World Journal of Pulmonary and Respiratory Medicine

Research Article

Male Mammary Tuberculosis: Diagnostic and Therapeutic Challenges – A Case Report from the Pulmonology Department of the Conakry University Hospital

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Abstract

Introduction: Mammary tuberculosis is a rare form of extrapulmonary tuberculosis, being exceptionally rare in men. We report a case of tuberculous breast abscess managed at the Department of Pneumology and Phthisiology of the Conakry University Hospital.

Observation: The patient was a 35-year-old presenting with a painful, febrile swelling of the right breast, accompanied by a fever of 39.2°C, anorexia, and a 3 kg weight loss over two months. Clinical examination revealed a painful, soft, mobile, and ill-defined mass. Initial ultrasound suggested an early-stage breast abscess. Laboratory tests showed signs of inflammation, with a CRP level of 225 mg/L and leukocytosis of 25 G/L. Following clinical deterioration despite empirical antibiotic therapy with Augmentin, a repeat ultrasound confirmed abscess formation. After surgical consultation, aspiration yielded frank pus. GeneXpert MTB/RIF testing identified *Mycobacterium tuberculosis* (Koch's bacillus), which was susceptible to rifampicin. A combination of antitubercular therapy (using the 2RHZE/4RH regimen for six months) and surgical intervention resulted in recovery without disabling sequelae.

Conclusion: Tuberculous breast abscesses are frequently diagnosed late, which complicates their management. Nevertheless, an appropriate medical-surgical strategy usually leads to a favorable outcome without major complications.

Keywords: Mammary tuberculosis; Antitubercular treatment; Surgery

Introduction

Tuberculosis is the second leading cause of death from infectious disease, following Human Immunodeficiency Virus (HIV) infection [1]. It therefore remains a major public health issue. Globally, over one billion people are affected, and more than nine million new cases are recorded annually, despite a slight recent decrease in annual incidence [1]. Once considered a disease primarily affecting disadvantaged populations and the elderly, it remains a particular concern in Africa, where morbidity and mortality rates are highest. The situation is also worrying in Eastern Europe due to the rise of drug-resistant forms [1]. Although it primarily affects the lungs, tuberculosis can also involve other organs [2]. Among extrapulmonary forms, the most frequent sites of involvement are in descending order lymph nodes, peritoneum, pericardium, kidneys, skin, joints, meninges, and bones [3,4]. Breast involvement is rare, accounting for less than 0.1% of cases [5]. The first case of tuberculous mastitis was described in 1829 by Sir Astley Cooper, who referred to it as a "scrofulous swelling of the breast" [6]. Approximately 900 cases have since been reported in the global literature [5,7]. Mammary tuberculosis may be primary or secondary to locoregional or disseminated disease, and its diagnosis often remains challenging from both clinical and paraclinical perspectives [3,5].

Breast parenchyma exhibits relative resistance to the tubercle bacillus [8]. The secondary form may result from retrograde spread from infected axillary lymph nodes or direct extension from the ribs, sternum, shoulder joint, costochondral cartilage, or adjacent pleura. The primary form, meanwhile, results from inoculation through a skin abrasion on the breast or a nipple fissure [9,10]. In 1952, McKeown and Wilkinson proposed a classification into five forms: nodular, obliterative, sclerosing, disseminated, and acute miliary [11,12]. Although rare among forms of visceral tuberculosis, mammary tuberculosis must be distinguished from other breast pathologies-particularly cancer due to clinical and radiological similarities. Diagnosis is based on histopathological examination revealing an epithelioid granuloma with caseous necrosis, or on the identification of *Mycobacterium tuberculosis* *via* bacteriological analysis [3].

Observation

The patient is a 35-year-old non-smoker with no significant known medical history. He presented to the Pulmonology Department at Conakry University Hospital with a painful, febrile swelling of the right breast that had been evolving for approximately one month, accompanied by intermittent fever (with no specific pattern), decreased appetite, and a 3 kg weight loss over two months. Clinical examination revealed a painful, soft, mobile, and ill-defined mass in

Citation: Camara A, Camara ON, Diallo A, Sylla ML, Camara A, Camara LM. Four Serotypes of Infectious Bronchitis Virus are Widespread in Unvaccinated Backyard Chicken and Commercial Farms in Ethiopia. W J Pulm Respir Med. 2026; 1(1): 1001.

