

Headache, Stiff Neck & Loss Of Consciousness: Differential Diagnosis Between Meningitis And Covid-19

Baş Ağrısı, Ense Sertliği ve Şuur Kaybı: Menenjit İle Covid-19 Arasındaki Ayırıcı Tanı

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Abstract

Severe acute respiratory syndrome COVID-19, caused by the coronavirus-2 (SARS-CoV-2) virus, is a pandemic infection that affects the whole world and has a very high mortality rate. This infection, which often has upper and lower respiratory tract symptoms, may also present with atypical presentations with different clinical pictures in the recent period. Diagnosis of these atypical cases takes time, and delays may occur in the patient's initiation of treatment. This was a case of COVID-19 that showed atypical presentation due to the absence of signs of infection of the respiratory system and the prominence of a stiff neck with the change of consciousness. At first glance, this case suggests central nervous system infection; He was diagnosed with COVID-19 after the nasopharyngeal swab sample taken due to high fever in the follow-up was found positive. This case report aims to draw attention to the fact that COVID-19 infection may occur in different forms and, therefore, raise awareness to save time in the diagnosis process by considering this situation.

Keywords: Covid-19, Central Nervous System Infection, Stiff Neck.

Özet

Severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) virüsünün etken olduğu COVID-19 tüm dünyayı etkileyen ve mortalitesi oldukça yüksek seyreden pandemik bir enfeksiyondur. Sıklıkla üst ve alt solunum yollarına ait semptomların görüldüğü bu enfeksiyonun son dönemde farklı klinik tablolar ile seyreden atipik prezantasyonları da karşımıza çıkabilmektedir. Bu atipik vakalara tanı konulması zaman almakta ve hastanın tedaviye başlama sürecinde gecikmeler yaşanabilmektedir. Olgumuz; solunum sistemine ait enfeksiyon bulgularının görülmemesi ve şuur değişikliği ile ense sertliğinin ön planda bulunması sebebiyle atipik prezantasyon gösteren bir COVID-19 vakasıdır. İlk bakışta santral sinir sistemi enfeksiyonu düşündüren bu vaka; takibinde ateş değerinin yüksek seyretmesi sebebiyle alınan nazofaringeal sürüntü örneğinin pozitif bulunması ile COVID-19 tanısı almıştır. Bu olgu sunumunda amaç COVID-19 enfeksiyonu tablosunun farklı biçimlerde de karşımıza çıkabileceğine dikkat çekmek ve dolayısıyla bu durum gözönünde bulundurularak tanı koyma sürecinde zaman kaybı yaşanmaması için farkındalık yaratmaktır.

Anahtar Kelimeler: Covid-19, Santral Sinir Sistemi Enfeksiyonu, Ense Sertliği.

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INTRODUCTION

COVID-19 infection was first seen in Wuhan, China, in December 2019. It was defined as a pandemic by the World Health Organization in March 2020 due to the fact that it is an infectious disease that threatens human health in all countries of the world (1). As of June 2022, the number of patients infected with Covid 19 has reached 529 million, and the number of deaths due to infection has reached 6.29 million globally.

COVID-19 can present with a wide range of clinical pictures ranging from a simple influenza infection to acute respiratory distress syndrome (ARDS) with severe respiratory failure. When the clinical findings of the patients with infection are documented, 80% of the cases present mild clinical features. In comparison, 15% of the patients are followed up with advanced pneumonia, and around 5% of the patients with ARDS, septic shock, or multiple organ failure syndrome (MODS). These are defined as critical disease findings. The mortality rate in infected cases has been reported as 2% (2).

In cases diagnosed with COVID-19, cough, throat pain, and nasal congestion are common symptoms. However, with the contribution of mutations seen in SARS-COV2, the clinical presentation is variable day by day. Today, we see that the neurological system has an important place among the organ systems that are most frequently affected by infection. In recent publications on neurological system findings seen in infected patients, it has been reported that headache, encephalitis, impaired consciousness, dizziness, encephalopathy, acute cerebrovascular events, and different neurological manifestations of peripheral nervous system pathologies.

This case report aims to elucidate a case of COVID-19 that progresses rapidly and causes loss of consciousness, and might be misdiagnosed as meningitis. Still, it recovers spontaneously and discusses the issue in the light of the literature.

