Disiplinlerarası Yen Araş Der, 2(2), 118-120, 2022

İstanbul Arel Üniversitesi Lisansüstü Eğitim Enstitüsü
Disiplinlerarası Yenilik Araştırmaları Dergisi

Symmetrical peripheral polyneuropathy in a severe acute respiratory syndrome coronavirus 2 infection

Ciddi akut solunum sendromu koronavirüs 2 enfeksiyonunda simetrik periferik polinöropati

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Geliş Tarihi/Received: 13.01.2022 Bölüm/Section: Health Sciences/Neurology

Kabul Tarihi/Accepted: 31.03.2022 Olgu Sunumu/Case Report

Abstract

The coronavirus outbreak, which started in December 2019, was announced as a pandemic. We presented a patient with confirmed SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) pneumonia developing symmetric polyneuropathy. Some extrapulmonary, primarily neurological clinical presentations of 2019 coronavirus disease (COVID-19) have been reported. A peripheral neuropathy case occurring in a 62-year-old Caucasian male after the SARS-CoV-2 infection is represented by discussing etiopathogenesis. This case might highlight the possible association between the SARS-CoV-2 disease and the nervous system involvement. SARS-CoV-2 infection must be remembered in the differential diagnosis of peripheral neuropathy cases.

Keywords: Sensory loss, neuropathic pain, nervous system, pandemic, coronavirus.

Özet

Aralık 2019'da başlayan koronavirüs salgını pandemi olarak ilan edilmiş olup 2019 koronavirüs hastalığının (COVID-19) ekstrapulmoner, öncelikle nörolojik klinik prezentasyonları bildirilmiştir. Bu olgu sunumunda, simetrik polinöropati gelişen, doğrulanmış SARS-CoV-2 (şiddetli akut solunum sendromu koronavirüs 2) pnömonisi olan bir hastayı sunduk. Bu olgu sunumunda 62 yaşında beyaz bir erkekte SARS-CoV-2 enfeksiyonu sonrası ortaya çıkan bir periferik nöropati olgusu tartışılarak sunulmuştur. Bu vaka, SARS-CoV-2 hastalığı ile sinir sistemi tutulumu arasındaki olası ilişkiyi vurgulayabilir. Periferik nöropati olgularının ayırıcı tanısında SARS-CoV-2 enfeksiyonu mutlaka akılda tutulmalıdır.

Anahtar Kelimeler: Duyu kaybı, nöropatik ağrı, sinir sistemi, pandemi, koronavirüs.

1. Introduction

The ongoing pandemic of COVID-19, which started in China and crossed borders to affect the populations globally caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is still evolving in many cases. This pathogen mainly causes respiratory infection. A spectrum of presentations has been reported, ranging from asymptomatic infection to severe lower respiratory tract illness that may progress to acute respiratory distress syndrome (ARDS) and even death [1]. Whereas the novel coronavirus appears to cause extrapulmonary manifestations, here is reported a case of symmetric polyneuropathy in a patient diagnosed with this infection.

2. Case report

A 62-year-old male patient was admitted to our neurology department with complaints of burning, numbness, tingling sensation in his feet that had been going on for approximately three weeks. He had primary (essential) hypertension but no history of diabetes mellitus (DM) or renal failure. He had SARS-CoV-2 pneumonia (Fig. 1) about six weeks ago and received a proper treatment protocol. Any spinal, limb, or head injuries were denied. On examination, there was a