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Publisher Name: Medtext Publications LLC

Manuscript compiled: Oct 05th, 2026

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the right breast. Pulmonary auscultation was normal, and there was no palpable axillary or peripheral cervical lymphadenopathy. Vital signs were as follows: weight 51.60 kg, temperature 39.2°C, blood pressure 117/63 mmHg, and heart rate 105 bpm. Diagnostic workup included breast ultrasound (Figure 1 and 2), which showed a mildly hypoechoic tissue mass with heterogeneous content and an irregular, thickened inner wall; the mass was located in the right retroareolar region, had an estimated volume of 114 ml, and was suggestive of an abscess in the pre-suppurative phase. Fine-needle aspiration cytology was non-contributory.

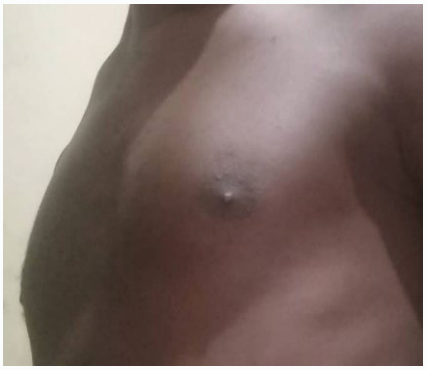


Figure 1: Breast appearance at first consultation.

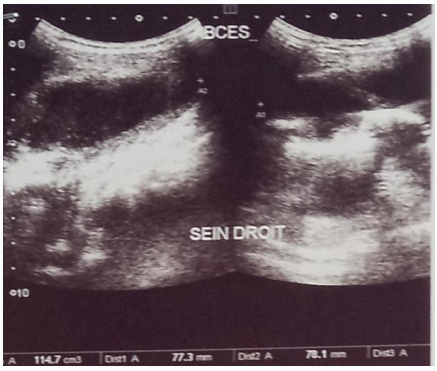


Figure 2: Initial breast ultrasound appearance.

A surgical consultation was requested for further evaluation. Fine-needle aspiration of the mass was non-diagnostic, yielding only a bloody fluid; no histopathological examination was performed. A diagnosis of common bacterial abscess was made, and empirical antibiotic therapy with Augmentin (1 g three times daily) was initiated for 25 days. Laboratory tests revealed an inflammatory state, with a CRP level of 225 mg/L and leukocytosis of 27 G/L (predominantly neutrophilic). Screening for comorbidities showed negative HIV serology and a blood glucose level of 0.89 g/L.

Re-evaluation at day 21: clinical examination revealed softening of the mass and a significant reduction in its volume. Breast pain persisted despite paracetamol (1000 mg every 6 hours), accompanied by a low-grade fever of 38.5°C and night sweats. Breast ultrasound showed a residual retroareolar abscess collection in the right breast, estimated at 55 mL, representing a reduction in abscess volume from 114 mL to 55 mL.

Treatment at Day 21: the course of Augmentin antibiotic therapy was extended to approximately one month at a dosage of 3 g/day. Assessment at Day 28 (Figure 3 and 4): clinical examination revealed a more clearly defined mass with sharp, regular outer margins, extending to the mid-axilla. Fever persisted, with a flare-up in the evening, accompanied by a loss of appetite. Breast ultrasound (Figure 5): this showed a right-sided breast collection in the suppurative phase, communicating with the chest wall via a drainage tract; the lesion measured 28 mm × 29 mm and exhibited irregular inner margins and peripheral vascularization.

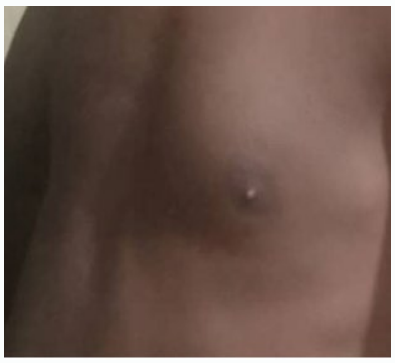


Figure 3: Clinical assessment at Day 21.



