

# Recovery of COVID-19 Patient with a Complicated Diabetic Lung Abscess in Hypertensive and Smoker Old Man from Najran of KSA

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**Abstract**— Male, older age, diabetes, severe asthma, hypertension, and various other medical conditions significantly increase hospitalization and death in COVID-19 patients.

*Mortality seems to be about threefold higher in people with diabetes mellitus (DM) than the general death of COVID-19 patients.*

*Our patient is 52 years old male patient admitted to the hospital complaining of chest tightness, shortness of breath, and productive cough over the last week. He was on antidiabetic and antihypertensive drugs. The investigations showed that he has uncontrolled type 2 DM (T2DM), right-sided pneumonia and proves to be a positive COVID-19 case. He was treated with antibiotics and anti-COVID-19 combination therapy (Lopinavir/Ritonavir) and hydroxychloroquine for ten days in a negative pressure isolation room. He was discharged after 24 days with an excellent general health condition.*

**Index Terms**— Keywords: COVID-19; Diabetes mellitus; lung abscess; hypertension; Najran.

## INTRODUCTION

Since the last few decades, the prevalence of T2DM in SA is growing at a frightening rate. It has been estimated to be 2.5% in 1982 [1], while in the last few years, it has been reported to be one-fourth of the adult population [2].

The primary complications of T2DM, whether globally or among the Saudi population, are peripheral neuropathy, nephropathy, retinopathy, and cardiac complication [3] [4]. Diabetic patients have impaired immunity; therefore, infections, particularly influenza and pneumonia, are frequent and more severe in older people with T2DM [5] [6]. Lung abscess is a rare and serious complication of DM [7] [8].

The pandemic of coronavirus disease (COVID-19) was caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), causing substantial morbidity and mortality [9] [10]. Older age and the presence of DM, hypertension, obesity, and other various diseases significantly increase the risk of hospitalization and death in COVID-19 patients. Mortality seems to be about threefold higher in people with diabetes than the general mortality of COVID-19 [11] [12] [13].

The first case of COVID-19 in the Kingdom of Saudi Arabia (KSA) was reported on March 2, 2020 [14]. Since then and till August 22, 2020, more than 306,370 positive cases reported in almost all KSA cities [15]. Najran is one of the least cities infected by COVID-19.

In the current case, we are reporting recovery from COVID-19 with concomitant various serious diseases.

## I. CASE REPORT

### II. First-time presentation:

On 5<sup>th</sup> April 2020, a 52-year-old white male known to have T2DM and hypertension presented to the emergency department with a chief complaint of shortness of breath and productive cough. He reported that his symptoms started seven days before his presentation. At the time of the presentation, he was diagnosed with community-acquired pneumonia, isolation in a negative pressure room, and treated with antibiotics and hydroxychloroquine to cover the possibility of COVID-19. A week before admission, he had a right chest tightness. However, He denied camping, spelunking, or hunting activities. Also, he stated that he has no history of previous contact with positive COVID-19 cases. A brief review of the system found that the patient was negative for fever, night sweats, palpitations, chest pain, nausea, vomiting, diarrhea, constipation, abdominal pain, neural sensation changes, muscular changes, and increased bruising or bleeding. He was diagnosed with diabetes 20 years ago and hypertension for the last 12 years, for which he takes metformin 500 mg orally three times a day (TID), Gliclazide 30 mg orally twice a day (BID), amlodipine 5 mg every day (QD). The patient has no history of previous surgery. Also, he stated tobacco use is 33 pack-years; however, he denied alcohol or illicit drug use. He is married in a monogamous relationship. Moreover, there were no known medicine, food, environmental allergies.

III. On physical examination, he was well-appearing but anxious. He was conversing freely without respiratory distress. His temperature was 37.6°C, Oxygen saturation was 97% on ambient air, respiratory rate 20 breaths/minute, heart rate 79 beats/minute, and blood pressure 130/88 mmHg. Chest examination showed diffuse crackles and a right-base coarse crepitation. He had a regular pulse rate and rhythm with no murmurs, rubs, or gallops.

### IV. Laboratory investigations

On April 05, 2020, initial work-up from the emergency department revealed leukocytosis with a leukocyte count of 14,000/μl with a mild neutrophil elevation (87%) and low lymphocyte (10.8%); hemoglobin level was 16.1 g/dl;

platelets were normal upper level (409000/  $\mu$ l). The next day, Glycosylated Hemoglobin (HBA1C) was measured and was high, at 9%. Inflammatory tests such as C - reactive protein (C-RP) and Erythrocyte Sedimentation Rate (ESR) were also measured and were 9.6 mg/dl and 70 mm/hr., respectively. Sputum and blood cultures were drawn and were negative for bacterial growth and Gram staining. A trained healthcare provider took samples of blood and nasopharyngeal swabs for MERS-COV, COVID-19, and Influenza to detect the mentioned viruses. A real-time reverse transcriptase-polymerase chain reaction (RT-PCR) assay was definite evidence to confirm the infection's presence. Therefore, COVID-19 was positive.

