



A COVID-19 Bilateral Peripheral Pneumonia in a Cirrhotic Patient; at Home Diverse Management; A Case Report

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Abstract

Rationale: Coronavirus disease is an important serious pandemic worldwide infection. Anticoagulants and antiplatelet medication are essential drugs in the management of COVID-19 infection. Bleeding tendency is an anxious adverse effect for these drugs in hepatic patients. Patient concerns: An elderly male COVID-19 cirrhotic patient presented to physician outpatient clinic with bilateral peripheral pneumonia. Diagnosis: COVID-19 pneumonia in cirrhotic patient. Interventions: Electrocardiography, chest CT scan, and oxygenation. Outcomes: Gradual dramatic clinical, electrocardiographic, and radiological improvement had happened. Lessons: It denotes the role of the low dose of anticoagulants, the low dose of antiplatelets, steroids, and antimicrobial therapy in the management of COVID-19 pneumonia with liver cirrhosis. Using the lowest doses of anticoagulants, and antiplatelet was the choice to avoid bleeding tendency. The mild elevations in liver enzymes indication of mild hepatic injury. The fluctuations in the synthetic function of the liver including; S. albumen, total bilirubin, prothrombin time, and INR was within normal.

Keywords: COVID-19; Coronavirus; Peripheral pneumonia; Cirrhosis; At home diverse management

Abbreviations: CBC: Complete Blood Count; COVID-19: Coronavirus Disease 2019; ECG: Electrocardiography; IV: Intravenous; IVB: Intravenous Bolus; O2: Oxygen; POC: Physician Outpatient Clinic; SGOT: Serum Glutamic-Oxaloacetic Transaminase; SGPT: Serum Glutamic-Pyruvic Transaminase; VR: Ventricular Rate

Introduction

Coronaviruses family were at first discovered in the 1930s when an acute chest infection of domestic chickens was appeared to be a result of the infectious bronchitis virus (IBV) [1]. In December 2019, series of case studies of acute respiratory illness, now named as a new descent of coronavirus-infected pneumonia (NCIP) or atypical viral pneumonia initially notified in Wuhan, Hubei Province, China [2-4]. It was described as a coronavirus disease-2019 (COVID-19) [2].

High levels of the virus in histopathological features that have been found in the liver are signal for hepatic organotropism of SARS-CoV-2 [5]. People with comorbidities (e.g. liver disease) are at higher risk for severe COVID-19 illness [6,7]. Elevated liver transaminases and abnormal liver function tests are one of the most common laboratory abnormalities in COVID-19 patients [8]. Essentially, the liver function tests (LFTs) includes alanine transaminase (ALT or SGPT) and aspartate transaminase (AST or

SGOT), alkaline phosphatase (ALP), gamma-glutamyl transferase (GGT), serum bilirubin, prothrombin time (PT), the international normalized ratio (INR) and albumin are key in clinical management [9]. These tests can be the main guide for hepatic injury and their differential diagnosis (DD) [9]. Aminotransferases are markers of hepatocellular (HC) injury [9]. Albumin is synthesized in the liver. With any liver disease, there is a fall in serum albumin, indicating reduced synthesis [9]. Prothrombin time (PT) estimates the conversion rate of prothrombin to thrombin. Except for factor VIII, all other coagulation factors are synthesized by the liver. Prothrombin time needs coagulation factors II, V, VII, and X. They are synthetic in the liver. They are pivotal in coagulation [9]. Hyperbilirubinemia is an increase in serum bilirubin levels above the normal laboratory range which is mostly due to bilirubin disorders. Hyperbilirubinemia can be classified as unconjugated or conjugated. Unconjugated hyperbilirubinemia usually results from increased production, impaired hepatic uptake, and decreased

conjugation of bilirubin [10,11]. Alkaline phosphatase is mostly increased in both cholestatic liver disease and bone disorder or osteoblastic activity [9].

Case Presentation

A 61-year-old married, farmer, Egyptian male patient presented to the Physician Outpatient Clinic (POC) with acute tachypnea, fever, and cough. Fatigue, anorexia, and dizziness were initial associated symptoms. He gave a history of fever for 3 days hours. The patient has an old history of liver cirrhosis. He also gave a recent history of contact with confirmed COVID-19 patient in the past 14 days. Upon general physical examination; generally, the patient was tachypneic, irritable, with a regular tachycardia of VR 110 bpm, blood pressure of 90/70 mmHg, respiratory rate of 34 bpm, the temperature of 40.2°C, and pulse oximeter of oxygen (O₂) saturation of 91 %. No more relevant clinical data were noted during the clinical examination. He had managed at home as COVID-19 pneumonia in a cirrhotic patient. Initially, the patient was treated with O₂ inhalation by O₂ cylinder (100%, by nasal cannula, 5L/min). Ringer solution (500 ml over 30 minutes) was immediately given. The patient was maintain treated with SC enoxaparin 20 mg twice daily), aspirin tablet (75 mg, once daily), clopidogrel tablet (75 mg, once daily), cefotaxime; (1000 mg IV every 8hours), azithromycin (500 mg PO single daily dose on the day one, followed by 250 mg PO daily on for 5 days), oseltamivir (75 mg PO twice daily only for 5 days), hydrocortisone sod succinate (100 mg IV every 8 hours), and paracetamol (500 mg IV every 8 hours as needed). The patient was monitored for temperature and blood pressure. The initial ECG on presentation showing sinus tachycardia with VR of 110 (Figure 1A). The initial complete blood count (CBC); Hb was 13.7 g/dl, RBCs; 5.18*10³/mm³, WBCs; 6.1*10³/mm³ (Neutrophils; 76.9 %, Lymphocytes: 17.8%, Monocytes; 5.3), Platelets; 96*10³/