Figure 4: Day 28 clinical assessment.

Laboratory tests performed: the complete blood count showed a white blood cell count of 11 G/L and a neutrophil count of 9 G/L. Serological tests were negative (negative for HIV and HBsAg). The tuberculin skin test was positive (15 mm). The chest X-ray was normal.

Bacteriological analysis performed following surgical consultation: fine-needle aspiration yielded fluid that was distinctly purulent, thick, granular, and odorless. The GeneXpert MTB/RIF test was positive, revealing rifampicin-susceptible *Mycobacterium tuberculosis*. In contrast, cytobacteriological examination of the aspirated fluid was sterile.

Therapeutic management involved a combination of medical therapy, pain management, and a surgical procedure. Medical treatment consisted of a first-line four-drug anti-tuberculosis regimen-combining rifampicin, isoniazid, pyrazinamide, and ethambutol-for two months, followed by a two-drug regimen of rifampicin and isoniazid for four months, for a total duration of six

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Figure 5: Ultrasonographic findings of the lesion. (A) Ultrasonographic appearance of the lesion. (B) Identification of the drainage tract (canal de drainage). (C) Ultrasonographic visualization of a newly formed parietal collection adjacent to the drainage site.

months. Pain management involved a combination of paracetamol (1000 mg) and tramadol (50 mg). Surgical treatment (Figure 6 and 7) consisted of debridement of the breast abscess, followed by daily dressings for one month.

Outcome: Complete recovery after 6 months of treatment with anti-tuberculosis drugs and surgery.

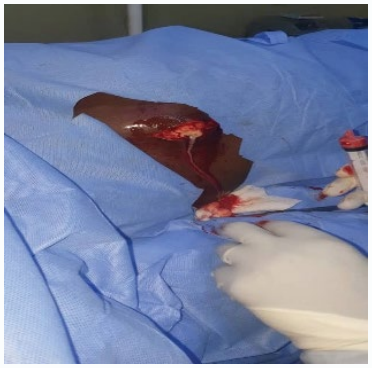


Figure 6: Incision of the abscess.



Figure 7: Clustered granular content.

Discussion

We report this case due to the diagnostic challenges involved in identifying the tubercle bacillus and to highlight the value of a combined medical-surgical management approach. This strategy resulted in a cure without locoregional complications or disabling scarring. Mammary tuberculosis remains a rare form of extrapulmonary disease-particularly in men-even in regions where pulmonary tuberculosis is common. Its rarity, as confirmed by the literature, makes diagnosis particularly difficult. Mammary tuberculosis primarily affects young women, especially multiparous and breastfeeding women. It is far less common in men, with an estimated male-to-female ratio of 1:30 [13]. It accounts for 0.06% to 0.1% of all cases of tuberculosis, with variations depending on the region of the world [14,15]. In 83% to 95% of cases, it occurs in women aged 20 to 50 [16]. The main risk factors are multiparity, breastfeeding, breast trauma, and chronic mastitis [17]. In Khaiz's study of 215 cases, Asia accounted for 45.2% of cases, followed by sub-Saharan Africa (27.4%), North Africa (17.2%), Europe (16.2%), and the Americas [18]. In our case, the observed clinical presentation contrasts with most data in the literature, which typically describe patients as being in good general health, without systemic signs such as fever, weight loss, night sweats, or anorexia [19]. Depending on the mode of transmission, two forms are distinguished: the primary form, linked to direct inoculation of the Koch bacillus via the lactiferous ducts or a skin lesion-often facilitated by pregnancy and breastfeeding-and the secondary form, resulting from hematogenous or lymphatic spread [20,21]. Our case did not identify a source of direct inoculation; however, the epidemiology of tuberculosis in an endemic area suggested the possibility of an unidentified exposure. This finding differs from other studies in which the primary form was identified. Common breast pathologies are often the initial consideration and must be ruled out through diagnostic imaging and histological examination. This condition can mimic numerous benign or malignant breast disorders. Differential diagnoses to consider include common breast conditions, particularly neoplasms and certain skin infections that may mask the clinical presentation. Breast cancer must be ruled out as a priority, especially given reported cases of co-existing cancer and mammary tuberculosis; this necessitates histological analysis of the breast tissue to check for associated carcinoma [22,23]. Other diagnoses to consider include mammary plasmacytosis, pyogenic abscess modified by antibiotic therapy, actinomycosis, granulomatous mastitis, sarcoma, foreign-body giant-cell mastitis, and duct ectasia [24,25]. The clinical presentation-featuring fever and biological signs of inflammation-suggested a bacterial skin infection, a diagnosis supported by the initial breast ultrasound; there was little evidence pointing to tuberculosis. However, the failure of broad-spectrum antibiotic therapy prompted further investigation-specifically a tuberculin skin test and a repeat ultrasound-which strengthened the suspicion of cutaneous tuberculosis; this diagnosis was subsequently confirmed by bacteriological analysis. Ancillary tests, particularly breast ultrasound, are of great importance from the

