

A Report of an Iranian COVID-19 Case in a Laparoscopic Cholecystectomy Patient: A Case Report and Insights

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Abstract

Background: The latest outbreak of coronavirus (2019-nCoV), emerging in Wuhan, China, has spread exponentially in 2019. Management of gallbladder stones during COVID-19 pandemic may be challenging. We report an Iranian COVID-19 Case in a Laparoscopic Cholecystectomy Patient.

Case Presentation: In the present study, we documented a case of COVID-19 in an Iranian patient for laparoscopic cholecystectomy and established the diagnosis, symptoms, and treatments of the case in order to provide non-emergent surgical procedure triage guidelines. **Conclusion:** This case highlights the importance of good collaboration between doctors and the authorities of public health in Iran, plus the demand for urgent exchange of clinical experience and knowledge with regard to the treatment of this infectious disease.

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Introduction

The outbreak of respiratory disease was reported in Wuhan, Hubei Region, People's Republic of China (PRC) on December 31, 2019, which later was shown to have been induced by a novel coronavirus.¹ In China and elsewhere in the world, COVID-19 spread quickly. This novel virus has been labeled severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) by the International Committee on Taxonomy of Virus and has been named coronavirus disease 2019 (COVID-19) by the World Health Organization (WHO).² SARS-CoV-2 is strongly connected to SARS-CoV and MERS-CoV responsible for earlier epidemics with serious morbidity and mortality. Other countries in Asia, including Iran, are among the affected ones beyond China with a reported number of 12307 cases and 259 deaths as of Feb 1, 2020. More than 50,468 laboratory-confirmed cases have been recorded in Iran at present and the number of cases is increasing on a daily basis.³ Here, on 21 Feb 2020, a COVID-19 case is presented in Shiraz, Iran, in this study.

Case Presentation

On Feb 21, 2020, a 46-year-old woman was scheduled

for laparoscopy cholecystectomy five months before her operation because of symptomatic gall stone. She had no past medical problems; she neither reported any other symptoms, nor had a history of traveling abroad. Moreover, she was not exposed to contagious COVID-19-infected patients or to those suspected of the infection. The patient signed the written informed consent form to participate in the study.

The day before her operation, she said she had been coughing for three days without chills or fever. No pathologic findings were shown by her chest X-ray and her blood examinations were normal as well. The patient received prophylactic antibiotic (Cephazolin 1000 milligram stat) to ease her cough. Also, her laparoscopic cholecystectomy demonstrated gallbladder distention with omental adhesion although there was no sign of an abscess. The first day after her operation, she did not have any complaints, tolerated the diet, and could walk appropriately. In the second post-operation day, she was reported to have pleuritic chest pain, air hunger with dyspnea, headache, and myalgia. However, her coughing did not change at all. Her vital sign was unstable as follows: temperature 103.4 F, heart rate 135-140, and respiratory rate 36-40,

O₂sat: 80%. Her fever followed a spiky pattern, along with normal chest auscultation. Moreover, abdominal physical examination was normal except for the pain in the port sides, and there was not any sign of deep vein thrombosis (DVT) in the lower extremities. For keeping her saturation above 85%, she required supplemental oxygen using a mask (O₂:4-6 lit/min). It is noteworthy that several investigations were performed to evaluate her complaints. Moreover, her blood test showed leukocytosis 12800×10 /L with 82% neutrophil, 11% lymphocyte, and 11 mg/dl C-reactive protein (CRP) level. Echocardiogram was done, showing a normal status. Her chest X-ray showed interstitial infiltrations on both sides. A high-resolution chest computed tomography (CT) scan was conducted with intravenous (IV) contrast (Figures 1 and 2), showing bilateral patchy alveolar infiltrations that appeared like ground-glass opacity (GGO). Also, bilateral basal consolidations were noted with mild effusion. She received empirical antibiotics to cover aspiration pneumonia (Ceftriaxone 1gram q12h IV and Clindamycin 600 mg q8h IV) with control of fever. The result was that her fever, dyspnea, and chest pain decreased, and she was afebrile after four days. She was discharged from the hospital in good condition. Two weeks later, Iran's Health Minister warned about COVID-19 infection. We called the patient and she said she had been in good condition; however, her husband was admitted to hospital for acute respiratory distress syndrome (ARDS) because of COVID-19. Finally, he was also discharged after 14 days.

