(International Print/Online Journal)

SJIF IMPACT FACTOR: 5.565
PUBMED-National Library of Medicine ID-101739732

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume 5, Issue 3, Page No: 1288-1291
May-June 2022

IJMSCR

Myocarditis and Pulmonary Tuberculosis: A Case Report

Jaspreet Kaur[1], Mithilesh Kumar Singh[2], Renu Chane[3], Geetanjali Gupta[3], Sachet Dawar[4]
[1]Professor & HOD, [2]Tutor, [3]Assistant Professor,
[4]Department of Respiratory Medicine, [1,2,3]Department of Biochemistry,
Noida International Institute of Medical Sciences, Gautam Budha Nagar, UP

***Corresponding Author:**
Jaspreet Kaur
Professor & HOD, Department of Biochemistry, Noida International Institute of Medical Sciences, Gautam Budha Nagar, UP

Type of Publication: Case Report
Conflicts of Interest: Nil

Abstract

Tuberculosis is one of the leading causes of death, worldwide. The predisposing factor of Cardiovascular Disease (CVD) in tuberculosis is due to the direct effect of Mycobacterium tuberculosis on the myocardium and coronary arteries, immune activation, and cytokine storm. We are presenting a case study of a 51-year-old male who presented with shortness of breath, cough with expectoration, and fever. He had a history of chronic smoking. High fever persisted for the next 4 days when the patient developed pain in the chest radiating to the left side of the shoulder. The patient was critical and intubated. ECG showed T wave inversion. Troponin-T was positive. CK-NAC 360 U/L, CK-MB 36 U/L, SGOT 3303 U/L.

Keywords: Myocarditis, Pulmonary tuberculosis, CK-NAC, CK-MB, Troponin

Introduction

Tuberculosis is the 13th leading cause of death and it is conserved as the second leading infectious killer after COVID-19 worldwide. In 2020, around 1.5 million death has been reported due to tuberculosis [1]. Worldwide the burden of tuberculosis and cardiovascular disease is enormous [2,3]. The predisposing factor of Cardiovascular Disease (CVD) in tuberculosis – the direct effect of Mycobacterium tuberculosis on the myocardium and coronary arteries, immune activation and cytokine storm, and cross-reactivity of anti-mycobacterial antibodies against cardiovascular tissue [4]. Hence it plays a role in the inflammatory mechanism of the atherosclerotic process.

Case Presentation:

A 51-year male presented in the emergency ward with complaints of shortness of breath, cough with expectoration, and fever for the last 10 days. He had a history of smoking bidi for more than the last 30 years. There was no history of other comorbidities, no history of past tuberculosis. On auscultation bilateral Ronchi were present, left side Crepts were present, Heart rate 110 /min, BP 150/85 mmHg, pO2 <93. ECG all 12 lead was normal. The liver function test, kidney function test, and Blood Sugar were normal. HIV, HBsAg, and Anti-HCV were non-reactive. Sputum for AFB was positive (3+).

Chest x-ray (Fig – 1) showed Chronic Obstructive Pulmonary Disease (COPD) with acute exacerbation and left mid-zone pneumonitis was diagnosed. HRCT chest (Fig – 2) was done and the finding was:

1. Pan-lobular emphysematous changes involving bilateral lung fields (mainly in the upper lobes).
2. Multiple lobulated cystic lesions involving the left upper lobe with the rest of the left upper lobe showing diffuse air space opacities with multiple air bronchograms, also involving the lingular segments – suggestive of multiple

cavitatory lesions with adjacent consolidatory changes. Above mention cavity also shows communication with the left upper lobe bronchus.