CASE

A 70-year-old man was admitted to the Emergency Department due to a headache and meaningless speech symptoms. Anamnesis was taken from the patient's relatives. The headache started in the morning and gradually increased in severity during the day. In the examination of the patient at a different institution, neck stiffness was detected, but computerized tomography revealed no pathology. In addition to the patient's increased consciousness and tendency to sleep, the patient was referred to our hospital, considering central nervous system infection due to urinary incontinence.

The patient had no previous history or family history. In the first evaluation of the patient following the admission, it was seen that his general condition was poor, consciousness was inclined to sleep, and the eyes were open with verbal stimuli. He could localize pain and respond to inappropriate verbal stimuli; the Glasgow Coma Scale was 11. No additional pathology has been observed besides neck stiffness and impaired consciousness. His vital signs could be elaborated as; blood pressure 130/80 mmHg, pulse: 124/min, fever: 37.1 °C, respiration rate 14/min, and oxygen saturation 95%.

A nasopharyngeal swab specimen, thoracic computerized tomography, contrast-enhanced brain magnetic resonance imaging (MRI), and Diffusion MRI for COVID-19 infection have been obtained from the patient. Thoracic Tomography revealed no significant pathology. Contrast-enhanced brain MRI showed that the cerebral sulcus depth and the ventricular

system's width increased secondary to age-related parenchymal atrophic changes. The patient's Diffusion Brain MRI revealed no evidence of acute diffusion restriction.

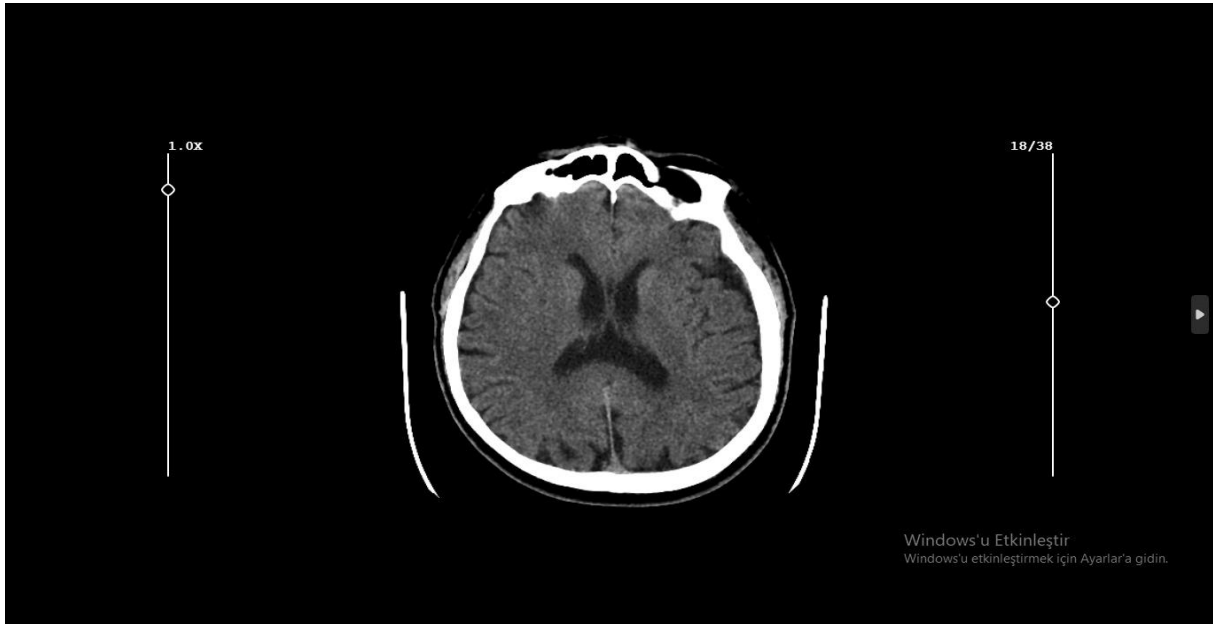


Figure 1. Parenchymal Atrophy And Age-matched ventricular enlargement on Cranial CT.