Discussion

At the end of 2019 in Wuhan, China, a novel coronavirus was reported. Out of seven subtypes of human-infective

coronaviruses, the beta-coronaviruses lead to potentially dangerous diseases. The massive dissemination of COVID-19 has contributed to an outbreak in China which is now extended worldwide. A total of 626343 cases globally have so far been diagnosed.⁴

Furthermore, irrespective of the unsatisfactory performance of the real-time reverse transcription-polymerase chain reaction (RT-PCR) test, some doctors announced that the above-mentioned patient was infected with COVID-19, based on the findings of the patient's CT scan, clinical signs, and laboratory tests.

The major symptoms of COVID-19 infection are primarily cough, fever, and dyspnea, as shown by the first reports in China.⁵ Similarly, throughout the second day after the operation, our patient showed moderate fever, dyspnea, and moderate hypoxemia. Bilateral infiltrating pneumonia was concurrently shown by the chest X-ray. Also, the way the patient's symptoms developed resembled those stated in the WHO announcement in which the COVID-19 most prevalent signs include fever, tiredness, and dry cough. Although it is typically mild with a gradual beginning, there might be also symptoms like aches and pains, runny nose, nasal congestion, diarrhea, or sore throat.⁵ In addition, China studies using high-resolution CT showed that all patients reported signs of bilateral pneumonia of varying severity, including those in mild cases, suggesting that if the respiratory tract is lower, it provides a more suitable location for the replication of SARS-CoV-2.^{6,7} Clinical characteristics of 2019 novel coronavirus (2019-nCoV) pneumonia include fever, dry cough, and asthenia.⁸ Nasal obstruction, runny nose, and diarrhea are usually experienced in few cases. In severe cases of the disease, dyspnea normally

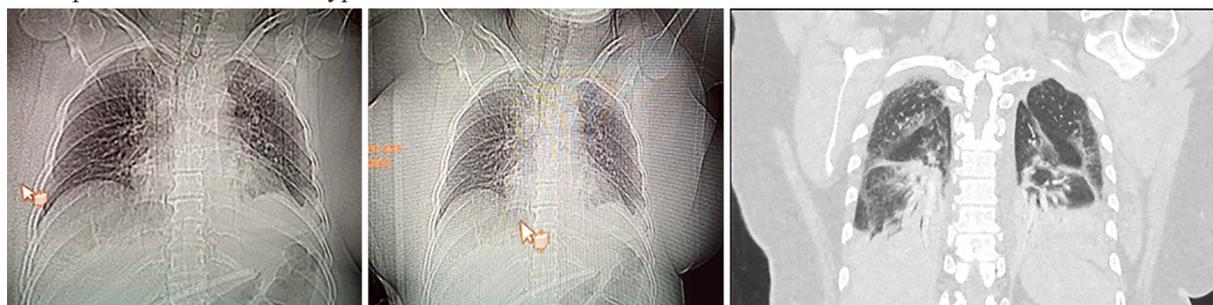


Figure 1: Chest X-ray in the patient with COVID-19

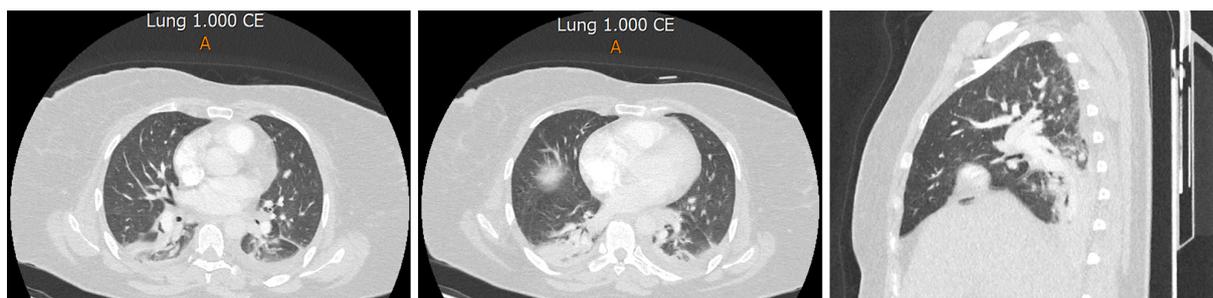


Figure 2: Chest CT images reveal multifocal ground glass opacities with consolidation related with 2019 novel coronavirus (2019-nCoV)

arises one week after the infection is developed, whereas ARDS, metabolic acidosis, septic shock, and coagulation dysfunction are observed in patients with critical conditions.⁹ At the outset, it was shown that the patients' signs of the disease were moderate, the complete number of leukocytes and neutrophils increased, and treatments by antiallergic and anti-inflammatory medicines were effective.^{5, 10}

Patients with positive RT-PCR test results and confirmed COVID-19 showed several laboratory abnormalities, including high CRP, white blood cell (WBC), neutrophil and lymphocyte, that were observed in our patient. Moreover, lymphopenia was reported to be a weak predictive factor for SARS. These results are likely to account for the presentation of the common biomarkers in viral pneumonia such as COVID-19.^{11, 12}

