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Case Report

Tuberculosis

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Abstract

Tuberculosis is caused by mycobacterium tuberculosis; belonging to mycobacteriaceae family. The most frequently used diagnostic methods for tuberculosis is tuberculin skin test, acid-fast stain, culture, and polymerase chain reaction. Due to presence of mycolic acid on the cell surface of bacteria it does not allow stain to absorb so as acid fast stain such as Ziehl-Neelsen, or fluorescent stains such as auramine are used instead to identify M. tuberculosis in microscope examination. It is a rod shape bacilli often looks wrapped together, due to the presence of fatty acids in the cell wall that stick together. In 2011, there are 8.7 million new cases of active tuberculosis worldwide among them 13% of patients are involved in co-infection with the human immunodeficiency virus [HIV]. It is estimated that there were 310,000 incident cases of multidrug-resistant tuberculosis, caused by organisms resistant to isoniazid and rifampicin, among patients who were reported to have tuberculosis. A total of 84 countries have reported cases of extensively drug-resistant tuberculosis, a subset of multidrug-resistant tuberculosis with added resistance to all fluoroquinolones plus any of the three injectable anti-tuberculosis drugs, kanamycin, amikacin, and capreomycin.

Key words: Tuberculosis, multidrug resistance tuberculosis

Introduction

Tuberculosis is caused by mycobacterium tuberculosis, belonging to mycobacteriaceae family [1].The most frequently used diagnostic methods for tuberculosis is tuberculin skin test, acid-fast stain, culture, and polymerase chain reaction [2].Due to presence of mycolic acid on the cell surface of bacteria it does not allow stain to absorb so as acid fast stain such as Ziehl-Neelsen, or fluorescent stains such as auramine are used instead to identify M. tuberculosis in microscope examination [3]. It is a rod shape bacilli often looks wrapped together, due to the presence of fatty acids in the cell wall that stick together [4].In 2011, there are 8.7 million new cases of active tuberculosis worldwide among them 13% of patients are involved in co-infection with the human immunodeficiency virus [HIV] [5]. Estimated that there were 310,000 incident cases of multidrug-resistant tuberculosis, caused by organisms resistant to ionized and rifampicin, among patients who were reported to have tuberculosis in 2011 [6]. More than 60% of patientsare from China, India, the Russian Federation, Pakistan, and South Africa [7].A total of 84 countries have reported cases of extensively drug-resistant tuberculosis, a subset of multidrug-resistant tuberculosis with added resistance to all fluoroquinolones plus any of the three injectable antituberculosis drugs, kanamycin, amikacin, and capreomycin [8].

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Case Presentation

50 years old male presented with cough with white/yellow color sputum from last 2 years, evening rise of body temperature last 3 months, chest pain and blood on coughing for last 2months. According to patients and patient attendant all the symptoms are seen form last 2 years, chronic cough more in winter season, morning time and on lying down posture. Cough is associated with the chest pain alone with sputum, sputum is initially white color but it gradually sputum become yellow in color and is having high grade fever, at evening it was high, he took tablets from local medical doctor, fever subsides and after 4 to 5 hrs fever again occurs, chewing tobacco 20 times a day for 20 yrs and weight loss (Figure 1).

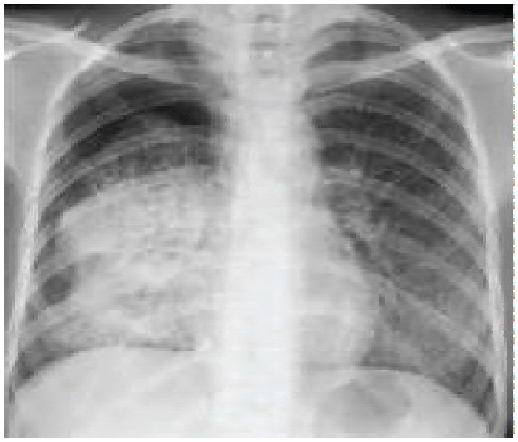

Figure 1. Chest X-ray

Based on patients complaints general examination shows raised in body temperature, and in systemic examination respiratory, upper and nasal passage was

congested, chest congested and pain, respiratory rate was 28/min, rhythm was regular but forced and bronchi over the suprascapular area.On laboratory investigation of there is increased in leukocytes count, decreased platelet count, MCV is increased, MCHC decreased, serum bilirubin and serum protein increased.