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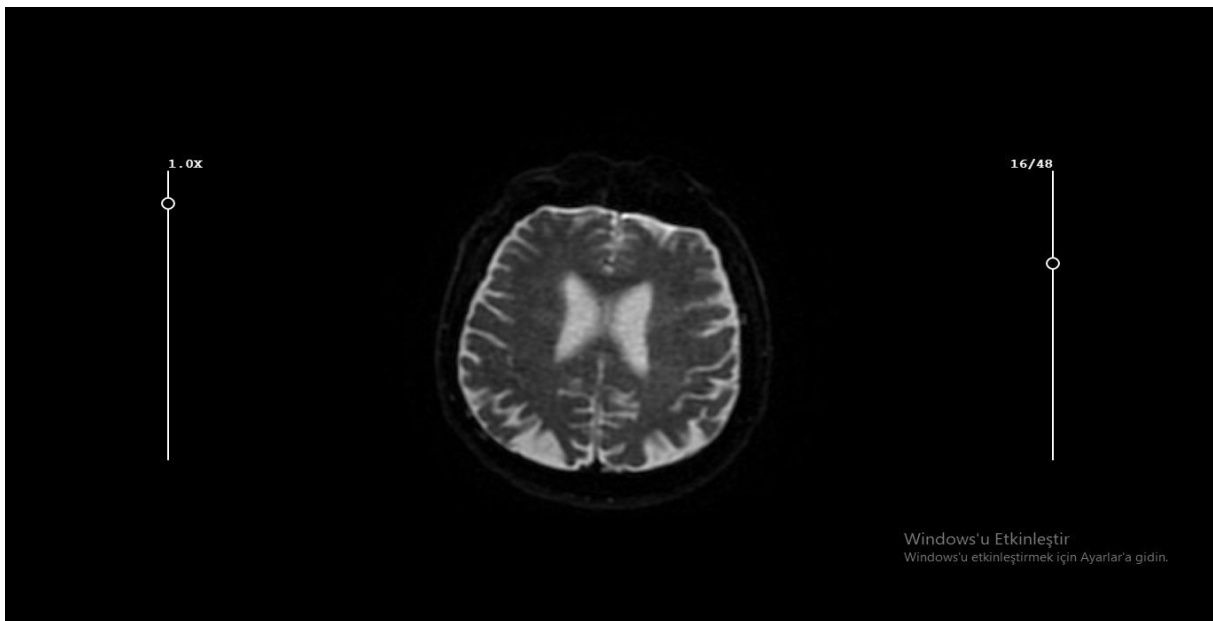


Figure 2. Indiffusion Brain MRI Apparent Diffusion Coefficient (ADC), no evidence of acute diffusion restriction.

The laboratory parameters were as follows; CRP: 127.16 mg/dL, urea: 54 mg/dL, creatinine: 1.43 mg/dL, chlorine: 100 mmol/L, Calcium: 8.6 mg/dL, lactate: 1.7 mmol/L and glucose: 131 mg/dL. A majority of the laboratory results were normal.