3. Patchy peribronchial infiltration with linear branching opacities gives a tree-in-bud appearance in the rest of the lung fields predominantly in the right middle lobe.
4. Mild left-sided pleural effusion
5. Mediastinal lymphadenopathy

High fever persisted for the next 4 days when the patient developed pain in the chest radiating to the left side of the shoulder. The patient was critical and intubated. ECG (Fig – 3) showed T wave inversion. Troponin-T was positive. CK-NAC 360 U/L (Normal Range: 24 – 145 U/L) CK-MB 36 U/L (Normal Range: 0 – 24 U/L), SGOT 3303 U/L (Normal Range: 0 – 35 U/L)

Fig – 1: X-Ray Chest PA View

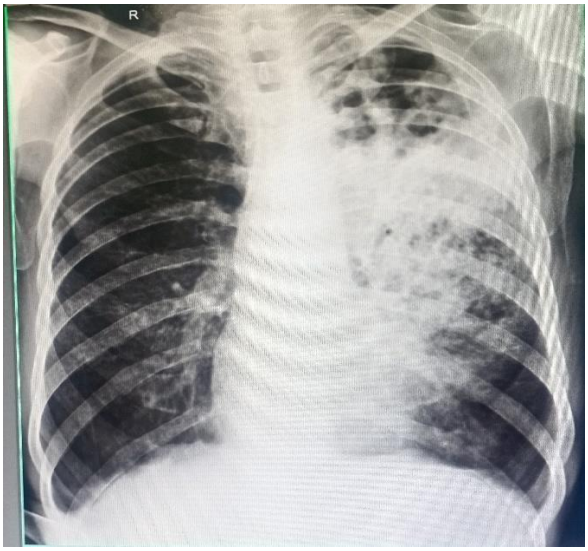
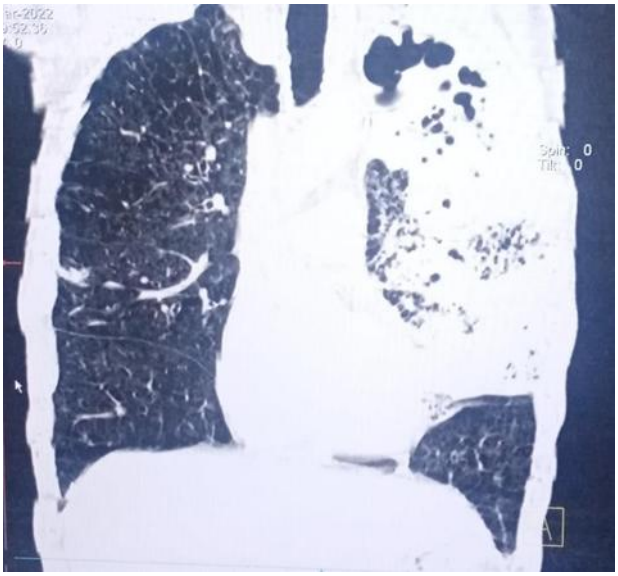
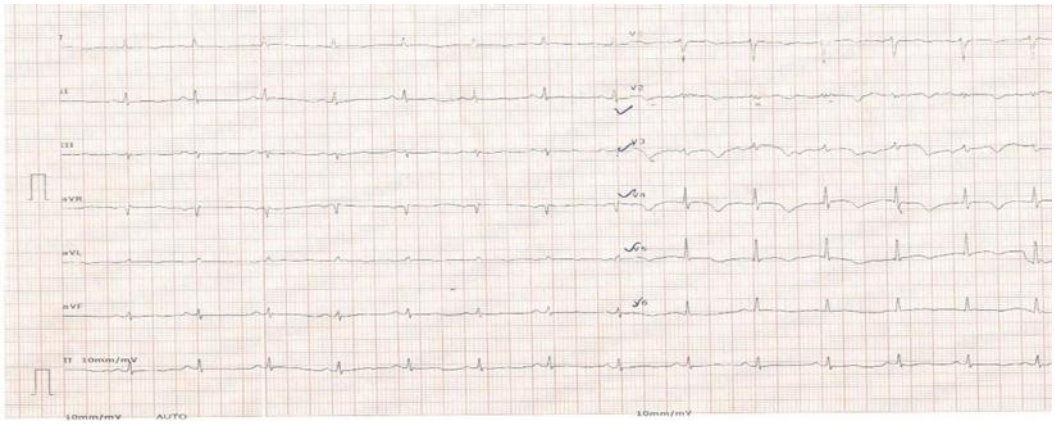


