Case Report

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Heroin or Covid-19? Neurological, Hepatic, Renal, Cardiac, and Pulmonary Complications are All in One Case

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Abstract

Multiple organ dysfunction syndromes (MODS) can occur for different reasons such as trauma, infection, and toxicity. Therefore, differential diagnosis can be difficult in patients who develop a MODS clinic. A 29-year-old male patient was admitted to our emergency department with complaints of fever, weakness, shortness of breath, numbness and weakness in the right upper extremity, and occasional changes in consciousness. In thorax computed tomography imaging; In the bilateral lung parenchyma, band formations were observed in ground glass. There was heroin use in his story. It caused a bad course in his clinic. He was discharged on the eighth day, provided that he had no active complaints and that his vital signs were positive and stable. It was aimed to discuss the causes of MODS in a patient who was admitted to the emergency room with heroin use and COVID-19 clinic in the light of the literature.

Keywords: Emergency Department; Covid-19; Heroin

Introduction

Multi-organ dysfunction syndrome (MODS) can occur for different reasons, including trauma, infection, and toxicity [1]. Therefore, differential diagnosis can be difficult in patients who develop MODS clinic. For example, heroin may be among the toxic causes. Heroin, which is two times more potent opioid than morphine, is used by substance addicts for intravenous use or as a powder by inhalation. Although non-fatal overdose is common, rarely fatal overdoses are encountered [2]. There are data in the literature that heroin toxicity causes pulmonary edema, shock, myocardial damage, acute renal failure, rhabdomyolysis, and leukoencephalopathy. However, they all rarely occur in the same case [3-5]. The 2019 novel coronavirus (COVID-19) presents with a variety of phenotypes that range from asymptomatic to profound, rapid multiple organ dysfunction syndrome and death. Proposed mechanisms for MODS in COVID-19 are multifactorial but include a hypercoagulable state with micro and macro-circulatory thrombosis [6]. In this case, we will examine the use of heroin, which is a toxic cause in the patient who presented with the MODS clinic, among the many patients of the COVID-19 clinic, where we are fighting the pandemic today. In this context, our case will shed light on the importance of differential diagnosis in the MODS clinic.

Case Presentation

A 29-year-old male patient was admitted to our emergency department with fever, malaise, shortness of breath, numbness and weakness in the right upper extremity, and occasional changes in consciousness. He stated that there was no history of any disease and drug use in the patient's history. When the vital signs of the patient are evaluated; fever was 38.1, respiratory rate was 18/min, blood pressure was 100/60 mmHg, saturation was 95%, heart rate was 106 beats/min. In the physical examination of the patient, the patient was cooperative and orientated. Glasgow Coma Score was 15. Although the patient was tachypneic, respiratory sounds were bilaterally rough and occasional rales were heard by auscultation. In

the neurological examination, While motor function was normal in the right upper extremity, the patient was evaluated as hypoesthesia in the sensory examination. Other than that, there were no findings to suggest an acute pathology in other system examinations. Sinus tachycardia was observed on the patient's electrocardiogram. Laboratory examinations and images of the patient were planned and taken to the observation room.

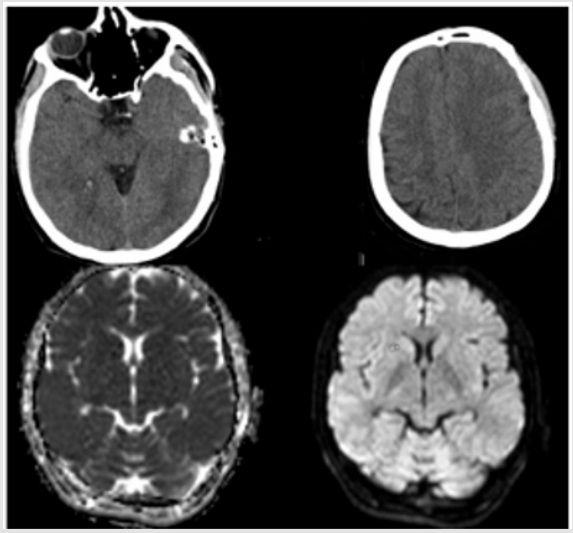

Figure 1: CT and MRI images of the patient within normal limits.

