Case report

COVID-19 in a patient with active tuberculosis: A rare case-report

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ARTICLE INFO

Keywords:
COVID-19
Tuberculosis
Acute respiratory failure
High flow nasal cannula

ABSTRACT

Scarcely data exist about the clinical features of COVID-19 in patients with concomitant active and/or latent tuberculosis (TB). This rare case-report outlines the diagnosis, management and outcome of a sixty year old hypertensive and diabetic patient with serious COVID-19 pneumonia and underlying active TB. The patient was treated successfully in a COVID-19 designated intensive care unit in Saudi Arabia.

1. Introduction

Coronaviruses cause disorders that range from common cold to severe clinical syndromes such as the Middle East Respiratory Syndrome and the Severe Acute Respiratory Syndrome [1,2]. The novel coronavirus SARS-CoV-2 disease (COVID-19) pandemic, which started last December 2019 in China, is still spreading [3]. 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, sepsis and multi-system organ failure [4-8]. Surely, infection with Mycobacterium tuberculosis remains the top cause of death due to an infectious disease. In theory, tuberculosis (TB) could predispose to the development of COVID-19; however, data and experience with COVID-19 and associated TB are lacking. This report briefly outlines the first case of COVID-19 in a patient with active tuberculosis in Saudi Arabia.

2. Case presentation

A sixty year old hypertensive and diabetic Asian male was admitted, in March 2020, to the emergency department of our COVID-19 health care center due to recent onset fever (38.6°C), persistent productive cough, chest pain, myalgias, fatigue and respiratory distress. The patient had a past history of TB according to his relatives; however, no medical records were available as he was treated outside Saudi Arabia. He has had a past history of TB according to his relatives; however, no medical records were available as he was treated outside Saudi Arabia. He has mentioned unprotected contact with his cousin who has recently recovered from COVID-19 without sharing any further information.

Physical examination revealed decreased breath sounds at the lung bases. His saturation of peripheral oxygen (SpO2) was 72%, on room air but he had no respiratory distress. Portable chest X-ray showed bilateral interstitial infiltrates (Fig. 1). Electrocardiogram, cardiac enzymes, coagulation profile and echocardiography were normal. Also, laboratory findings were normal apart from lymphocytopenia (0.59 × 10⁹/L, normal: 1.1–3.2 × 10⁹/L), and increased C-reactive protein [243.3 mg/liter, normal: 0–7 mg/liter], lactate dehydrogenase [944 units/liter, normal: 100–190 units/liter], and ferritin (876 ng/ml, normal: 23–336 ng/ml). Admission chest computed tomography (CT) scans revealed diffuse bilateral ground-glass opacities (Fig. 1B and C). Nasopharyngeal swabs confirmed COVID-19 by Real-Time-Polymerase-Chain-Reaction (RT-PCR) assays using Quantinova Probe RT-PCR kit (Qiagen) in a Light-Cycler 480 real-time PCR system (Roche, Basel, Switzerland) [9-11]. The patient was admitted to one of the 100 isolation chambers designated for COVID-19 supportive care within our 200-bed polyvalent intensive care unit (ICU), which is the largest in the Middle East. He underwent a full diagnostic work-up for other viral, bacterial, mycobacterial and systemic disorders. A higher level of respiratory support via a high flow nasal cannula (HFNC) was initiated (flow: 60 L/minute, fraction of inspired oxygen 40%) along with awake prone positioning 20 hours daily. The rate of oxygenation index [(ROX): oxygen saturation/(fraction of inspired oxygen x respiratory rate)] was maintained over 6 for the upcoming 48 hours indicating successful oxygenation [12]. Empiric therapy for COVID-19 with lopinavir/ritonavir and ribavirin for 14-days, dexamethasone for 7 days, and prophylactic anticoagulation along with supportive ICU care was administered as per hospital protocol [13]. Interestingly, the nucleic acid amplification test

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https://doi.org/10.1016/j.rmcr.2020.101146
Received 27 June 2020; Received in revised form 30 June 2020; Accepted 30 June 2020
Available online 4 July 2020
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inflammation biomarkers and lymphocytopenia were evident, upon 
management as previously reported [20]. In this case, increased 
and awake prone positioning has been effective in his respiratory 
patient has made an uneventfully recovery. The application of HFNC 
carefully patients under treatment for COVID-19 and TB for side-effects 
aforementioned risk is real [17]; hence, clinicians should monitor 
side-effects (i.e., liver toxicity). Although not recorded in our case, the 
ease and poor prognosis in COVID-19 [4] of combination therapies and drug-drug interactions. Fortunately, our 
nation of first-line anti-TB therapy and antiviral treatment for COVID-19 
requiring second line treatment have been reported [17]. The combi-
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should have theoretically increased the risk for the occurrence of side-effects (i.e., liver toxicity). Although not recorded in our case, the 
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infammation biomarkers and lymphocytopenia were evident, upon 
admission, which have been linked to extensive lung parenchymal dis- 
dease and poor prognosis in COVID-19 [4–8]. Whether a correlation 
exists as well between these laboratory abnormalities and the 
underlying TB is uncertain. In conclusion, larger prospective studies are 
clearly required to investigate further the diagnosis, management and 
clinical course of COVID-19 patients with active and/or latent TB.

Declaration of competing interest

The authors declare that they have no known competing financial 
interests or personal relationships that could have appeared to influence 
the work reported in this paper.

Abbreviations

SARS-CoV-2 disease COVID-19
ICU intensive care unit
RT-PCR Real-Time-Polymerase-Chain-Reaction
CT computed tomography
TB tuberculosis
NAAT nucleic acid amplification test
HFNC high flow nasal cannula

Funding

This research did not receive any specific grant from funding 
agencies in the public, commercial, or not-for-profit sectors.

Ethical approval

The study was approved by the Institutional Review Board of King 
Saud Medical City, Riyadh, Kingdom of Saudi Arabia [H-01-R-053, 
IORG0010374, H1RI-May 20]. Written informed consent was obtained 
from the patient.

Credit authorship contribution statement

Fahad Faqihi: Investigation, Writing - original draft. Abdulrahman 
Alharthy: Investigation, Validation, and Data Analysis. Alfateh Noor: 
Investigation, Validation, and Data Analysis. Ahmed Balshi: Validation, 
Writing-original draft. Abdullah Balharmar: Validation, Writing-original 
draft. Dimitrios Karakitsos: Conceptualization, Supervision, Writing - 
review & editing.

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