Given the normal status of the chest radiograph in the patients with mild or no symptoms, chest CT is potentially an instrument that contributes to the diagnosis of the infection, along with other tools such as clinical symptoms and any travel history. Recently, according to the findings obtained from a series of 1014 cases, chest CT has been considered to be more sensitive for the diagnosis of 2019-nCoV infection.⁶ Chest CT presents a fast-paced and easy screening method for 2019-nCoV-associated presumed pneumonia. It is also now used by the National Health Committee to diagnose and treat 2019 nCoV infection (trial version fifth).¹³ GGOs are the primary CT results in patients with COVID-19, as in viral pneumonia owing to other etiologies.¹⁴ Reticular and/or interlobular septal thickening, and consolidation are common associated findings. Several instances were also found of crazy-paving trends. Also, in the absence of GGO, pure consolidation is of less prevalence and these lesions are accompanied by bilateral lungs.¹⁵ Nevertheless, at the initial step of COVID-19 when the disease is diagnosed, a normal CT scan can be found in a few patients.¹⁶ Additionally, this study showed that, prior to the operation day, the chest X-ray of our patient did not present any pathologic findings; moreover, after the operation, her chest X-ray displayed interstitial infiltrations on both sides.

The patient in this study became afebrile 10 days after being admitted to the hospital, even without antiviral treatment. Although her chest X-ray demonstrated signs of pneumonia, there were no reports of respiratory failure. Nonetheless, how to best treat COVID-19 remains still unknown. The debate of this case has been the time and priority of elective surgery during pandemic of infection. While we did not manage to reform it, the laparoscopic cholecystectomy of the patient under examination requires specific reflection for excluding gas via the port side. Consequently, to secure the patients and

medical teams' safety during elective operations, it is obviously essential to develop some triage guidelines, on which the hospital performance must be based center by center. The chest radiography for the patient in this study reported mild cough lacking any evidence of pneumonia the day before the operation. In the initial stages of the clinical course of 2019-nCoV infection, these nonspecific symptoms of the mild disease cannot be easily distinguished clinically from those of various other common infectious diseases, especially during the winter when respiratory viruses are prevalent.¹⁰

2019-nCoV can be transmitted to other people by the infected individuals even before the symptoms of the disease emerge. The epidemiological investigation of these patients has confirmed that the virus is characterized by human-to-human transmission and high levels of infectivity. It is also revealed that respiratory droplets are the major transmission route, followed by a close touch.¹⁷ The incubation period is reported to be an overall number of three to seven days, with the longest period not exceeding 14 days.¹⁸ Upon her discharge from the hospital and recovery in the house, the patient had transmitted the disease to her husband who was later transferred to the hospital for treatment.

The estimated fatality rate in the general population is low, almost 1-6%. Nonetheless, the patients with older age or underlying medical conditions account for most of the critical cases which are considered as the high-risk groups, thus in need of careful attention.¹⁹

Given the high reciprocal exposure of a great number of healthcare providers with the COVID-19-infected patients in the operation rooms and therapeutic settings, the dissemination risk of such infectious diseases is extremely high, especially in asymptomatic carriers.

Conclusion

To conclude, the present study provides a report of a COVID-19 case in the post-operation phase, suggesting that such patients may show uncommon clinical symptoms. Therefore, upon facing a surgery candidate with unspecified viral clinical manifestations, and without any microbiological isolation, all the medical personnel should be informed and made aware so as to consider COVID-19 as a potential diagnosis, particularly in epidemic regions. Therefore, the medical personnel and healthcare providers are advised to postpone the time of surgery as well as to develop triage guidelines for selecting those patients whose operation is mandatory in all of the medical centers.

Abbreviations

WHO, world health organization; COVID-19, coronavirus disease 2019; SARS-CoV-2, severe acute

respiratory syndrome coronavirus-2; RT-PCR, real-time reverse transcription-polymerase chain reaction; ARDS, acute respiratory distress syndrome; GGO, ground-glass opacity; CT, computed tomography; CRP, C-reactive protein; DVT, deep vein thrombosis; PRC, People's Republic of China.

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Authors' Contributions

All authors contributed to collecting data and writing the manuscript. All authors have read and approved the manuscript.

Availability of Data and Materials

The dataset analyzed during the current study are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate in the Study

This study conforms to the *Declaration of Helsinki* regarding research involving human subjects and the patient signed the written informed consents form. The ethical code is IR.SUMS.REC.1399.168.

Consent for Publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Conflict of Interest: None declared.

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