

Tuberculous cold abscess of anterior chest wall

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Abstract

Introduction: In Western countries, incidence of Pulmonary Tuberculosis is declining, while Extra Pulmonary Tuberculosis has increased. In India increase of both forms is worrying health care providers. Tuberculous cold abscess of the anterior chest wall without involvement of adjoining structures like sternum, ribs, pleura and lung in an adult healthy, immunocompetent male is presented because of uncommon occurrence and fewer reports.

Case Report: A 59 Year old Type II diabetic male presented with 8x4 cm swelling over the chest wall which was not suspected for tuberculosis. The mass was fluctuant and tender and aspiration was done. The aspirated fluid did not show any specific finding in his FNAC report. No organism was seen in the gram smear and routine bacterial culture was sterile. CT scan showed fluid accumulation but no other lesions. However, Ziehl Neelsen staining report revealed the presence of AFB and the pus grew *M.tuberculosis* on LJ medium after one month. He was started on Anti-Tuberculosis Treatment (ATT) Category I comprising of Isoniazid, Rifampicin, Ethambutol and Pyrazinamide with a regular monthly review He has received a course ATT for six months and remains healthy without any recurrence over the past twelve months after the completion of his ATT.

Keywords: Cold abscess; Sternal mass; TB abscess, *Mycobacterium tuberculosis*

Introduction

India ranks the first among the five countries with high tuberculosis burden in 2012 having largest number of incident cases (2.0 million – 2.5 million) and China ranks the second (0.9 million – 1.1 million). India and china accounts for 26% and 12% of the world tuberculosis (TB) cases respectively.⁽¹⁾ It is also estimated that 40% of the Indian population is infected with TB.⁽²⁾ Tuberculosis can manifest as either pulmonary or extra pulmonary tuberculosis (EPTB). Extra pulmonary tuberculosis is tuberculosis of body sites other than lungs involving highly vascular areas such as lymph nodes, meninges, kidney and other areas like pleura, liver, gastrointestinal tract, genitourinary tract, peritoneum, pericardium and skin.⁽²⁾ EPTB has gone up from 2 to 5% to 8 to 13% during the past decade among the immunocompetent Indian patients and it can manifest in any organ or system with a variety of clinical manifestations, posing a diagnostic challenge.⁽³⁻⁴⁾ One such rare, challenging clinical manifestation is chest wall tuberculosis involving sternum with or without infection of adjoining pleura and lungs which is 1 to 2% only.⁽⁴⁾ We present a case of chest wall tuberculosis without involving sternum which has a still less prevalence rate. This case is presented because of paucity of reports in literature and to highlight the difficulties in arriving at a diagnosis by screening all the paucibacillary extra pulmonary specimens for AFB by Ziehl-Neelsen smear (ZN) and *Mycobacterium* culture, which can even differentiates the atypical presentation caused by *Mycobacterium tuberculosis* and Non Tuberculous *Mycobacteria* (NTM) making the diagnosis still accurate.

Case Report

The Institutional Human Ethical Committee (IHEC) of our institute has approved this project. We have obtained Patient's Informed Consent and permission to publish this case and photo. A 59 Year old Type II diabetic male, a bank executive, presented himself to the out-patient clinic of this tertiary care super specialty teaching hospital with 8x4 cm swelling of one month duration over the anterior chest wall. The mass was fluctuant and tender. Chest wall mass was not suspected for tuberculosis at that time. One ml of the aspirated fluid was sent for Fine needle aspirate cytology (FNAC), gram smear and routine bacterial culture. Gram smear did not show any organisms. No significant finding was observed in his FNAC report. Culture report for routine bacteria came as "sterile after 48 hours incubation". His chest X-ray was normal. However, his CT scan showed fluid accumulation but no other lesions. Irrigation and drainage (I&D) was therefore done under mild general anesthesia, loculations were broken and 50 ml pus was aspirated and sent for culture of common aerobic bacteria as well as for Ziehl Neelsen staining to look for the presence of AFB. FNAC was not repeated. Pre operatively he was given Amikacin, Cefixime and Metronidazole. There was no involvement of adjoining structures like sternum, ribs, pleura and lung. He was discharged at his own request with an advice to continue Cefixime, anti-diabetic drugs and daily change of dressing. Based on the Ziehl Neelsen staining report mentioning "Few Acid Fast Bacilli present in pus smear", the patient was informed and referred to Department of Tuberculosis and Chest Diseases (TBCD). His sputum ZN smear was negative for AFB and pus was sterile for common

