Case Report

Concurrent tuberculosis and COVID-19: reports of three cases

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ABSTRACT

Coronavirus disease 2019 (COVID-19), the latest global pandemic is on the hunt and the incidence is sharply rising day by day. On the other hand, tuberculosis (TB) is the leading causes of death from infectious origin. Historically, coronaviral illness were reported with co-infection with TB; Severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) is not an exception. As both diseases have overlapping clinical features, sometimes it maybe very difficult to diagnose and long standing features of TB can easily be mistaken for post-acute COVID-19. This report emphasizes the importance of suspecting TB-COVID co-infection and its grave consequences.

Key words: *co-infection, COVID-19, tuberculosis.*

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INTRODUCTION

Amidst the global outbreak of severe acute respiratory syndrome coronavirus 2 (SARS-COV-2), it is not very uncommon to have tuberculosis (TB)-coronavirus disease 2019 (COVID-19) co-infection, specially in Bangladesh, where TB prevalence is high. Diagnosis is very challenging and is mostly dependent upon clinical suspicion and sensing radiological evidence of active TB along with SARS-COV-2. Here, we present 3 cases of TB-COVID-19 co-infection, diagnosed and treated in a primary care center of Bangladesh.

CASE REPORTS

Case 1

A 58-year-old diabetic man, who had been suffering from non-productive cough for 2 months, presented with recent onset of high grade fever and tested positive for SARS-CoV-2 by reverse transcriptase polymerase chain reaction (RT-PCR). He was treated with ivermectin, doxycycline, antitussives and antihistamines. He was a bit symptomatically improved but cough was persisting. Subsequently he tested negative for SARS-CoV-2.

One week later, he again developed high grade fever, breathlessness and producti9ve, distressing cough. As per protocol, again RT-PCR for COVID-19 was advised and he tested negative. Sputum for acid fast bacilli (AFB) came positive and treatment was started with standard anti-TB chemotherapy.

After 10 days of anti-TB chemotherapy, he developed severe breathlessness and was immediately referred to higher center. Immediate chest x-ray was suggestive of right sided pneumothorax (Figure 1). Urgent tube thoracotomy was done. As per routine procedure, again RT-PCR for SARS-COV-2 was done and he tested positive.

Patient was treated with insulin, enoxaparin, anti-TB chemotherapy and broad spectrum antimicrobials. Chest tube was removed after 1 month.

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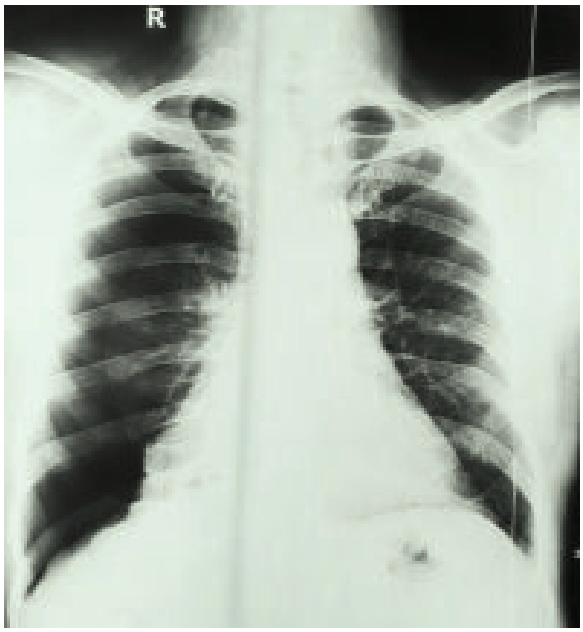

Figure 1 Chest x-ray postero-anterior view showing right sided pneumothorax

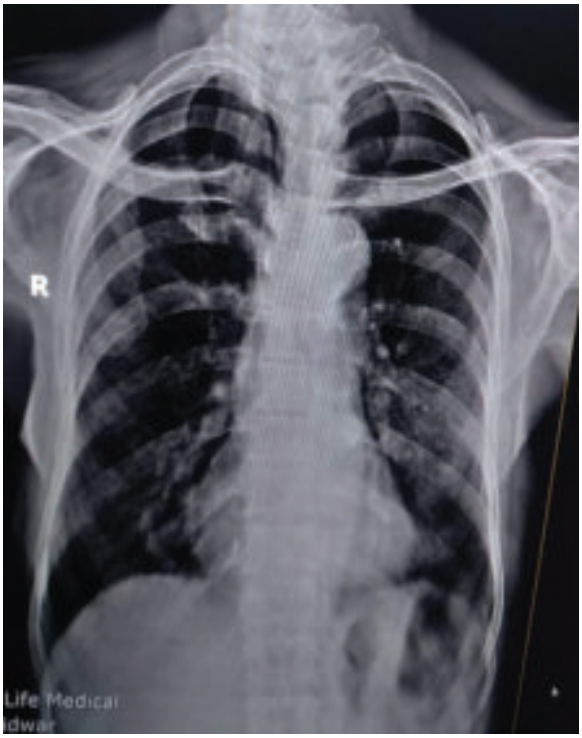

Figure 2 Chest x-ray postero-anterior view showing bilateral patchy infiltrates

CASE 2

A 67-year-old diabetic, hypertensive gentleman presented with the complaints of low grade fever, occasional dry cough and sore throat for 2 weeks. He tested positive by RT-PCR for SARS-COV-2. He was treated conservatively with prophylactic enoxaparin, doxycycline, ivermectin, antitussives and other symptomatic management. He tested negative after 2 weeks. But, he continued to have low grade fever and dry cough, which later became productive and he reported 3 kg of weight loss in 3 weeks. His random blood glucose (RBS) was 26.3 mmol/L. Initially, his symptoms were presumed to be due to post-acute-COVID-19 and uncontrolled diabetes. His chest radiograph was telling a different story (Figure 2) and his sputum AFB and Gene Xpert was advised and he tested positive for tuberculosis. Treatment was started with anti-TB chemotherapy and insulin. Now he is doing well.