#### V. *Imaging studies:*

VI. Chest X-Ray: showed heterogeneous opacification in the right lower zone with obliteration of the right cost-phrenic angle (minimal pleural effusion), as shown in Figure 1.

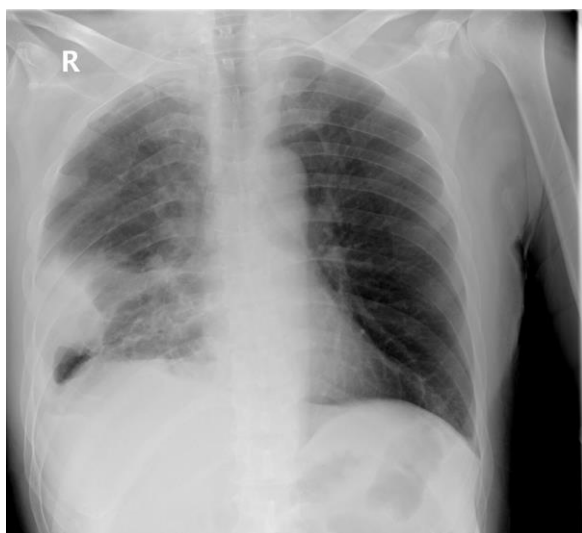


Figure 1: initial Chest X-ray, 5<sup>th</sup> April 2020.

Chest Computerized Tomography (CT): CT Chest was performed on the 8<sup>th</sup> of April 2020 to further the pulmonary diagnosis; it showed Right-sided multi-lobulated pleural collections with concomitant lung abscess, as shown in Figure 2 A-F.

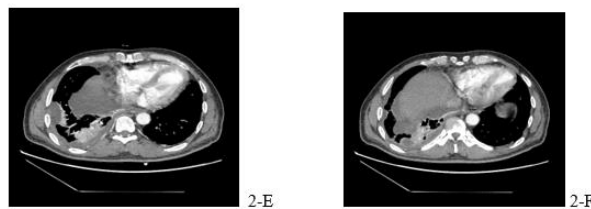
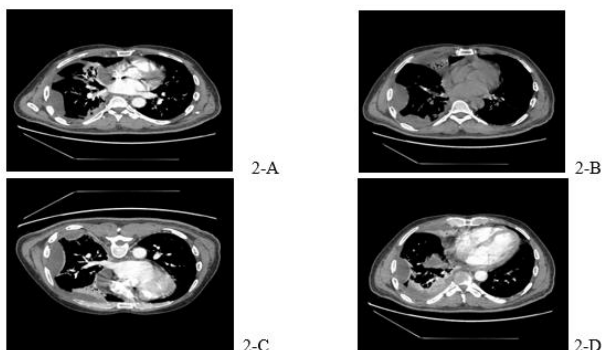


Figure 2. Initial chest CT, 8<sup>th</sup> April 2020.

#### *Confirmatory evaluation:*

VII. Finding pulmonary consolidation on the CT of the chest, pulmonary consultation was obtained. As this was his third day of broad-spectrum antibiotics for a bacterial infection and he was not getting better, it was decided to perform diagnostic CT-guided pleural tapping to look for any atypical or rare infection and to rule out malignancy, then the patient refused.

VIII. Based on the laboratory tests, Tuberculosis was excluded by a negative Montoux test, and Acid Fast Bacilli smear three times from sputum were negative. MERS-COV and Influenza were negative, and COVID-19 was positive. Therefore, the diagnosis of COVID-19 infection with lobulated pleural effusion and lung abscess was made.

#### IX. *Management*

Lung abscess treated with broad-spectrum antibiotics of Meropenem and vancomycin for three weeks. It was given to cover the possibilities of any abscess-forming organisms, including MRSA. Then it was shifted to oral Augmentin and Linezolid for two weeks when the patient was discharged on April 29, 2020.

COVID-19 infection was managed with combination therapy of (Lopinavir/Ritonavir) 400/100 mg (= two tablets of 200/50 mg BID) for ten days and hydroxychloroquine (400 mg BID in the first day then 200 mg BID for four days) in the isolation room.

On April 18, 2020, the leukocyte count declined to reach the normal value at 7100/ $\mu$ l, and the neutrophil and lymphocyte were within the normal range at 45.1% and 37.1%, respectively; hemoglobin level was 15 g/dl, and ESR was 40 mm/hr. Interestingly, the response was excellent, monitored with a chest X-ray, as shown in Figure 3.

The patient stayed at the hospital until the 29<sup>th</sup> of April, 2020, and then was discharged as a consequence of his improvement with the treating physician's decision.