bacteria again. Empirically he was started on Anti-Tuberculosis Treatment (ATT) Category I comprising of Isoniazid, Rifampicin, Ethambutol and Pyrazinamide with a regular monthly review. Meanwhile, patient's pus grew *M.tuberculosis* on LJ medium after one month. Confirmation of the identity of the isolate was done in accordance with the standard guidelines⁽⁵⁾ like slow growth and colony morphology on LJ medium, ZN staining of colonies on LJ, cord formation in liquid medium and biochemical tests like Niacin test, Neutral red test and Nitrate reduction test. The isolate was sensitive to Para Nitro Benzoic acid in MGIT 960 (thus pointing to *M.tuberculosis* complex). Additionally, the culture was positive for MPT 64 antigen in an immunochromatography test⁽⁶⁾ in Bioline TB Ag MPT 64 rapid kit, SD, Korea. Drug sensitivity (DST) of this isolate was carried out in Tuberculosis automated ID and DST System, MGIT 960. The isolate was found to be susceptible to all first line ATT drugs: Streptomycin, Isoniazid, Rifampicin, Ethambutol and Pyrazinamide. After three months of ATT, the patient has come with a clean dry scar (Fig. 1). He has received a course ATT for six months and remains healthy without any recurrence over the past twelve months after the completion of his ATT.

Discussion

The patient, a type II diabetic for the past three years, was on regular oral hypoglycemic drugs and had good glycemic control. On a note of family history, his wife had pulmonary tuberculosis (PTB) 20 years back for which she had received a full course of ATT. Clinically he did not show any signs and symptoms of pulmonary tuberculosis. He was non-reactive for Anti HIV 1 and 2. Literature review pertaining to the treatment of TB cold abscesses point to different modalities namely, Medical,⁽⁷⁾ Surgical⁽⁸⁾ or both.⁽⁹⁾ Some Chest surgeons like Cho and his co-workers⁽⁸⁾ prefer to give ATT for some time prior to surgery and continue ATT post-surgery. Only after surgery, our patient received ATT, since TB cold abscess was not clinically suspected prior to or during surgery. It is difficult to confirm TB of the chest wall radiologically or by FNAC alone and hence the importance to screen all such sternal masses by Biopsy, ZN smears, TB culture and TB PCR. FNAC of this abscess did not point to tuberculosis, which is understandable, since this is less sensitive than *M. tuberculosis* culture, which is the gold standard for the diagnosis of tuberculosis. Only up to 50% of pulmonary cases and 25% of extra pulmonary TB are diagnosed by smear examination alone. Rapid, automated growth detection methods include the radiometric BACTEC 460TB system, and non-radiometric fluorometry based BACTEC MB9000, BACTEC MGIT 960 systems, the carbon dioxide-sensing MB/BacT ALERT 3D System, and the pressure-sensing ESP Culture System II. These automated systems are very useful for rapid diagnosis

of Pulmonary Tuberculosis (PTB) and EPTB cases. Use of these automated systems for culturing *M. tuberculosis* would hasten the process of recovery of the organism, identification and drug susceptibility, thus facilitating early confirmation of the diagnosis and providing appropriate treatment. The pus aspirate from the patient was cultured only on LJ medium. In this patient the treatment was started empirically without drug susceptibility testing. Traditional category I treatment has been successfully used by several chest physicians and surgeons with complete cure in chest wall tuberculosis. New diagnostic tests like Xpert MTB/RIF which detects *M. tuberculosis* and rifampicin resistance simultaneously in about two hours⁽¹⁰⁾ would help earlier identification and treatment of tuberculous cold abscesses as well as other forms of EPTB and PTB. Today because of increasing multi-drug resistant tuberculosis (MDRTB) in both PTB and EPTB cases drug susceptibility testing is thus more relevant in the treatment of tuberculosis patients.



Fig. 1: Clean Scar of Healed TB Cold abscess, Three months after ATT

Conclusion

In developing countries like India, where PTB is endemic and a major public health problem, EPTB is not rare. Yet, cold abscess due to *M. tuberculosis* of the anterior chest wall without involvement of any adjoining structures is quite uncommon. Hence this case is presented to create awareness among pulmonologists and cardio thoracic surgeons in India and abroad. Chest physicians and surgeons may consider the possibility of TB cold abscess, while confronting sternal mass/tumors of patients from developing countries, irrespective of their current economic status and to submit all sternal masses for FNAC, biopsy, AFB smear and Mycobacterial Culture.

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