CASE 3

A 58-year-old, diabetic, hypertensive patient presented for uncontrolled blood glucose. Notably, during routine query, he mentioned that he was suffering from anosmia for preceding 2 days. He also mentioned of suffering from low grade intermittent fever with an evening rise and unexplained fatigue for preceding 2 weeks. Keeping pandemic in mind, RT-PCR for SARS-CoV-2 was advised and he tested negative. A chest radiograph rose suspicion of TB and investigations were requested. The next day, patient became dyspnoeic with altered level of consciousness. He was diagnosed as a case of type 1 respiratory failure (Spo2 was 68%).

He was admitted in CORONA-isolation unit of a medical college hospital and treated with high flow oxygen, enoxaparin and steroids. Subsequently, he tested positive for SARS-CoV-2 by RT-PCR and sputum for AFB also came positive.

The patient was treated with anti-TB chemotherapy, insulin, enoxaparin and broad spectrum antimicrobials. Following deterioration of his condition, he was later referred to Dhaka for better management.

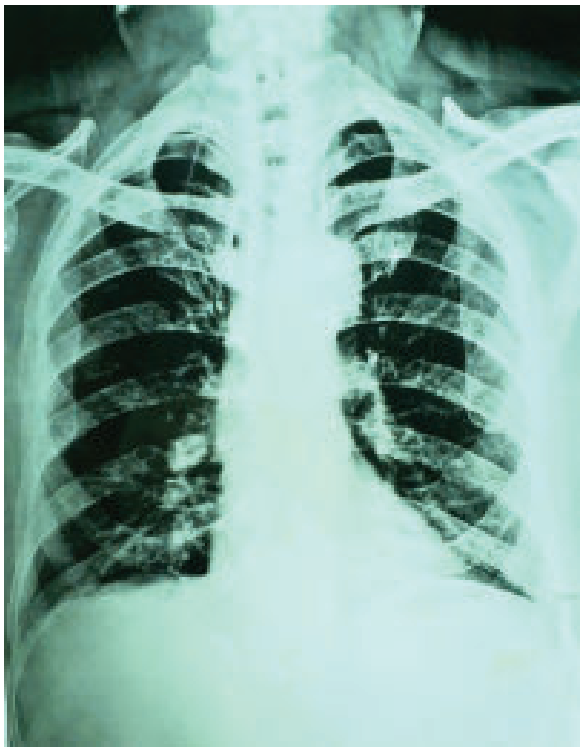

Figure 3 Chest x-ray postero-anterior view showing bilateral pulmonary infiltrates

DISCUSSION

COVID-19, the latest global pandemic has already infected 46.5 million people worldwide and 1.2 million of them had expired.[1] On the other hand, TB is the leading cause of death from a single infectious agent. As per global TB report 2019, approximately 10 million people had been diagnosed with TB in 2019. Everyday 4000 people fell prey to TB and 30,000 diagnosed with TB every day as per the latest reports.[2] Co-infections with SARS-COV-2 with other common respiratory pathogens are not uncommon and there were many reported cases of TB- SARS-COV-1 and TB-MERS back in 2003 and 2012 respectively.[3,4] Like its previous ancestors, SARS-CoV-2–TB co-infections have also been reported but data are still limited.[7,9] As, both diseases have common clinical features (fever, cough, breathlessness) and common mode of transmission, such co-infections are not very much uncommon. There are some burning issues regarding this dual infection.

Though apparently seems to be incidental, TB and COVID-19 are related with each other. It has been postulated that corona virus may activate a stem cell mediated defense mechanism, that accentuates activation of dormant TB.[5] Use of immune-modulators in moderate and severe COVID-19, as steroids and tocilizumab, may also lead to reactivation of latent TB in high TB burden country like ours. Concomitant use of anti-TB chemotherapy may also lead to drug-drug interaction and additive hepatotoxicity, if remdesivir has been used for treatment of COVID-19.[6] TB itself and its long term deleterious sequele may alter the course of COVID-19 and may be responsible for more severe disease course.[6] In patients with dual infection, the mortality is around 12.3% which is much higher than isolated COVID-19.

It is very much challenging to diagnose these sorts of cases as both these disease have similar clinical features and transmission through droplets and on top of that superimposed COVID-19 in a patient with TB, radiological evidence is even difficult to find out. Even the longer, insidious clinical course of TB may be mistaken for post-acute-COVID-19, the particular subsets of COVID-19 patients who still retain some common overlapping features as chronic cough and low-grade intermittent fever.[10] So, if a patient has a long history of cough and low grade fever before the acute outburst and if a COVID-19 patient does not follow its usual natural course like prolonged fever, weight loss, haemoptysis and have some common comorbidities that are responsible for severe course in both these diseases such as diabetes mellitus, chronic kidney disease, malignancy, other immunosuppressive conditions that evidence of TB must be searched for. Serial chest radiographs and sputum microscopy for AFB can be very much helpful in these particular cases. In case of dual infections, consideration of immunosuppressive agents and compassionate use of other antivirals also must be reconsidered.

Authors' contribution: CSP was involved in diagnosis, patient management and manuscript writing, NC was involved in diagnosis and management of patients. Both authors read and approved the final version for submission

Conflicts of interest: Nothing to declare.

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