

# Covid-19 Pandemic, Restrictions and Rhabdomyolysis

Bedia Gulen<sup>1</sup>, Bahadır Taşlıdere<sup>2</sup>, Yasin Ugur<sup>2</sup>, Ayşe Busra Özcan<sup>2</sup>, Ertan Sonmez<sup>2</sup>

<sup>1</sup>Department of Emergency Medicine, Medipole University School of Medicine, İstanbul, Turkey

<sup>2</sup>Department of Emergency Medicine, Bezmialem Vakıf University School of Medicine, İstanbul, Turkey

## Abstract

Rhabdomyolysis is a syndrome that occurs as a result of the destruction of muscle cells and intracellular materials are added to the systemic circulation. Clinical and laboratory findings and complications arise as a result of the destruction of muscle cells. In our case, a 19-year-old male patient was admitted to the emergency department with bilateral widespread leg pain and inability to walk, especially in the right leg. Within the scope of the quarantine applied during the Covid-19 epidemic, the patient remained without leaving home for a few months. On the day she went out, her complaints started despite only walking around for a while and not doing any heavy exercise. The patient was followed up and treated with the diagnosis of rhabdomyolysis since the creatinine kinase (CK) level was found to be significantly higher in the laboratory tests of the patient. This case is presented to us to draw attention to the fact that secondary results of pandemics can occur in different situations and that rhabdomyolysis can be treated without early diagnosis and complications. Not leaving the house during the pandemic process should not lead to an excessively sedate life. It is important to overcome the pandemic period without encountering disorders such as rhabdomyolysis and thromboembolism.

**Key words:** Rhabdomyolysis, COVID-19, Pandemic

## Introduction

Rhabdomyolysis is a clinical syndrome that develops when intracellular materials enter the systemic circulation as a result of the destruction of muscle cells. Excessive, uncontrolled, and sudden exercise by an untrained person can cause rhabdomyolysis. The incidence of exercise-induced rhabdomyolysis is difficult to define because many patients likely do not seek medical attention. In a study conducted on soldiers, its incidence was found to be 0.2%<sup>1</sup>. Clinically, the characteristic triad consists of muscle pain, weakness, and dark urine. If not diagnosed and treated, life-threatening conditions such as renal failure, compartment syndrome, cardiac arrhythmia, hypovolemic shock may occur. There is no exact pathological level of creatine phosphokinase (CPK) for the diagnosis of rhabdomyolysis. Generally, an increase of 10 times the normal range is considered significant<sup>2</sup>. Creatine phosphokinase elevation after the intense activity is a quite common phenomenon. The SARS-Cov2 virus, which causes Covid-19, spread rapidly among people through droplets, causing a pandemic all over the world<sup>3</sup>. Country administrators initiated a curfew to reduce the spread of the epidemic, covering people over 65 and children and young people under 20. Calls to “stay at home” made all over the world suddenly caused life to slow down and daily physical activities to be minimized. The first intense activity after a hypoactive process may result in rhabdomyolysis.

Life-threatening rhabdomyolysis by causing systemic complications can occur during the fight against COVID-19. Our aim is to reveal the secondary harms of the COVID-19 pandemic and to ensure that the necessary measures are discussed in a multifaceted way.

## Case

A 19-year-old male patient was admitted to the emergency room with a complaint of widespread pain and weakness in both legs for two days. According to the anamnesis taken, our patient did not leave the house for fifteen days following the calls of “stay at home” due to the COVID-19 pandemic. Two days ago, after going out for shopping and walking for a while, he was unable to walk due to increasing muscle pain and applied to the emergency room. Vital signs of body temperature: 36.7 °C, respiratory rate: 18 / min. pulse: 120/ min. blood pressure: 140/90 mmHg, blood sugar: 126, SO<sub>2</sub>: 97 In the physical examination, it was observed that the patient had difficulty walking. In his neurological examination, he was consciously oriented, cooperated cranial nerves were intact and there was no neck stiffness. On upper extremity muscle strength examination, deltoids 4/5, biceps, triceps 3/5, lower extremity hip flexion left 3/5, right 4/5 knee and foot dorsiflexion was detected. Other systemic examinations

**Corresponding Author:** Bahadır Taşlıdere **e-mail:** drbahadir@yahoo.com

**Received:** 16.06.2021 • **Accepted:** 31.08.2021

**Orcid:** <https://orcid.org/0000-0002-5920-8127>

©Copyright 2018 by Emergency Physicians Association of Turkey -

Available online at [www.ejcritical.com](http://www.ejcritical.com)

