: mycobacterium tuberculosis (mtb), cbnaat/xpert/rif assay, fine-needle aspiration cytology (fnac), tuberculosis, breast abscess

Introduction

Tuberculosis is a serious hazard to global health [1]. *Mycobacterium tuberculosis* infection is the disease's primary cause, and it is mainly disseminated by inhaling aerosols tainted with the bacteria [2]. There are two different manifestations of tuberculosis: extrapulmonary tuberculosis, which refers to infections outside of the lungs, and pulmonary tuberculosis, when the foci of the primary infection lie in the lungs [3]. Approximately 17.5% of all cases of tuberculosis are extrapulmonary [4].

The extrapulmonary manifestations of tuberculosis in the breast are very rare [5]. This clinical condition is mostly seen in multiparous lactating females of the Indian subcontinent and Africa and makes up about 0.1% of all cases of tuberculosis manifesting at extrapulmonary sites [4,6]. This category includes about 3% of all breast conditions necessitating surgical operations [7]. Its incidence ranges from 3% to 4.5% in India [8].

The current case is an extremely uncommon type of extrapulmonary tuberculosis that manifested as a primary tuberculous unilateral breast abscess in an Indian multiparous housewife where both lung foci and a history of tuberculosis were absent. The final diagnosis was reached after a thorough clinical evaluation, and she began anti-tubercular therapy in accordance with national recommendations.

Case Presentation

A 28-year-old Indian female from a low-income family who is not diabetic complained of a painful lump within her right breast for a period of one month. She was well until one month ago when she noticed a 3 cm-sized lump in her right breast. This lump was insidious in onset and was associated with pain for 25 days. The pain was mild, continuous, non-radiating, and not linked with any aggravating or alleviating factors. Further, there has been a purulent discharge from this lump for the past five days.

There was no prior history of fever, cough, weight loss, night sweats, or lumps in the opposite breast or axilla. Additionally, there was no history of tuberculosis in her or any of her contacts. She was a housewife, and there was no history of smoking, alcoholism, or any substance abuse. Besides, there was no history of stays at night shelters, refugee camps, or imprisonment.

A general examination was suggestive of a hemodynamically stable female. Local examination revealed a tender, ill-defined, firm-to-hard, irregular lump approximately 3 cm × 3 cm in size, with a discharging sinus in the right breast. There was no attachment to the skin or underlying chest wall, and the nipple was not retracting (Figure 1).

How to cite this article

Yadav S (September 26, 2023) A Rare Case of Tuberculous Nodular Breast Abscess in an Immunocompetent Indian Female. Cureus 15(9): e45977. DOI 10.7759/cureus.45977



FIGURE 1: Gross image showing discharging sinus

Also, there was no cyanosis; clubbing; jaundice; cervical, axillary, or supraclavicular lymphadenopathy; or pallor. Her obstetric history was as follows: gravida 2, para 2; living, 2; and abortion, 0. She was 24 when she gave birth to her first child. She breastfed each child for 13 months. Her age at menarche was 12. Moreover, her systemic examination was unremarkable.

A likely diagnosis of pyogenic breast abscess was made using the differentials of tuberculous breast abscess and breast cancer. She was advised routine blood tests, a chest ultrasound, and a chest radiograph. Her chest radiograph showed no abnormalities (Figure 2).

