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Case Report
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A Case of COVID-19 Infection Complicated by Disseminated Intravascular Coagulation in a Patient with Active Tuberculosis: A Rare Case Report from Syria

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Abstract

We report the first case of tuberculosis with COVID-19 complicated by DIC. The patient was a 65 years old Syrian male. He reported to us in the outpatient department with chief complaints of cough with expectoration associated with fever, chest pain, weight loss, and night sweats, 2 months ago with recent onset of sore throat, loss of sense of smell. The diagnosis of tuberculosis in the current pandemic of COVID-19 required a high degree of suspicion to rule out the SARS-CoV-2 infection along with the infection of Mycobacterium tuberculosis. The clinical presentations in the two diseases are quite similar and thus the present case will serve as a tool to help the clinicians handling cases of both the viral and bacterial infection across the global.

Keywords: Tuberculosis; COVID-19; Disseminated intravascular coagulation

Introduction

Coronavirus Disease 2019 (COVID-19) is officially a pandemic. It is defined as illness caused by a novel coronavirus now called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), which was first identified amid an outbreak of respiratory illness cases in Wuhan City, China, then quickly spreading throw out the city. It was initially reported to the WHO on December 31st, 2019. On January 30th, 2020, the WHO declared the COVID-19 outbreak a global health emergency, on March 11th, 2020, the WHO a global pandemic [1]. Most COVID-19 patients have respiratory symptoms and mild disease. A minority of patients, especially the elderly and individuals with underlying comorbidities, can develop life threatening features such as Acute Respiratory Distress Syndrome (ARDS), thromboembolic disease (like DIC, pulmonary embolism), and multi-system organ failure [2,3]. DIC: Is a rare and serious condition that disrupts your blood, it is a blood clotting disorder that can turn into uncontrollable bleeding. Is a syndrome characterized by the systemic activation of blood coagulation, which generates intravascular thrombin and fibrin, resulting in the thrombosis of small-to medium – sized vessels and ultimately organ dysfunction and severe bleeding [4]. TB is a bacterial infection known to mankind for a long time. The disease is a major public health problem especially in the low–income countries of Asia, Africa, and Europe. It is caused by *Mycobacterium tuberculosis* [5].

Case Presentation

Our patient is 65 years old, Syrian, male with no travelling history. He is active smoker (35 packet/year) with no history of alcohol consumption. He has no remarkable medical surgical or drug history.

His complains started about 2 months–before he referred to our center with fever, chills, chest pain, cough with expectoration, night sweats, weight loss (15 kg/2 months) and fatigue. He has recent onset of sore throat, loss of sense of smell (one week ago).

The patient has mentioned unprotected contact with cousin who has recently corona infected. Vital signs were an average heart rate of 128 beats per minute, blood pressure 11/7 mmHg, tachypnea, with a respiratory rate of 22 breaths/min, oxygen saturation (SPO2) on air room 94%.

Lab orations showed elevated white blood cells (11.6×10^3), elevated CRP (90 mg/l), decreased

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Figure 1: Bilateral areas of parenchymal and interstitial densities, predominantly in the upper fields.

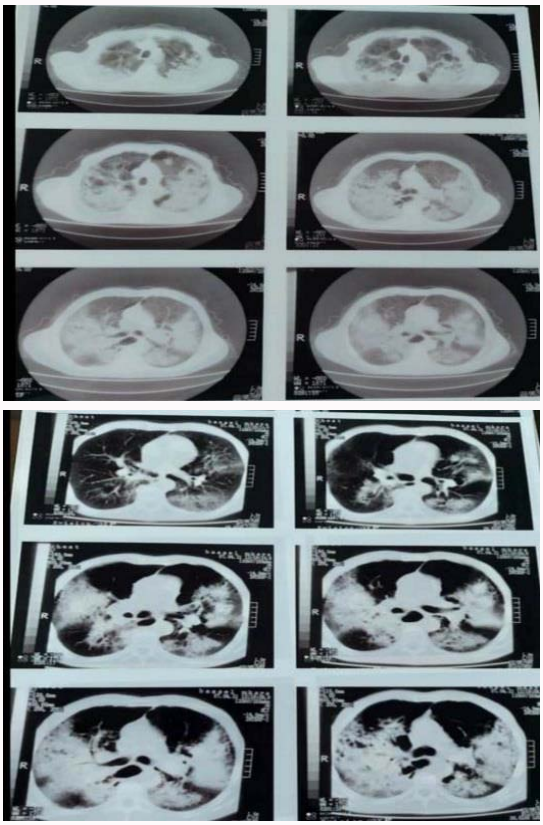

Figure 2: Lesions typical of pulmonary tuberculosis with bilateral areas of interstitial densities, ground glass opacities with mainly a peripheral and lower lobe distributation.

HGB (9 g/dl), elevated ESR (110 mm in the 1st hour).

Chest X-ray on March 11th, 2021 showed: Bilateral areas of parenchymal and interstitial densities in the lungs, predominantly in the upper fields (Figure 1).

His primary diagnosis was community acquired pneumonia with no improvement on antibiotic.