On sputum examination there is a rod shaped tubercular bacilli (Figure 2).Based on signand symptoms and investigation diagnosed as multidrug resistance tuberculosis by culture sensitivity test [9].

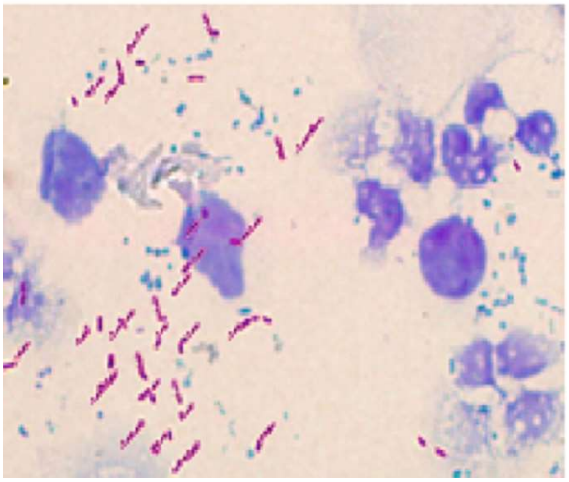

Figure 2. Sputum smears with bacilli.

Discussion:

Tuberculosis (TB) kills half million people in India. One million people are undiagnosed or diagnosed but not treated. Drug resistance TB and MDR-TB is a problematic disease in tubercular patients for their treatment [10]. Detection of tuberculosis was done by sputum microscopy and culture in liquid medium with subsequent drug-susceptibility testing arecurrently recommended as standard methods for diagnosing active tuberculosis [11].Test done by culture sensitivity of sputum sampling showing resistance toisoniazid and rifampicin. Sputum examination by collecting early morning two sputum samples, one sample for microscopic examination and another for culture. Microscopic investigation showing highest acid-fast bacilli (AFB) yield [12]. Among two samples of sputum, one sample shows AFB positive cases, diagnosed as tubercular patient [13]. Detection of TB can also be done by using radiological finding in pulmonary TB

Thoracic imaging is important for diagnoses of pulmonary TB and monitoring response to treatment [14].primary stage of pulmonary TB include parenchyma disease (middleand lower lung lobes is suggestive of disease),lymphadenopathy (CT evidence ofintrathoracic lymph nodes with a diameter greater than 2 cmwith central areas of low attenuation is suggestive of caseousnecrosis and highly indicative of active TB diseaseand miliary disease (diffuse 2–3 mmnodules throughout the lung parenchyma). Globally, 4.1% of new TB cases are reported as MDR-TB.According to Indian government in collectionwith world health organization and united state agency for international development reported that 23% of newly diagnosed TB are MDR-TB 3%. Rifampin resistance was not seen and resistance to isoniazid (INH) was highest (any 11%, monoresistance4%), followed by resistance toPyrazinamide (any 7%, monoresistance 4%) and streptomycin (any 7%, monoresistance2%) [15].Among patients previously treated for TB, there were high levels of resistance to first-line drugs—tested ionized (any 25%,monoresistance 8%) followed by resistance to streptomycin (any 13%,monoresistance 2%),Pyrazinamide (any 9%, monoresistance 4%) and ethambutol (any 7%, monoresistance0.21%) [15]. treatment of tuberculosis is done by using antitubular drugs. New guideline revised categorization of patients was brought out in 2010 in which patients of TB.From 2016, WHO enhanced its goal and launched “END TB strategy”. RNTCP had brought out there last guidelines in 2016 were use of drug sensitivity testing has been incorporated to effectively treat DR-TB. 1. Liquid culture 2. Drug susceptibility test. RNTCP initiated the DOTS- plus programme in 2000 to cover the diagnosis and treatment of MDR-TB and got updated in 2010 and is revised in 2016. Intensive phase (6-9 months) (Kanamycin, Levofloxacin, Ethionamide, Cycloserine, Pyrazinamide and Ethambutol by Continuation Phase (18 months) (Levofloxacin, Ethionamide, Cycloserine and Ethambutol) [15].

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