His laboratory exams showed; pH 7.22, lactate 3.2 mmol/L, hematocrit 47%, hemoglobin 14.8g/dL, white blood cells 17300/µL (neutrophils 14600/µL), platelets 292000/µL, aspartate aminotransferase 5463U/L, alanine aminotransferase 4406 U/L, lactate dehydrogenase 837 U/L, creatine kinase 1.504 U/L, troponin-I 1951 pg/mL, creatinine 2.11mg/dL, urea 80 mg/dL, procalcitonin 4,6 ng/mL, ferritin 2379ng/mL, International Normalized Ratio (INR) 1.3, C-reactive protein 12 mg/L. Acute pathology was not observed in brain computed tomography (CT) and diffusion magnetic resonance imaging (MRI) images taken for the patient's neurological complaints (Figure 1). In thorax CT imaging, In the bilateral lung parenchyma, ground-glass is as with band formations were observed. There was a conversion to mild consolidation, which shows a tendency to merge in the ground glass areas of the left lung lower lobe basal. Low-density nodules accompanied by traction bronchiectasis with calcification in the right upper lobe posterior and upper lobe anterior and sequel changes (viral pneumonia + sequelae change) were observed (Figure 2). There was no major pathology in urinary and hepatobiliary ultrasonography evaluations due to an increase in liver and kidney function parameters. Although the patient had no acute electrocardiogram findings, a cardiology consultation was planned due to the high troponin present. Cardiac evaluation of the patient was performed with echocardiography and it was thought that the current height was secondary to the systemic state. Due to its neurological findings; Despite the absence of acute imaging pathology, the neurological evaluation was requested, and the patient was evaluated to have no acute neurological etiology because of the neurology consultation.

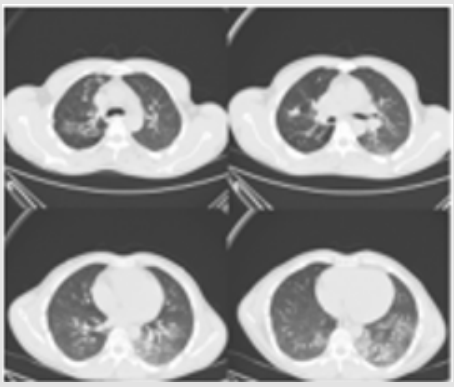

Figure 2: Thorax CT, ground-glass areas with band formations and mild consolidation.

In the light of our current anamnesis, physical examination, and laboratory findings; we had to turn to the pandemic COVID-19 clinic, which is our current problem. We had the idea that the thorax bt image of the patient developed due to COVID-19 and all other pathologies appeared as a complication of this. We planned hospitalization by meeting with internal medicine and infectious diseases. However, the patient's subsequent relative stated that the patient had a high amount of heroin use last night, hiding it. This made us think that the current situation may also be a complication related to heroin use. Since the patient had a progressively worsening multiorgan dysfunction, we asked for an internal medicine consultation considering that the patient could benefit from dialysis. Then we performed the patient's hemodialysis. In addition to all these, since we have a suspicion of COVID-19 for the patient, we have taken the sample of combined nasal throat swab for the patient and made the test. By the possibility of infective pre-diagnosis; favira 200mg (favipiravir, Novelfarma, Turkey) and tazocin 4.5gr (Piperacillin+Tazobactam, Pfizer, USA) were started in addition to supportive treatment during the hospitalization in the service after dialysis. Chloroquine treatment was avoided due to elevated liver function tests. One day later, the result of the COVID-19 test was negative.

This led us further to the heroin-based clinic. Also, kidney and liver function tests showed dramatic improvement after hemodialysis. Despite all this, since the COVID-19 test may have false negativity, a control swab test was sent and the treatment of the patient was completed for 5 days. The second test result was also negative. On the 7th day of hospitalization; laboratory values of the patient pH 7.41, lactate 0.8mmol/L, white blood cells 74800/µL (neutrophils 14600/µL), aspartate aminotransferase 92U/L, alanine aminotransferase 128U/L, lactate dehydrogenase 190U/L, creatine kinase was 214U/L, creatinine 0.75mg/dL, urea 26.6mg/

dL. On the 8th day, the patient was discharged on the condition that he had no active complaints, his vital signs were positive and stable, and his laboratory results improved, on the condition that he was called for control and was isolated for 14 days.