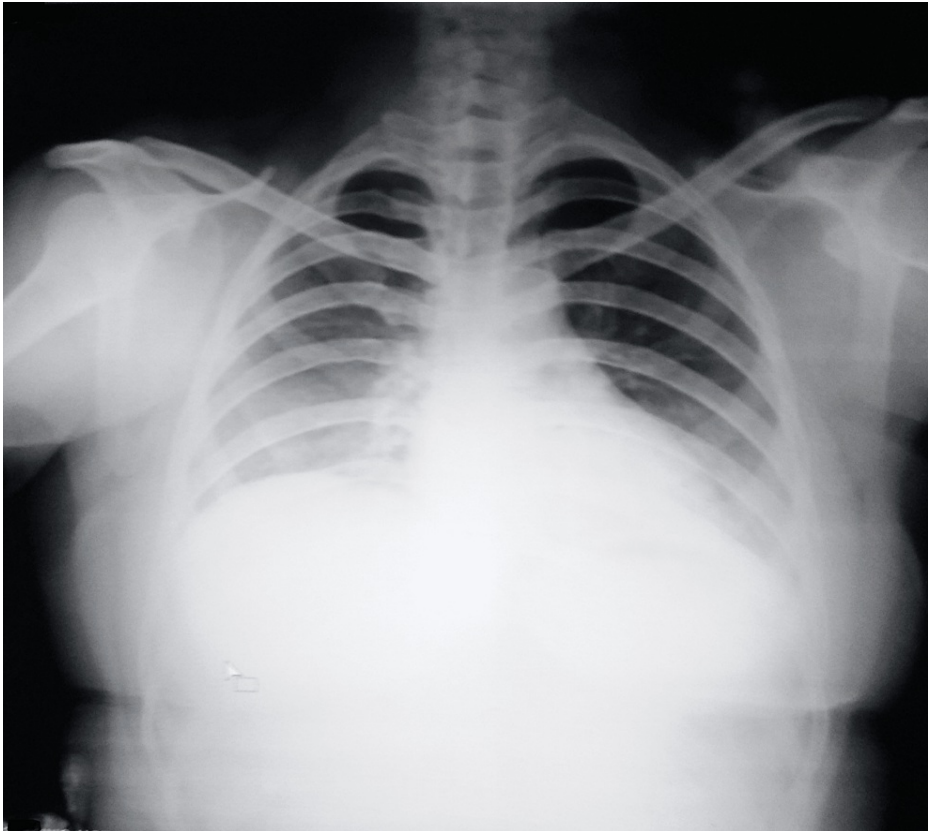


FIGURE 2: An unremarkable chest radiograph (PA view)

PA: posteroanterior

A chest ultrasound was suggestive of an irregular, heterogeneous cystic collection in the right axillary tail region (10 o'clock position) measuring about $19 \times 16 \times 14$ (volume: approximately 3 cc) with the presence of multiple lymph nodes surrounding the lesion (with intact fatty hilum), the largest measuring 22×10 mm (Figure 3).