Computed Tomography (CT scan) completed on April 10th, 2021 showed lesions typical of pulmonary tuberculosis with bilateral areas of interstitial densities, ground–glass opacities with mainly a peripheral and lower lobe distributation (Figure 2).

The differential diagnosis of this pattern includes pulmonary tuberculosis, COVID-19, interstitial lung disease.

A test for SARS-CoV-2 was performed using a throat and nasal swab and the result confirmed COVID-19 by Real –Time – Polymerase-Chain-Reaction (RT-PCR) assays, and the COVID-19 IGM was positive, IGG was negative, which mean the patient is in the cute stage. We also ordered the Nucleic Acid Amplification Test (NAAT) that was performed on sputum specimens (Xpert MTB/RIF test) [6-7] and the result was positive with *Mycobacterium tuberculosis* sensitive to rifampicin (Table 1).

After confirming the diagnosis, the patient has started on COVID-19 treatment (anti-coagulant- remdisivir) and tuberculosis therapy (INH + RMP + PZA + EMB). Suddenly we noticed serious and recent decreased in platelets levels (34×10^3/uL). We asked for a bloody consultation which showed: elevated in D-Dimer levels (4,100 mg/l), decreased fibrinogen (1.5 g/L), Prothrombin T (PT: 26% to 25%, 4 sec) (Table 2). Peripheral blood smear: Segmented cells, red blood cell counting, he suggest DIC as a complication of COVID-19 and we quickly started treatment with plasma transfusion, transfusion of platelets, anti-coagulant medication, corticosteroids.

After two days of treatment we noticed significant clinical improvement (he does not need oxygen therapy during the recovery period) and laboratory tests improvement: Elevated platelet levels, decreased in D-Dimer level, elevated fibrinogen, pt (26% to 25%, 4 sec).

Finally the patient is discharged in good health from the hospital and continued his tuberculosis therapy with drug tolerance and with no another complications of COVID-19 infection.

Discussion

This case has several important points to be noticed

The first point: Is in the past, the co-infection of TB has been reported in the epidemics and pandemics of other viral diseases like SARS, MARS, etc. [8-9]. Data on the coincidence of TB and COVID-19 are limited. So far, there have been a few studies describing

Table 1: Diagnostic tests of COVID-19 and TB.

Diagnostic tests of TB Genetic assay	April 11th, 2021 GeneXpert Suptum (+)
Diagnostic tests of COVID- 19 Genetic assay	April 11th, 2021 Throat and nasal swab (RT-PCR) assay
COVID -19 IGM	Positive
COVID-19 IGG	Negative

Table 2: Summary of the results of the patient's tests at the time of admission to the hospital.

Test	The First day of Admission	The fourth day	After 2 days of treatment
WBC	11.6×10^3/uL	13.6×10^3/uL	9.1×10^3/uL
RBC	3.19×10^6/uL	3.19×10^6/uL	2.98×10^6/uL
HGB	9.00 g/dL	9.00 g/dL	8.8 g/dL
PLT	220×10^3/uL	34×10^3/uL	52×10^3/uL
ESR	95 mm (1 h)	110 mm (1 h)	
CRP	65 mg/l	90 mg/l	
D.Dimer	1400 mg/l	4,100 mg/l	
PT	90% - 14.3 sec	26% - 25.4 sec	60% - 16.44 sec
INR	1.13	2.26	1.38
Fibrinogen	3.00 g/L	1.5 g/L	
ALT	87 U/L	90 U/L	
AST	45 U/L	46 U/L	
LDH	900 U/L	1292 U/L	1030 U/L

cases of co-infection with MTBc and the SARS-CoV-2 virus [6]. Polarized views have been reported regarding the course of SARS-CoV-2 infection in patients with active TB. The first cohort analysis to assess the relationship between TB and COVID-19 was prepared through an international collaboration and included 49 cases of co-infection identified in 8 countries and revealed a higher mortality rate among the elderly with a history of tuberculosis [10]. Chen et al. reported that tuberculosis increased susceptibility to COVID-19 and exacerbated its symptoms [11].

The second point: Is DIC is a rare and serious condition with high mortality rate and few studies describing cases of COVID-19 complicated by DIC [12]. The present case did not have severe clinical symptoms of COVID-19, but the patient showed a rare and serious complication. It has been previously reported that COVID-19 can predispose patients to DIC and venous thromboembolism, supposed to be due to excessive activation of the coagulation cascade and platelets [11]. Due to the importance of progression of coagulopathy into DIC, it is necessary to pay greater attention to the appropriate diagnosis of coagulation disorders in patients with COVID-19 by the measurement of D-dimer, PT, fibrinogen, and platelet count [13], as performed in the present study.

Third point: Is our case is particularly interesting and because therapeutic success was achieved despite the coincidence of COVID-19 complicated by DIC and Tuberculosis.

Conclusion

The clinicians should have a high index of suspicion in the present pandemic and should consider evaluating patients for both TB and COVID-19, and importance of giving attention to severe complications that may occur in patients even before emerging ordinary symptoms of the disease that can cause serious problems for patients and make the management difficult. In the current case, the patient developed DIC without any introductory symptoms.

Large studies from various centers around the globe are imperative for formulating the new management guidelines for the tow infections.

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