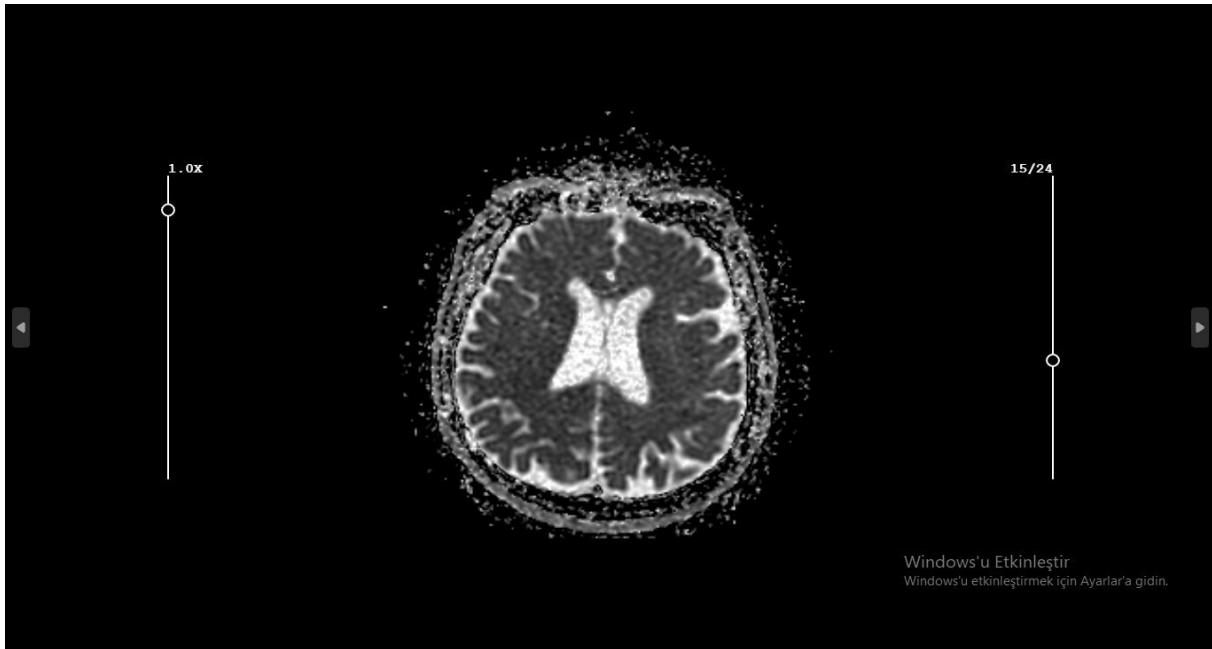


Figure 3. Diffusion-weighted examination of cranial magnetic resonance imaging (DWI). Cerebral sulcus depth and the ventricular system's width increased secondary to age-related parenchymal atrophic change.

A consultation was requested from the infectious diseases department due to the neck stiffness, and the patient was followed up in the Emergency Department after no definite central nervous system infection had been detected in the lumbar puncture. In the repeated examinations, unconsciousness was observed in the tenth hour following admission to our hospital. The RT-PCR of the patient was positive, and he was referred to the infectious diseases department with the diagnosis of COVID-19. The patient, treated for COVID-19 infection, was discharged without sequelae on the sixteenth day of admission.

DISCUSSION

COVID-19 can cause multiorgan involvement and may present different clinical features according to the affected system. The most common findings in infected cases are influenza symptoms due to respiratory system involvement. Other system involvements may accompany the infection, and admission symptoms may vary through the system infected by the virus in the foreground.

Cases of causative encephalitis have also been reported in patients diagnosed with COVID-19. In these cases, the virus's presence was identified by CSF's genomic sequencing (3). The main findings indicating central nervous system involvement in infected patients are dizziness, headache, altered consciousness, vertigo, ataxia, and acute epileptic seizure. COVID-19 can also affect the peripheral nervous system, cause neuropathic pain, deteriorate the sense of taste and smell, and also impair vision. Data indicating signs of meningeal irritation, altered consciousness, and focal neurological disorders can be detected in the physical examination of patients with neurological involvement. In a previous case report of suspected COVID-19, diffusion-weighted examination of cranial magnetic resonance imaging (DWI) after acute epileptic seizure showed hyperintensity and mild atrophy in the right temporal lobe and hippocampus (FLAIR) sections (4). Besides COVID-19 infection, many infectious agents can potentially cause toxic encephalopathy (5). Some studies indicate that the virus cannot be shown directly in the CSF samples of infected cases. However, detecting signs of inflammation, such as protein increase and cell detection, which can be encountered in viral infection in CSF, may be instructive. This situation suggests that

the virus can cause encephalitis by causing immune-mediated mechanisms secondary to the direct effect of infection.

Mild encephalitis/encephalopathy (MERS) with reversible splenial lesions with intra-myelinic axonal edema and infiltration of local inflammatory cells has been observed at different stages of COVID-19 cases (6). The diagnosis of MERS is defined as a clinical and radiological diagnosis. A prominent reversible lesion in the corpus callosum splenium detected by radiological imaging was associated with an infectious agent and mild encephalopathy (6). In light of these findings, the effects of COVID-19 infection on the central nervous system should be known and present in diagnosing cases with neurological involvement.

The delay in COVID-19 diagnosis causes the risk of transmission of the existing infection to the community and contact health workers due to the negative impact of individual mortality and morbidity due to time losses in the initiation of the treatment of the patient and the delays that may be experienced in the provision of effective isolation conditions. It should be kept in mind that as a result of the structure of the SARS-CoV-2 virus and its mutations over time, different clinical pictures may be seen more frequently.

CONCLUSION

It should be kept in mind that COVID-19 infection may also occur in atypical cases, especially under pandemic conditions, and nasopharyngeal swab samples should be taken without losing time. It is crucial to initiate early treatment, and isolation measures should be taken without losing time.

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Competing interests: The authors declare that they have no competing interests.

Ethical Declaration

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008. Ethics committee approval has been granted from our institution. Informed consent has been obtained from the participant.

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