mm³. Measured random blood sugar was; 111 mg/dl. S. Ferritin was high; 291 ng/ml. D-dimer was normal (370 ng/ml). The initial CRP was high; 75.6 g/dl. SGPT was high; 63U/L, SGOT was high; 94 U/L, alkaline phosphatase (ALP);76 U/l, S. albumen;4.7 g/dl, total bilirubin; 0.3 mg/dl, Prothrombin time;13 sec., and INR; 1.2. Serum creatinine; 0.9 mg/dl and blood urea;34 mg/dl. In the on the fifth day of management; CBC; Hb was 11 g/dl, RBCs; 4.21*10³/mm³, WBCs; 4.4*10³/mm³ (Neutrophils; 49.7 %, Lymphocytes: 26.2%, Monocytes; 24.1%), Platelets; 126*10³/mm³. CRP was; 8.12 g/dl. SGPT; 38 U/L, SGOT; 66 U/L, alkaline phosphatase (ALP);99 U/l, S. albumen;4.2 g/dl, total bilirubin; 0.7 mg/dl, Prothrombin time;12 sec., and INR; 1.3. Serum creatinine; 0.87 mg/dl, and blood urea; 36 mg/dl. In the on the tenth day of management; CBC; Hb was 12.2 g/dl, RBCs; 4.57*10³/mm³, WBCs; 6.1*10³/mm³ (Neutrophils; 58.6 %, Lymphocytes: 26.8 %, Monocytes; 14.6%), Platelets; 119*10³/mm³. S. Ferritin was high; 152 ng/ml. D-dimer was normal (380 ng/ml). CRP was; 1.02g/dl. SGPT; 32 U/L, SGOT; 50.4 U/L, alkaline phosphatase (ALP);106 U/l, S. albumen;4.3 g/dl, total bilirubin; 0.1 mg/dl, Prothrombin time;13 sec., and INR; 1.1. S. creatinine was; 0.71 mg/dl and blood urea; 29 mg/dl. The first radiological films were done on the day of presentation: Plain Chest imaging showing peripheral bilateral ground-glass pulmonary consolidations (Figure 2). Chest CT scan showing peripheral bilateral lungs ground-glass consolidations (Figure 3A). The last radiological film was done on the second day of admission; a Chest CT scan was done within 14 presentations showing nearly dramatic improvement of the above ground-glass pulmonary consolidations (Figure 3B). Echocardiography was normal. COVID-19 pneumonia in a cirrhotic patient was the most probable diagnosis. ECG tracing was taken within 20 days of treatment showing normal sinus rhythm with VR of 85 (Figure 1B). Within 14 days of the above management, the patient finally showed complete clinical, radiological, and laboratory improvement.

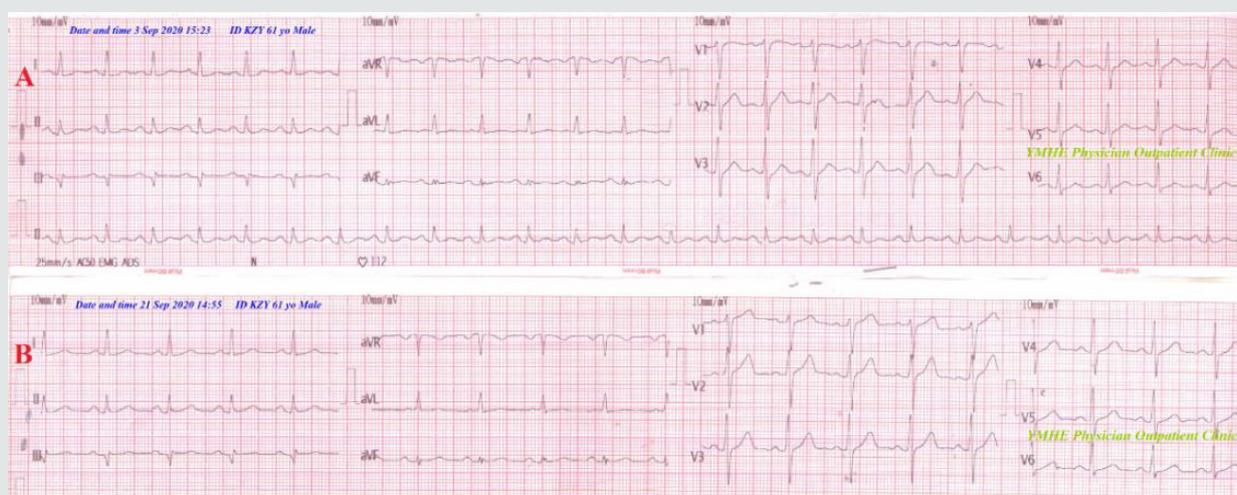


Figure 1: Serial ECG tracings; A. tracing was the initial ECG on presentation showing sinus tachycardia with VR of 110. B. tracing was taken within 20 days of treatment showing normal sinus rhythm with VR of 85.