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very first consultation [26,27]. The most common mammographic findings are diffuse trabecular thickening and skin retraction; an ill-defined breast mass may also be observed [26].

Nearly 43.5% of mammary tuberculosis cases are classified as BI-RADS 4 or 5 [27]. However, there are no specific mammographic signs. The observed images are often suspicious, which limits the examination's specificity and makes it primarily a tool for guiding the diagnosis. The nodular form may appear as a solitary, well-circumscribed opacity mimicking a fibroadenoma or cyst, or conversely as an irregular opacity with a peritumoral halo, skin thickening, and sometimes microcalcifications, suggesting a malignant lesion [17,20,28]. Inflammatory biomarkers are usually elevated, as seen in our patient, and the erythrocyte sedimentation rate is often increased. The tuberculin skin test is generally positive in endemic areas; while sensitive, it lacks specificity, and a negative result does not rule out the diagnosis [21]. Diagnostic confirmation relies on the detection of acid-fast bacilli *via* direct examination or culture. Isolating the bacillus on Löwenstein medium remains difficult, but liquid medium cultures (Bactec) and PCR-based gene amplification techniques can improve diagnostic performance [29]. Management follows the standard first-line antitubercular treatment protocol, adapted for extrapulmonary forms. However, bone, osteoarticular, and meningeal involvement requires a longer course of treatment, typically ranging from 12 to 24 months. When diagnosed early, the clinical course is usually favorable and uncomplicated. Surgery is generally reserved as a secondary measure, particularly in cases of medical treatment failure or significant local suppuration. In the case we observed, the patient had received first-line antitubercular treatment for one month without resolution of the breast mass (Figure 8). Surgical drainage of the abscess confirmed the diagnosis of tuberculosis and led to rapid improvement (Figure 9). Lumpectomy or mastectomy may also be considered if medical treatment fails [7,19].



Figure 8: Appearance of the dressing during the first postoperative week (days 1 to 7), showing the local progression following drainage.

Abscesses can be effectively treated via ultrasound-guided external drainage. Surgery is primarily employed for diagnostic and conservative purposes: biopsy, drainage of purulent collections, excision of necrotic tissue, or lumpectomy to obtain histological confirmation. Treatment relies chiefly on multi-drug anti-tuberculosis therapy initiated following bacteriological or histological confirmation. The agents used include isoniazid, rifampicin, pyrazinamide, ethambutol, and, less frequently, streptomycin. Treatment duration ranges from 6 to 18 months, depending on the clinical context and the chosen protocol [21,3]. Regular monitoring of adherence, efficacy, and tolerability is essential [3,30]. When properly managed, treatment generally leads to a favorable outcome. In breastfeeding women, the risk of transmission to the infant and the potential toxicity of the medications may warrant consideration of weaning.



Figure 9: Complete healing observed at four weeks, indicating a favorable outcome following medical and surgical management.

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