

COVID-19 on a Patient with Familial Hypercholesterolemia

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Abstract

Covid-19 is disease caused by a novel coronavirus also known as severe acute respiratory syndrome coronavirus 2, a name that describes the disease if causes. It was first detected in Wuhan, China in December of 2019 where it arose to spread in the entire world to cause the global COVID-19 Pandemic. This virus causes severe bilateral pneumonia and acute respiratory distress syndrome which requires to be managed in intensive care unit requiring mechanical ventilation. We present a 77-year old Covid-19 patient with familial hypercholesterolemia and stroke who presented with the main symptom of confusion. After exclusion of our first differential that was stroke, we tested the patient for Covid-19 and resulted positive. After treatment with oxygen, steroids and antibiotics, the patient recovered and was discharged. An important lesson from this patient was that the presentation of Covid-19 has various types and manifestations.

Keywords: SARS-CoV-2, Stroke, Hypoxia, Familial Hypercholesterolemia.

Abbreviations

O2- Oxygen
TIA- Transient Ischemic Attack
URI- Upper Respiratory Infection
CT- Computerized Tomography
Q8h- every 8 hours
Q24h- every 24 hours
MI- Myocardial Infarction
WNL- Within Normal Limit
NYC- New York City
IV- Intravenous
IL-Interleukin
PRN- as needed
PCSK-9 (Protein Convertase Subtilisin/Kexin type 9).

Introduction

COVID-19 is a disease caused by a novel coronavirus also known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which is an enveloped, non-segmented positive-sense RNA virus that belongs to the beta-coronaviride family [1]. Despite the fact that asymptomatic carriers are not tested and confirmed, the estimated mortality of the virus remains high. By an estimation, the mortality rate in china is 5.6%, and in the

remainder of the world it is 15.2% [2]. According to Worldometers database there are 22,914,417 confirmed COVID-19 cases as of 21 August 2020 [3]. We present a case of COVID-19 patient with familial hypercholesterolemia, who presented with dyspnea, upper respiratory tract infection and confusion.

Case presentation

A 77 year old patient was brought to emergency room with symptoms of confusion, general weakness, lethargy, headache, rhinorrhea, anosmia and hypogeusia that started four days ago. Per daughter, he usually is independent in the activities of daily living, and is able to recall the names and dosages of his medication. Yesterday he could not recall speaking to her by phone, even though they were on the phone five times. Also his handwriting was freshly disordered. She reports that he has been sleeping through most of the days recently. He is currently on an open label clinical research trial with injectable PCSK-9 inhibitor, but he did not receive it in the study center because he was lethargic and confused. Brought by an ambulance, he could not recall the reason of his arrival at the ER, disoriented on time and place. He and his daughter had attended a funeral together 19 days ago. The patient had a decrease in appetite for a week, denies symptoms such as chest pain/tightness/pressure, dyspnea, shortness of breath,

cough, nausea, vomiting, diarrhea or dysuria at this time. On the date of admission, the temperature was 37.6 °C, blood pressure 133/81 mmHg, pulse 120 bpm, respiratory rate 22/min, SpO2 90% on room air. Physical exam was significant for decreased breath sounds with intermittent rhonchi posteriorly. Neurologic examination WNL. Mental examination - disoriented, confuse, slurred speech. ECG was also performed, a normal sinus rhythm, left axial deviation and inferior leads Q wave was detected which suggests an old myocardial infarction with undetermined age.



Figure 1: Chest X Ray, Shows moderate irregular ill-defined opacities in bilateral mid/lower lungs

Past Medical History

Familial hypercholesterolemia, eosinophilia, diabetes mellitus, arterial hypertension, glaucoma, benign prostatic hypertrophy, stroke, rheumatoid arthritis and myocardial infarction.

Medications - Aspirin 81mg, Carvedilol 6.5mg, Cinacalcet 30mg, Finasteride 5mg, Metformin 500mg, Repatha 420mg/month.

Social history - Former smoker with 1 PPD for 20 years, quit in 2010, current alcohol user >7 glasses per week for the past 50 years. No STD's.

Differential Diagnosis and Management

Giving his past medical history and clinical presentation our work up diagnoses was Stroke, TIA, Diabetic ketoacidosis. Due to COVID-19 concerns all patients were offered SARS-CoV-2 PCR testing and he also was isolated and admitted to hospital where he was started on nasal oxygen 3 L/min able to maintain O2 saturation of 92% and 3000ml/24h IV fluids of Glucose 5% and NaCl 0.9% simultaneously. Laboratory work up was ordered together with CT-head and chest X-ray and SARS-COV2 PCR. Chest X ray (fig.

1) scan showed moderate irregular ill-defined opacities in bilateral mid/lower lungs, suspicious for multifocal pneumonia such as an atypical viral pneumonia. A CT scan of the head was performed and it showed no evidence of acute infarction, mass or intracranial hemorrhage. At this time patient was started on IV Vancomycin 15mg/kg Q24h and oral prednisone 20mg Q8h. Patient was stable and vital signs keeps improving with O2 saturation of 94% on day one, on day 2 vancomycin was discontinued and fluids reduced to 1000ml/24h of crystalloids, O2 was reduced to 2L/min PRN. After 48h patient was discharged to be isolated and home health visits was ordered for follow up. On week 5 patient resulted negative for SARS-CoV-2.

Discussion

SARS-CoV-2 is a current pandemic situation that especially have hit hard NYC and our access to patients was limited with limited hospital capacity. Due to his past medical history, age and state of confusion at presentation which are the key comorbidity factors for most of the deaths caused from COVID-19 worldwide we had to hospitalize the patients and treat accordingly where he did amazing progress however we also follow him up after discharge. Due to lack of guidelines on SARS-COV2 worldwide, patients were treated symptomatically mainly with nasal O2, IV fluids, antibiotics and steroids. His historical value of Platelets were always at 200-250 x10/uL, at presentation they were above 500 x 10/uL which together with immobility and increase of IL 6 and IL 8 were a concern for possible thromb/emboli and we kept a close monitoring on those every 2h, luckily there was no need for Heparin as levels gradually kept lowering down.

Table 1. Relevant laboratory values

Admission	Day one	On Discharge
RBC 4.14 x 10/uL	4.16 x 10/uL	4.19 x 10/uL
HgB 12.7 g/dl	12.8 g/dl	13 g/dl
Plt 593 x 10/uL	498 x 10/uL	320 x 10/uL
WBC 8.0 x 10/uL	8.0 x 10/uL	7.1 x 10/uL
Monocytes 12.7%	10.6%	9%
Blood albumin - 2.9 g/dl	3.1 g/dl	3.9 g/dl
Blood K+ - 5.4 mEq/L	5.0 mEq/L	4.8 mEq/L
AST - 48 u/L	45 u/L	45 u/L
GGT 163 u/L	118 u/L	98 u/L
Fibrinogen - 774 mg/dl	560 mg/dl	400 mg/dl
D-dimer - 1.25 ug/ml	0.9 ug/ml	0.5 ug/ml
LDH - 313 u/L	240 u/L	180 u/L
CRP - 72.9 mg/L	40 mg/L	5 mg/L
Interleukin 8 - 20 pg/ml	16 pg/ml	10 pg/ml
Interleukin 6 - 21.0 pg/ml	15 pg/ml	9 pg/ml

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