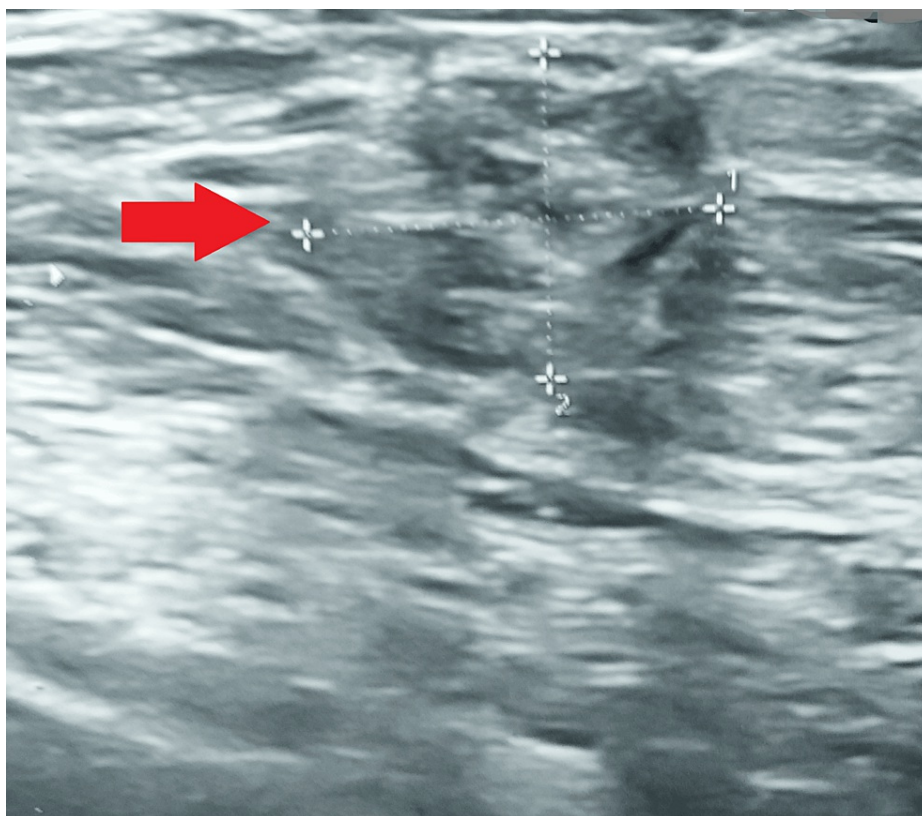


FIGURE 3: A chest ultrasound suggestive of an irregular collection

The right breast lump's fine-needle aspiration cytology was done, which resulted in the removal of 20 cc of yellow-colored pus. The fluorescent smear microscopy for acid-fast bacilli from the specimen was positive for *Mycobacterium tuberculosis*. Similar findings were reported on the cartridge-based nucleic acid amplification test (low detection of *Mycobacterium tuberculosis* without resistance to rifampicin) and the line probe assay. Another sample was sent for liquid culture and drug susceptibility testing, where there was growth of *Mycobacterium tuberculosis* with no resistance to first-line anti-tubercular drugs. Further, the incision and drainage of the abscess were done, and the histopathology of the samples was suggestive of granulomas with epithelioid cells, lymphocytes, and Langhans giant cells in a necrotic background with no evidence of malignancy. Laboratory investigations were remarkable for a raised erythrocyte sedimentation rate (76 mm in the first hour). Her human immunodeficiency viruses I and II were nonreactive, but her Mantoux test was positive.

Based on the findings, a final diagnosis of primary tuberculous abscess of the right breast was made, and she was advised to take a fixed-dose combination of anti-tubercular medicines per her weight according to the national guidelines (isoniazid, rifampicin, pyrazinamide, and ethambutol for 56 days and then isoniazid, rifampicin, and pyrazinamide for four months).

Initially, she did fine on her treatment, with no negative drug response, a reduction in her pain, and a stoppage of discharge. After two months of treatment, at her request, she was transferred to her hometown. Reports of her last follow-up were inaccessible. However, her outcome was marked as treatment complete in the national data software.

Discussion

In endemic nations, tuberculosis significantly impacts public health [9]. Extrapulmonary tuberculosis of the breast is seldom reported [10]. It is mainly seen in females aged 20-40 years, but no age is immune [11,12]. Isolated cases in males are also available in the literature [11]. It is categorized as primary if it solely affects the breast and is absent from the rest of the body or secondary if it affects other body regions as well [12]. Compared to primary breast abscesses, secondary ones are somewhat more frequent [10,11]. Additionally, per the latest classification, breast tuberculosis could manifest as a nodular, disseminated, or tuberculous abscess [13]. The present case was of nodular type, as it presented as a distinct mass that progressively involved the skin, resulting in ulceration.

Diagnosis is challenging as mammography has low sensitivity [13]. Ultrasonography could identify about 60% of lesions [14]. Ziehl-Neelsen staining, or culture-based detection of *Mycobacterium tuberculosis*, is the

gold standard for diagnosis [13]. In order to identify the bacilli, fine-needle aspiration cytology is typically used to look for stains, epithelioid cells, and granulomas [13]. The results of fine-needle aspiration cytology are normally equivocal, and even in cultures, the acid-fast bacilli are frequently undetectable [13]. The identification of the pervasive granulomatous inflammation with caseous necrosis from the lesion's histopathology, as done in this case, is very helpful [13].

Management is essentially medical, with anti-tubercular drugs [6,10]. Incision and drainage are recommended; however, surgical intervention without anti-tubercular drugs is usually futile [10,13].

In a study by Samal et al., only four out of 84 cases of breast abscess had discharging sinuses [15]. Ghaleb et al. reported 12 cases of breast tuberculosis [16]. They concluded that radiological imaging and the clinical examination were not specific, and the diagnosis required either histological confirmation or positive cultures of Koch bacillus [16].

A case of tuberculous nodular breast abscess is presented, which was timely managed. The paucity of data about this condition emphasizes the need for data from endemic countries, as large-scale studies will be helpful in increasing awareness and drafting new management guidelines for this rare clinical condition.

Conclusions

This article presents a case of a primary tuberculous breast abscess in an Indian female who complained of pain in her right breast and a discharge from a sinus. In the absence of the constitutive symptoms of tuberculosis and a history of contact, the definitive diagnosis was made after a thorough diagnostic investigation, and she started anti-tubercular therapy. The case required a significant degree of skepticism for a timely diagnosis and care, as any delay could have yielded unfavorable results.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Sankalp Yadav

Acquisition, analysis, or interpretation of data: Sankalp Yadav

Drafting of the manuscript: Sankalp Yadav

Critical review of the manuscript for important intellectual content: Sankalp Yadav

