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Case Report

Post-COVID-19 Susceptibility of Young Patient to Tuberculosis

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The globe has been in extreme turmoil ever since the deadly severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic attacked humanity in December 2019 [1]. According to Andrews (2020) [2], Kerala is believed to have reported the country's first COVID-19 case in January 2020 [2]. The first wave hit India in March 2020 and lasted almost all of November 2020. The second wave started in March 2021 and continued until the end of May 2021 [3, 4]. Secondary infections in Covid-19 waves were prevalent in comorbid patients, immunocompramised patients and in patients who recovered from the severe symptoms of Covid-19.

Tuberculosis (TB), one of the most ancient diseases in human history, dates back thousands of years. Latent *Mycobacterium tuberculosis* infection is thought to affect about 25% of people on the planet [5].

This case study covers the story of a young patient who was infected with Covid-19 and *Micobacterium tuberculosis*. The question is here how patient get infected with severe symptoms of Covid-19 disease even though he was vaccinated? And second question is secondary infection of tuberculosis?

Case Presentation:

The acute respiratory distress during the COVID-19 infection led to concerns about potential post-recovery complications, including susceptibility to respiratory infections. This case study explores the scenario where a young twenty three years old male patient, after recovering from COVID-19, developed an infection with *Mycobacterium tuberculosis*.

The patient received a first and second dose of the Covisheild vaccine. Despite having Covid-19 symptoms for one to two days, the patient in question tested positive for the test using Reverse Transcription Polymerase Chain Reaction (RT-PCR) on January 15, 2022. He took complete Covid-19 medication dosage prescribed by the doctor when he was home quarantined.

The RT-PCR test for Covid-19 was negative after almost fifteen days. Within a week, following two weeks of therapy and recuperation, the patient started to have chronic cough, dyspnea, unexplained weight loss, and increased fatigue. In light of his recent Covid-19 history, the healthcare professional evaluated the patient and performed a comprehensive checkup. Sputum analysis, Computed Tomography (CT) scan, and diagnostic testing were used to evaluate the respiratory system's condition.

Although the preliminary sputum study did not establish the presence of *Mycobacterium* TB, the doctor was suspicious for the presence *Mycobacterium* infection. On February 14, 2022, a follow-up CT scan of the lung produced some questionable results (Figure 1). The doctor advised him to undergo the Xpert MTB-RIF Assay. Xpert MTB-RIF test is a quick PCR-based method for identifying mutations linked to rifampin resistance (RIF) and *Mycobacterium tuberculosis* complex DNA

(MTBc) which was positive on February 18, 2022 for non rifampin resistance *Mycobacterium* infection. A course of antibiotics targeted directly at *Mycobacterium tuberculosis* was part of the overall treatment plan for tuberculosis.

He was probably more vulnerable to tuberculosis because of the severe respiratory symptoms that the COVID-19 infection caused. Due to the impaired lung function and possible harm, there may be an increase in respiratory infections. Simultaneously, a respiratory rehabilitation program was initiated to facilitate recovery and improve lung function. It's possible that his acute respiratory involvement during the COVID-19 infection increased the risk of developing tuberculosis.

Patient was educated on respiratory hygiene practices to prevent further infections. He was also advised to avoid close contact with individuals exhibiting symptoms of respiratory illnesses.

Patient's healthcare provider scheduled regular follow-up appointments to monitor his response to treatment, assess lung function, and address any emerging concerns promptly.

Conclusion:

This case highlights the importance of vigilance in post-COVID-19 care, especially for individuals with a history of severe respiratory involvement. Monitoring and managing potential complications, such as tuberculosis, are crucial in ensuring a comprehensive and effective recovery. Healthcare providers should remain attentive to the evolving healthcare needs of individual's post-COVID-19 condition, tailoring interventions to address specific vulnerabilities and reduction the risk of secondary infections.

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Figure 1: Computed Tomography (CT) scan report.