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symmetrical decrease in patellar and Achilles deep tendon reflexes and loss of sensation (pinprick and vibration) in bilateral toes. Neither muscle weakness nor pathological reflexes were observed. He didn't have any kind of urinary or anal incontinence. Examination of the upper extremities was normal. There was no numbness, tingling, pain radiating from the neck or back into the extremities in a dermatomal pattern or weakness in a myotomal pattern. There was no dyspnea, diplopia, or dysphagia. Hence, the neurological examination suggested symmetrical peripheral polyneuropathy of the lower extremities. The lumbar MRI assessment (magnetic resonance imaging) with contrast indicated no significant lesions (Fig. 2). No abnormalities were found in blood routine examination, hepatic, renal, and thyroid function, electrolyte, glucose, glycated hemoglobin, folic acid, vitamin B12 levels. Electromyoneurography (EMNG) was performed, and sensorimotor demyelinating polyneuropathy in the lower extremities was found. For his neuropathic complaints, duloxetine 30 mg/d (milligrams per day) was started, clinical and electrophysiological follow-up was planned. The patient signed an informed consent form.

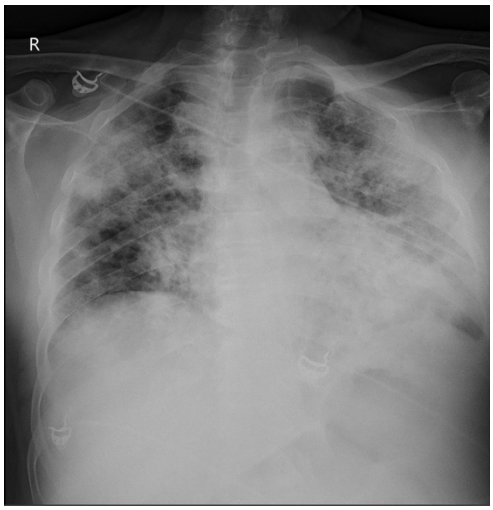

Figure 1. Chest radiography

3. Discussion

Different types of coronaviruses have been identified so far, and the SARS-CoV-2 was announced as responsible for an ongoing pandemic of COVID-19 [2]. Many respiratory viruses, including human coronaviruses, might cause extrapulmonary symptoms, primarily involve the nervous system, and cause various neurological signs and symptoms. The nervous system involvement may be due to direct neural invasion or replication or indirect virus-induced host immune responses [3]. There have been reports of neurologic manifestations as polyneuropathies caused by human coronaviruses. A case series showed four SARS patients who developed polyneuropathy about three weeks after the onset of the infection [4]. A case of the Middle East Respiratory Syndrome Coronavirus (MERS-CoV) was reported with weakness, numbness in lower limbs, and walking difficulty with the diagnosis of polyneuropathy [5]. Another four patients with MERS diagnosis demonstrated neurological manifestations of encephalitis overlapping with Guillain–Barré syndrome (GBS) [6].

In our case, we considered a few differential diagnoses. Here, we present the case of a patient with pneumonia due to SARS-CoV-2 complicated by symmetrical polyneuropathy. Since no symptoms were present before the development of COVID-19 and toxic neuropathy was excluded after reviewing his medications, critical illness polyneuropathy (CIP) and Guillain–Barré syndrome (GBS) were thought to be the most likely diagnosis. CIP develops as an acute complication of severe illness and presents with extremity and respiratory muscle weakness [7]. Although there was no upper extremities involvement, due to the progressive symmetric muscle weakness history and decreased deep tendon reflexes, partially improved GBS was our possible diagnosis [8].

4. Conclusion

In conclusion, this case might highlight the possible association between the SARS-CoV-2 disease and the nervous system involvement. SARS-CoV-2 infection must be remembered in the differential diagnosis of peripheral neuropathy cases, and further examination and treatment for this should be done.

5. Author contribution statement

In this study, Ufuk ÇINKIR in the creation of the idea and the hypothesis; Saltanat MERT, Ufuk ÇINKIR and Ayhan KÖKSAL literature review, article writing, data collection, data analysis; Saltanat MERT, Ufuk ÇINKIR and Ayhan KÖKSAL contributed to the design of the article, revision of the article and evaluation of the results.

6. Ethics committee approval and conflict of interest statement

The patient signed an informed consent form. The authors declare no conflict of interest.

Figure 2. Lumber MRI with contrast

7. References

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