Coexistence Of Corpus Callosum Splenium Infarct And COVID-19 Pneumonia: A Case Report

Corpus Callosum Splenium Enfarktının COVID-19 Pnömonisi ile Birlikteliği: Bir Olgu Sunumu

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Abstract

In this article, we presented our case who developed CC splenium infarction who had COVID-19 pneumonia at the same time. A 45-year-old male patient with a positive COVID-19 PCR test was admitted to the emergency department with complaints of confusion and loss of direction. He didn't have a chronic disease, a history of smoking and alcohol abuse. Confusion was found on mental examination. The Splenium of the CC was hyperintense on diffusion-weighted magnetic resonance imaging (MRI) and hypointense on Apparent Diffusion Coefficient (ADC) sequence. There are a few case reports in the literature about young patients who do not have known or unexplained cardiovascular risk factors and who have had COVID-19-related pneumonia. We thought that COVID-19 pneumonia might be a triggering factor since infarction of the splenium region of the corpus callosum is rare, the patient is in the young age patient group, and there is no other comorbidity.

Keywords Cerebrovascular Disease, COVID-19 Pneumonia, Corpus Callosum, Corpus Callosum Splenium Infarction

Özet

Bu yazıda, COVID-19 pnömonisi olan ve aynı zamanda Corpus Callosum (CC) Splenium enfarktüsü gelişen olgumuzu sunduk. COVID-19 PCR testi pozitif olan 45 yaş erkek hasta kafa karışıklığı ve yön kaybı şikayetleri ile acil servise başvurdu. Kronik bir hastalığı, sigara ve alkol kullanım öyküsü yoktu. Bilinç muayenesinde karışıklık saptandı. CC'nin Splenium difüzyon ağırlıklı manyetik rezonans görüntülemede (MRI) hiperintens ve ADC sekansında hipointensti. serebrovasküler etiyolojisi araştırıldı, herhangi bir patoloji saptanamadı.Literatürde bilinen veya açıklanamayan kardiyovasküler risk faktörleri olmayan ve COVID-19 ile ilişkili pnömoni geçirmiş genç hastalarla ilgili birkaç vaka sunumu bulunmaktadır. Bu hastada Corpus Callosumun splenium bölgesinde enfarktüsün nadir görülmesi, hastanın genç yaş hasta grubunda olması ve başka bir komorbidite olmaması nedeniyle COVID-19 pnömonisinin tetikleyici bir faktör olabileceğini düşündük.

Anahtar Kelimeler COVID-19 Pnömonisi, Serebrovasküler Hastalık, Corpus Callosum Splenium Enfarktüsü, Corpus Callosum

INTRODUCTION

The corpus callosum (CC) has a wide supplying network due to branches coming from both posterior cerebral arteries (PCA) and anterior cerebral arteries (ACA). The splenium of the corpus callosum is also supplied by the posterior pericallosal artery, a branch of the PCA, and forms a rich anastomosis with the terminal branches of the ACA[1]. Because it has such a rich nutritional network isolated infarction of CC is extremely rare and accounts for less than 1% of ischemic infarctions. About half of CC infarctions affect the splenium. Various neurological symptoms can be seen in CC splenium infarcts. Clinical signs and symptoms such as confusion, ataxia, and dysarthria are the most common[2]. In current studies, embolization appears as the most frequent cause of isolated splenium infarctions. Other less common causes of CC infarction include vasospasm, venous occlusion, vasculitis, hypercoagulation, and hypoxia[3]. In this article, we presented our case who developed CC splenium infarction who had COVID-19 pneumonia at the same time.

CASE REPORT

A 45 years old, male patient with a positive COVID-19 PCR test due to loss of smell and generalized weakness was admitted to the emergency department with complaints of confusion and loss of direction. He did not have any chronic disease, he had no alcohol or smoking habits. On mental examination, we found confusion, he had disorientation to place and person, but time orientation was normal. There was no nuchal rigidity. Cranial nerve examination, motor functions and sensory examination were normal as far as can be evaluated, the patient could not cooperate with cerebellar tests, and plantar reflex was bilaterally indifferent. There was a lesion in the CC splenium that was hyperintense on diffusion-weighted magnetic resonance imaging and hypointense on Apparent Diffusion Coefficient (ADC) sequence (Fig.1A, B, C and D).