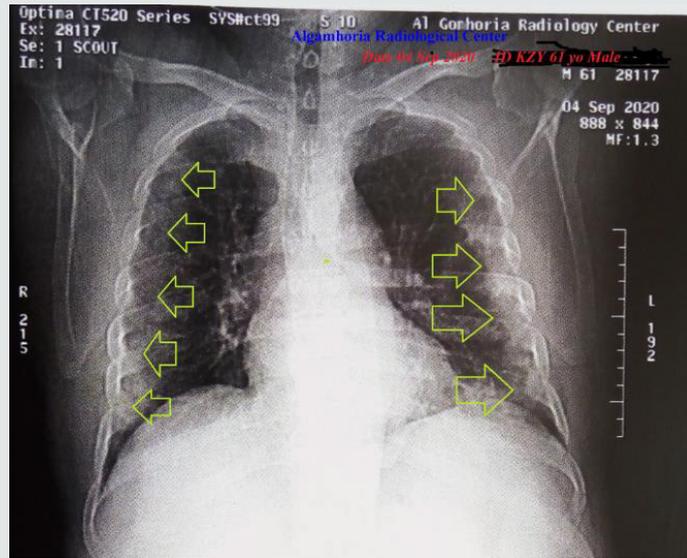


Figure 2: First film: 2A1. Plain Chest imaging on the day of the presentation showing peripheral bilateral ground-glass pulmonary consolidations (lime arrows).



Figure 3: A. chest CT scan was done on presentation showing peripheral bilateral ground-glass pulmonary consolidations (lime arrows) B. chest CT scan was done within 14 presentation showing nearly dramatic improvement of the above ground-glass consolidations.

Discussion

Overview

- a) An elderly male COVID-19 cirrhotic patient presented to a physician outpatient clinic with bilateral peripheral pneumonia.
- b) The objective primary for my case study was the presence of bilateral peripheral pneumonia in a COVID-19 cirrhotic patient in an outpatient clinic.
- c) The secondary objective for my case study was the question of; How did you manage the case?
- d) There was a history of direct contact to confirmed the COVID-19 case.
- e) The presence of direct contact to confirmed the COVID-19 case, bilateral peripheral ground-glass extensive consolidation, and lymphocytopenia on top of fever, tachypnea, and dry cough will be supporting the COVID-19 diagnosis.
- f) The tachypnea, sinus tachycardia, hypoxia, consolidation, and elevated d-dimer are highly suggestive of associated pulmonary embolism.
- g) Hyperthermia with hypotension on the case presentation may be interpreted by the presence of septic shock (due to pneumonia).
- h) The conversion sinus tachycardia normal sinus rhythm in ECG after clinical improvement was marked.
- i) The blood pressure normalization urgently after fluid IV infusion with the maintenance of the effects of anti-infective drugs, anticoagulants, and antiplatelet had avoided the need for vasopressors e.g. norepinephrine IV infusion.
- j) Using the lowest doses of anticoagulants and antiplatelet was the preference to avoid bleeding tendency.
- k) The mild elevations in liver enzymes indication of mild hepatic injury.
- l) The fluctuations in the synthetic function of the liver including; S. albumen, total bilirubin, prothrombin time, and INR was within normal.
- m) It signifying the role of anti-infective drugs, anticoagulants, and antiplatelet role in COVID-19.
- n) The presence of sinus tachycardia indicate either; fever shock or pulmonary embolism.
- o) Blood pressure, respiratory rate, and O₂ saturation are a strong guide for clinical follow-up in COVID-19 patients.
- p) A gradual decreasing the level of elevated CRP, lymphocytic count, liver enzymes, and CT chest may be used as another good laboratory guide for follow up in COVID-19 patients.

- q) The serial change of radiological changes from normal chest CT to abnormal to normal at the end will strengthen the used medications in this effective management. Also, it gives a good radiological impact for follow up.
- r) I can't compare the current case with similar conditions. There are no similar or known cases with the same management for near comparison.

Limitations of the study

There are no known limitations to the study.

Conclusion and Recommendations

- a) The using the lowest doses of anticoagulants and antiplatelet in hepatic impairment are an essential choice to avoid the bleeding tendency.
- b) The fluctuations in the synthetic function of the liver including; S. albumen, total bilirubin, prothrombin time, and INR is insignificant.

Conflicts of interest

There are no conflicts of interest.

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I wish to thanks my wife to save time and improving the conditions for helping me.

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