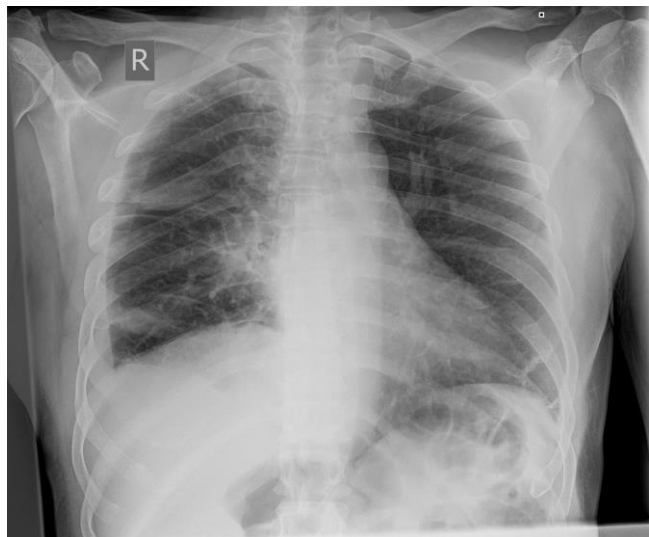


Figure 3: Inpatient Chest X-ray, 19<sup>th</sup> April 2020.

#### X. Follow up

In two months of follow-up in the office on June 7, 2020, the patient reported a total resolution of the presenting symptoms, with successful smoking cessation.

Blood investigations were done again on the day of the visit. They showed normal white blood cells at 6810/ $\mu$ l, the neutrophil and lymphocyte were normal at 50% and 31.7%, respectively, hemoglobin was 15 g/dl, the platelet was also normal at 324000/ $\mu$ l. The HbA1c was 9.3%. C-RP and ESR were normal.

Follow up CT-chest with reveals interval resolution of the previously demonstrated lung collections with some residual scarring, central bronchiectasis changes, and patchy areas of ground-glass attenuation at the right lung with no nodules or masses, as shown in Figure 4.

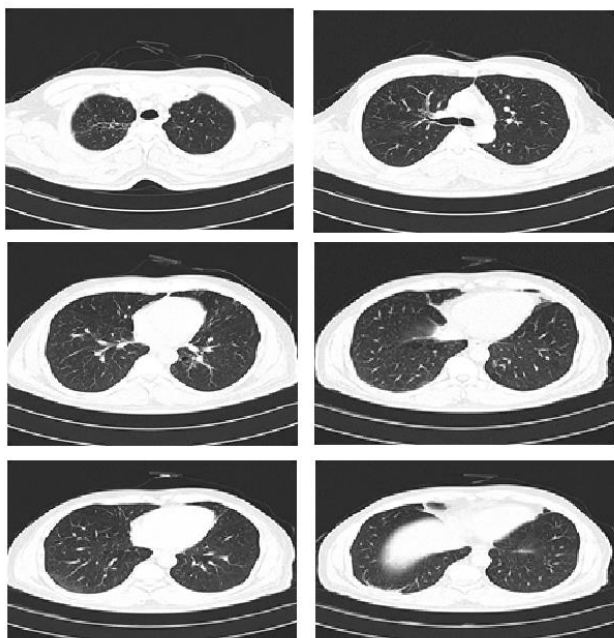


Figure 4: Follow up chest CT, 7<sup>th</sup> June 2020.

#### DISCUSSION

Up to date, only three reports concerning the development of lung abscess complicating COVID-19 pneumonia [16] [17] [18]. In our case, we are reporting a recovery of COVID-19 associated with lung abscess as a concomitant disease in addition to the other serious diseases such as hypertension and uncontrolled diabetes mellitus in a heavy smoker old man.

Although COVID-19 was first reported in Wuhan, China, in late December 2019 [19], the first reported case in SA was on March 2nd, 2020. Since then, a substantial significant increase in the positive cases of COVID-19 involving almost all Saudi cities including, Najran, the southern province of SA.

The current case is a Saudi citizen from Najran city. He presented to the hospital complaining of respiratory distress and a productive cough. His investigations showed that he is infected with COVID-19 and has the most severe diseases such as uncontrolled DM, hypertension, pneumonia, and lung abscess; besides, he is a heavy smoker and over 50 years old male patient. It is well-known that these pre-existing medical conditions are more likely to be infected and are at a higher risk for complications and death from COVID-19 [11] [12] [13]. The patient was discharged after 24 days with an excellent health condition. The close, intensive, and adequate medical care has had a significant role in recovering this patient with such multi-fatal conditions.

#### CONCLUSION

To the best of our knowledge, this is the first case report of a recovered COVID-19 patient presented with a concomitant lung abscess, uncontrolled DM, and hypertension in a heavy smoker old male patient.

#### ETHICAL APPROVAL

This study was approved by the Institutional Review Board (IRB) committee General Directorate of Health Affairs Najran, KSA. IRB log number: 2020-19 E

#### CONSENT

Written informed consent was obtained from the patient for publication of this case report and any accompanying Figures.

#### DECLARATION OF INTERESTS

All authors declare no competing interests.

#### AUTHOR CONTRIBUTIONS

Mohammed Al-Noaemi conceptualized and wrote the paper; Ali Swedan is the consultant physician treating the case and supply the clinical data; Hadi Al Sulayyim and Asmaa Hammoodi participated in the follow-up of the patient and revises the text; all authors approved the final manuscript.

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## APPENDIX

Appendixes, if needed, appear before the acknowledgment.

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Use the singular heading even if you have many acknowledgments. Avoid expressions such as “One of us (S.B.A.) would like to thank ... .” Instead, write “F. A. Author thanks ... .”

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