The heart rate was 80 beats per minute on electrocardiography and was in normal sinus rhythm. The echocardiography observed no appearance in favor of thrombus in the heart cavities and valves. Rhythm Holter was in basic sinus rhythm. Blood glucose levels, Hemoglobin A1c level, blood glucose levels and lipid profile values were within the normal range. In carotid and vertebral artery Doppler ultrasonography, we didn't detect significant stenosis. Antiphospholipid antibodies were negative. There was no prothrombin mutation, Factor V Leiden mutation, Protein C and S deficiency, or Antithrombin III deficiency.

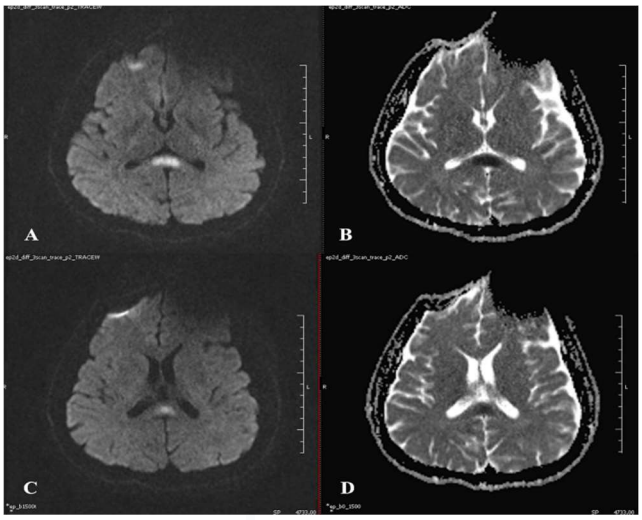

Figure 1. A, B, C and D. The Infarction of Splenium of The Corpus Callosum

Enzyme level could not be evaluated because there wasn't a biochemistry test in our hospital for Fabry disease, but kidney function tests were in the normal range and the patient didn't have a history of nephrological disease.

DISCUSSION

In COVID-19 pneumonia, hyperinflammation and hyperviscosity can be observed and hypercoagulation develops due to released cytokines, hyperviscosity, and increased fibrinogen. In addition, hypoxia, and cardiac and hemodynamic instability seen in the progression of the disease are also risk factors for stroke. However, it is still to be determined if COVID-19 can be considered a direct risk factor for stroke. In many analyses evaluating the development of acute cerebrovascular infarction in patients with COVID-19 pneumonia, it has been suggested that cardiovascular risk factors are the main risk, even if COVID-19 pneumonia is accepted as a 'predisposing factor'[4].

There are a few case reports in the literature about young patients who do not have known or unexplained cardiovascular risk factors and who have had COVID-19-related pneumonia[5,6]. Our case was a young patient who developed an infarct in the splenium region of the CC on the third day of the diagnosis of COVID-19. We thought that COVID-19 pneumonia might be a triggering factor since infarction of the splenium region of the corpus callosum is rare, the patient is in the young age patient group, and there is no other comorbidity.

The literature review has shown that COVID-19 causes encephalopathy primarily due to invasion of the olfactory bulb and/or secondary effects of released inflammatory cytokines, hypoxemia, and oxidative stress on the Cranial nervous system[7]. Therefore, when findings suggestive of encephalopathy are detected in patients with a diagnosis of COVID-19, it should be kept in mind that acute cerebrovascular disease may be the reason for this before the underlying cause is considered to be hypoxia, fever and general condition disorder. In addition, more case reports and further studies are needed to show that COVID-19 pneumonia may be a risk factor for the eventuate of acute cerebrovascular disease to develop our treatment protocol.

Ethıcal Declerations

Written informed consent was obtained from the patient for publication and images.

Conflict of Interest Statement:

None declared by the authors.

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Author Contribution

None declared by the authors.

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