Fig – 2: HRCT Chest



Volume 5, Issue 3; May-June 2022; Page No 1288-1291

Fig – 3: ECG shows T wave inversion V2, V3, V4, V5, and V6



Discussion:

There have been several studies in Russia and India which support the relationship between coronary artery disease and tuberculosis [5]. Kinare, et al. reported a case of a 19-year-old male who ended fatally due to a large ventricular aneurysm obtained from myocardial infraction caused by tubercular coronaritis of the left anterior descending branch [6]. The intracellular pathogen involved in chronic and latent infection has been implicated in the development of cardiovascular diseases (CVD) [7]. There has been a strong relationship between infection and inflammation and immune reaction in patients with CVD [8]. The pro-inflammatory profile (activated macrophages, T cell, elevated cytokine) has been studied in a patient with tuberculosis [4]. Tuberculosis also induces auto-immunity through molecular mimicry of the heat-shock protein system [9]. Cases of sudden death and arthritis, a rare occurrence, is suggestive of the direct effect of myocardial tuberculosis on the myocardium and coronary artery [10].

According to WHO, the highest tuberculosis burden country in the world is India, which has an estimated incidence of 26.9 lakh cases in 2019 [11]. An estimated 17.9 million people died from CVDs in 2016, representing 31% of all global deaths. Of these deaths, 85% were due to heart attack and stroke [12].

Conclusion:

Individuals at risk of CVD may demonstrate raised blood pressure, glucose, and lipids as well as overweight and obesity. Identifying those at the highest risk of CVDs and ensuring they receive appropriate treatment can prevent premature deaths. However, tuberculosis can be one of the risk factors for CVD and it should not be missed in the Indian population as India has the highest tuberculosis burden.

Reference:

1. https://www.who.int/news-room/fact-sheets/detail/tuberculosis [Last access on 6th April 2022]
2. World Health Organization. Global Status Report on Nonconcommunicable Diseases 2014. Geneva, Switzerland: WHO, 2014.
3. World Health Organization. Global Tuberculosis Report 2015. Geneva, Switzerland: WHO, 2015.
4. Huaman, MA, et al. Tuberculosis and cardiovascular disease: linking the epidemics. Tropical Diseases, Travel Medicine and Vaccines 2015; 1: 10, 1–7.
6. Bakalli A, Osmani B, Kamberi L, et al. Acute myocardial infraction and pulmonary tuberculosis in a young female patient: a case report. Case Journal 2008, 1:246 – 250.
7. KinareS, BhatiaB. Tuberculosis coronary arteritis with aneurysm of the ventricular septum. Chest 1971, 60:613-616.
8. Rosenfeld ME, Campbell LA. Pathogens and atherosclerosis: update on the potential contribution of multiple infectious organisms to the pathogenesis of atherosclerosis. Thrombosis and Haemistasis 2011; 106: 858 – 867.
9. Epstein SE, et al. Insights into the role of infection in atherogenesis and in plaque rupture. Circulation 2009; 119: 3133–3141.
10. Xu, Q, et al. Association of serum antibody to heat-shock protein 65 with carotid atherosclerosis. Lancet 1993; 341: 255–259.

Volume 5, Issue 3; May-June 2022; Page No 1288-1291

11. Liu, A, Hu, Y, Coates, A. Sudden cardiac death and tuberculosis – how much do we know? Tuberculosis (Edinb) 2012; 92: 307–313.
12. https://tbcindia.gov.in/WriteReadData/l892s/India%20TB%20Report%202020.pdf [Last access on 8th April 2022]
13. https://www.who.int/india/health-topics/cardiovascular-diseases [Last access on 8th April 2022]

Volume 5, Issue 3; May-June 2022; Page No 1288-1291