Discussion

Systemic inflammatory response syndrome and MODS are considered as serious threatening life-threatening problems [7]. MODS is generally the result of the body's response to factors rather than a direct effect. The result is a systemic inflammatory response, hemostatic changes, and the appearance of organ damage. Abnormal coagulation regulation in MODS cases leads to fibrinolysis as a result of microvascular thrombosis, tissue ischemia, and organ hypoperfusion. Disruption of multi-organ function can be caused by infection, toxic substances, trauma, burns, and many similar conditions [8]. Until December 2019, this new coronavirus has been identified as a cause of upper and lower respiratory infections in Wuhan, a city in Hubei Province, China. It spread rapidly, resulting in an epidemic all over China, and then gradually spread to other parts of the world in pandemic proportions. It affected almost every continent in the world except Antarctica. In February 2020, the World Health Organization identified COVID-19, which means 2019 coronavirus [9]. In a study of 1099 patients with COVID-19 pneumonia in Wuhan, the most common clinical features at the onset of the disease are; It was shown as fever in 88%, fatigue in 38%, dry cough in 67%, myalgia in 14.9, and dyspnea in 18.7%. The appearance of pneumonia is the most common and severe symptom of the infection. In this group of patients, respiratory distress occurred after five days of the disease, and 3.4% of patients developed acute respiratory distress syndrome. Critical illness (respiratory failure, septic shock, and/or multi-organ dysfunction) was observed in up to 6% of cases Yang et al., [10] in their study conducted in 2020, 92 COVID-19 cases were examined and there were 14 patients with MODS clinic with multiple organ involvement. Of these, procalcitonin showed a significant increase in 12 cases, suggesting a possible infection, and 4 cases were associated with myocardial injury [11].

In line with what we said, a retrospective study involving 41 patients with COVID-19 reported that most of the infected patients with SARS-CoV-2 showed clinically mild symptoms, although few patients showed poor prognosis and eventually died from acute respiratory distress syndrome and MODS [12]. At the time when our case was admitted to the hospital, our hospital was a pandemic hospital, we approached every patient with this suspicion, and the patient's clinic was similar to COVID-19 patients with poor prognosis, and this led us as a preliminary diagnosis. In addition to all these, heroin use can cause similar situations. There are various hypotheses for the pathogenesis of heroin intoxication complications, including the primary toxic role of heroin, hypoxia, ischemia-reperfusion injury, anaphylactic reactions, and the toxic role of adulterants [4]. In the other case and review study of Feng et al., A case with multiorgan damage after heroin intoxication was shown similarly to our case [13]. Patients with heroin intoxication complicated by MODS have a higher mortality rate in the early period and when they do not receive effective medical services. To normalize ischemia and hypoxia, respiratory and circulatory failure must be treated timely and effectively, because if this is not achieved, major organ functions can become permanent, increasing morbidity and mortality [14]. Also, there are resources that we can get support from the literature to explain the neurological complaints in our case. A case that caused complaints by causing myelinopathy in the brain associated with intravenous heroin overdose has also been reported [15].

Conclusion

In our case, we emphasized the differential diagnosis of heroin use and the covid-19 clinic. As seen in both our case and sample cases, pathologies that affect all organs and systems related to heroin use may occur. Again, in COVID-19 cases, it is obvious that the picture progresses to multiorgan insufficiency as the clinical worsening. The excessive number of COVID-19 cases, which is the most important problem of our day, should not cause us to ignore the cases that cause other similar clinics. In these cases, history and initial complaints and their duration are very important and will prompt us to think from all sides. Again, in these cases, early diagnosis and treatment have great importance; Its effect on reducing morbidity and mortality should not be underestimated.

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Conflict of Interest: None declared.

Informed Consent: Written informed consent was not necessary because the study was performed retrospectively by screening patient files.

Ethical Approval: Written with permission from the patient and local hospital administration.

Human Rights: The study was made in following the Declaration of Helsinki for Human Research.

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