Supervision: Sankalp Yadav

Disclosures

Human subjects: Consent was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. Yadav S, Rawal G: Primary multidrug-resistant pulmonary tuberculosis with a concomitant COVID-19 infection in an Indian female- world's first case of its type in this current pandemic. *J Family Med Prim Care*. 2021, 10:3922-4. [10.4103/jfmpe.jfmpe_225_21](https://doi.org/10.4103/jfmpe.jfmpe_225_21)
2. Jones-López EC, Acuña-Villaorduña C, Sebidandi M, et al.: Cough aerosols of Mycobacterium tuberculosis in the prediction of incident tuberculosis disease in household contacts. *Clin Infect Dis*. 2016, 63:10-20. [10.1093/cid/ciw199](https://doi.org/10.1093/cid/ciw199)
3. Lee JY: Diagnosis and treatment of extrapulmonary tuberculosis. *Tuberc Respir Dis (Seoul)*. 2015, 78:47-55. [10.4046/trd.2015.78.2.47](https://doi.org/10.4046/trd.2015.78.2.47)
4. Mirsaeidi SM, Masjedi MR, Mansouri SD, Velayati AA: Tuberculosis of the breast: report of 4 clinical cases and literature review. *East Mediterr Health J*. 2007, 13:670-6.
5. Shrestha A, Gautam K, Pyakurel D, Pradhan S, Pant V: Breast tuberculosis, a rare entity. *IDCases*. 2019, 15:e00530. [10.1016/j.idcr.2019.e00530](https://doi.org/10.1016/j.idcr.2019.e00530)
6. Tauro LF, Martis JS, George C, Kamath A, Lobo G, Hegde BR: Tuberculous mastitis presenting as breast abscess. *Oman Med J*. 2011, 26:53-5. [10.5001/omj.2011.14](https://doi.org/10.5001/omj.2011.14)
7. da Silva BB, Lopes-Costa PV, Pires CG, Pereira-Filho JD, dos Santos AR: Tuberculosis of the breast: analysis

- of 20 cases and a literature review. *Trans R Soc Trop Med Hyg.* 2009, 103:559-63. [10.1016/j.trstmh.2009.02.005](https://doi.org/10.1016/j.trstmh.2009.02.005)
8. Jadhav PS, Pagaro PM, Verma A, Deshpande A: Tubercular breast abscess. *Med J DY Patil Univ.* 2013, 6:206-7. [10.4103/0975-2870.110318](https://doi.org/10.4103/0975-2870.110318)
9. Baker RE, Mahmud AS, Miller IF, et al.: Infectious disease in an era of global change . *Nat Rev Microbiol.* 2022, 20:193-205. [10.1038/s41579-021-00639-z](https://doi.org/10.1038/s41579-021-00639-z)
10. Yadav S: Primary tubercular breast abscess in an Indian female: a rare case . *Cureus.* 2023, 15:e41586. [10.7759/cureus.41586](https://doi.org/10.7759/cureus.41586)
11. Asjad BZ, Ali MA, Naeem BK, Khan M, Ahmed Abbasi U, Nehal Z, Siddiqui S: Breast abscess and tuberculosis and its diagnostic challenges: a two-year prospective study in Karachi, Pakistan. *Cureus.* 2019, 11:e5909. [10.7759/cureus.5909](https://doi.org/10.7759/cureus.5909)
12. Marinopoulos S, Laurantou D, Gatzionis T, Dimitrakakis C, Papaspyrou I, Antsaklis A: Breast tuberculosis: diagnosis, management and treatment. *Int J Surg Case Rep.* 2012, 3:548-50. [10.1016/j.ijscr.2012.07.003](https://doi.org/10.1016/j.ijscr.2012.07.003)
13. Tazzioli G, Macolino A, Combi F, Palma E, Papi S, Codeluppi M, Mussini C: Breast tuberculosis: a case report of primary type mammary tuberculosis. *Clin Case Rep.* 2019, 7:2346-8. [10.1002/ccr3.2486](https://doi.org/10.1002/ccr3.2486)
14. Sakr AA, Fawzy RK, Fadaly G, Baky MA: Mammographic and sonographic features of tuberculous mastitis . *Eur J Radiol.* 2004, 51:54-60. [10.1016/S0720-048X\(03\)00230-4](https://doi.org/10.1016/S0720-048X(03)00230-4)
15. Samal D, Sahoo R, Maity K, Patra K, Abdullah U: Tuberculosis of breast: an indian scenario . *Int Surg J.* 2018, 5:2137-41. [10.18203/2349-2902.isj20182026](https://doi.org/10.18203/2349-2902.isj20182026)
16. Ghalleb M, Seghaier S, Adouni O, et al.: Breast tuberculosis: a case series . *J Med Case Rep.* 2021, 15:73. [10.1186/s13256-020-02646-9](https://doi.org/10.1186/s13256-020-02646-9)