Bahadır Taşlıdere, **e-mail:** drbahadir@yahoo.com

Bedia Gülen, **e-mail:** bediagulen@yahoo.com

Yasin Ugur, **e-mail:** dr.yasin122@gmail.com

Ayşe Büşra Özcan, **e-mail:** aysebusraozcan@gmail.com

Ertan Sonmez, **e-mail:** ertansnmz@gmail.com



**Figure 1.** Average number of steps per weeks

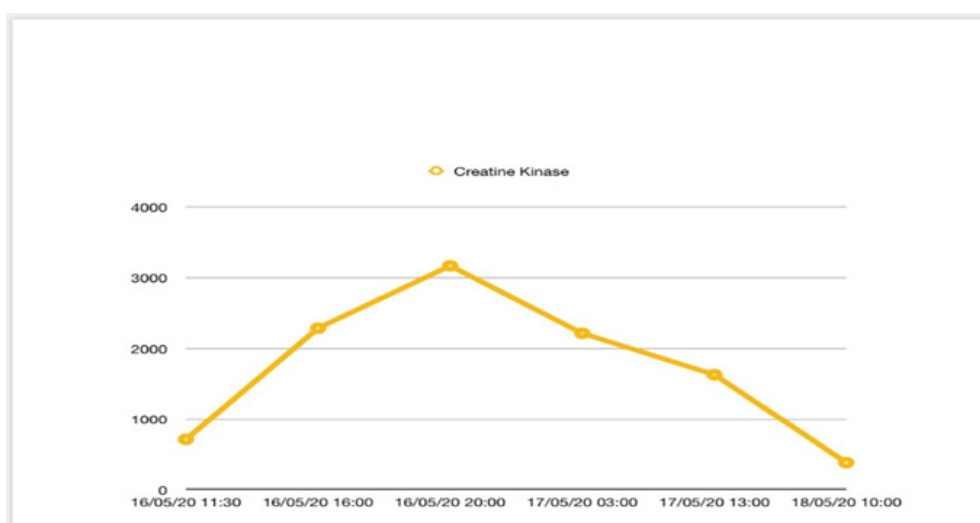
were evaluated as normal. The patient had no known chronic illness or regular medication.

In laboratory tests; hemoglobin: 17.30 / g, white blood cells: 8.220 / mm<sup>3</sup>, neutrophil: 49.38%, C-reactive protein: 2.02 mg / dL, blood glucose: 126 mg / dL, creatinine; 0.70, aspartate aminotransferase: 43 U / L, alanine aminotransferase: 89 U / L, CPK: 713 U / L. When the CPK level was found to be high in the patient, three positive (+++) hemoglobin and 35 erythrocytes were found in the complete urinalysis. It was found that the patient's clinical complaints started when he moved after being inactive for a long time during the pandemic period (Figure 1). It was thought that all these symptoms may be due to rhabdomyolysis. An additional neurological disease was not considered in the patient, who was also evaluated by neurology. The patient's COVID-19 PCR test result was found to be negative. CPK

levels in control blood tests were determined as 2289 U / L, 3171 U / L, 2216 U / L, 1631 U / L and 383 U / L (Figure 2). The patient's muscle pain was relieved after fluid therapy, and the bilateral lower and upper extremity muscle strength was intact in the last neurological examination. After 3 days of clinical follow-up in the emergency service, the patient was discharged with recommendations, whose blood values and clinic improved.

## Discussion

Due to the COVID-19 pandemic, the importance of masks, hygiene, social distance, and isolation rules are indisputable in breaking the chain all over the world. The most notable



**Figure 2.** Creatinine kinase levels during treatment

step taken to prevent droplet transmission has been called for 'stay at home'. Thus, it was aimed that fewer people may be sick at the same time period at the social level. With the practice of "stay at home", the mobility in cities has decreased by 30-40% and it has been observed that people do not leave small living areas<sup>4</sup> Rhabdomyolysis, which is clinically characterized by muscle pain, weakness, and dark urine, can lead to fatal complications such as renal failure, compartment syndrome, and dysrhythmia<sup>5,6</sup>. Therefore, it is necessary not to waste much time during the diagnosis phase. Serum creatine phosphokinase increase is a possible result after strenuous activity<sup>7</sup>. Therefore, the distinction between a physiologically normal condition and a disease should be made well. Physical activities that occur after being immobilized at home for a long time due to pandemic result in rhabdomyolysis, creating a security vulnerability for our health. (a lack of trust for our health) This situation has shown that the secondary results of the pandemic may appear in different situations. Young men with more muscle mass should be more careful about this. When the daily step number program on smartphones is examined, rhabdomyolysis occurs on the day when the number of steps is suddenly increased during the curfew and the period when schools are closed (Figure 2).

People should be informed that they do not spend the days they stay at home by being sedentary and to make appropriate exercise programs for them. We should change

the concept of "stay at home" that entered our lives with COVID-19 as "stay and move at home" and learn to live with the reality of COVID-19. Not leaving the house during the pandemic process should not lead to an excessively sedate life. It is important to overcome the pandemic period without encountering disorders such as rhabdomyolysis and thromboembolism.

## References

1. Lee G. Exercise-induced rhabdomyolysis. *R I Med J* 2014; 97(11): 22-4.
2. Zutt R, Van Der Kooij AJ, Linthorst GE, Wanders RJA, De Visser M. Rhabdomyolysis: review of the literature. *Neuromuscul Disord.* 2014; 24: 651-9
3. Talevi D, Socci V, Carai M, Carnaghi G, Faleri S, Trebbi E, et al. Mental health outcomes of the COVID-19 pandemic. *Riv Psichiatr.* 2020; 55(3): 137-4
4. Jacobsen GD, Jacobsen KH. Statewide COVID-19 Stay-at-Home Orders and Population Mobility in the United States. *World Med Health Policy.* 2020;29;10.1002/wmh3.350.
5. Furman J. When exercise causes exertional rhabdomyolysis. *JAAPA.* 2015; 28(4): 38-3
6. Rawson ES, Clarkson PM, Tarnopolsky MA. Perspectives on Exertional Rhabdomyolysis. *Sports Med.* 2017; 47(1): 33-9
7. Fernandes PM, Davenport RJ. How to do it: investigate exertional rhabdomyolysis (or not). *Pract Neurol.* 2019;19(1):43-8