CASE REPORT

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Unusual Suspect After Spinal Anesthesia: Herpetic Encephalitis

Spinal Anestezi Sonrası Gelişen Olağan Dışı Şüpheli: Herpetik Ensefalit

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Abstract

Herpes simplex virus (HSV) is the most common cause of acute, sporadic viral encephalitis. Usually occurs with the activation of the latent virus. Sudden onset fever and especially temporal lobe involvement are typical clinical features of HSV encephalitis. In this article, we aimed to present a case of herpetic encephalitis, which is an unusual factor in meningitis after spinal anesthesia. Severe headache and convulsion developed at postoperatively. Body temperature of the patient was 38.3 °C and neck stiffness developed. The patient was diagnosed with herpes encephalitis by clinical, laboratory and cranial magnetic resonance, and acyclovir treatment was started immediately. The patient was discharged home with recovery on the 14th day. Loss of consciousness and convulsions with fever seen at the postoperative period after spinal anesthesia, may not always be due to bacterial meningitis but sometimes due to HSV-associated acute herpetic meningoencephalitis. Rapid diagnosis and treatment is life-saving.

Keywords: Acyclovir, encephalitis, herpes simplex, spinal anesthesia

Öz

Herpes simpleks virüsü (HSV) akut, sporadik viral ensefalitlerin en sık etkenidir. Genellikle latent virüsün aktivasyonu söz konusudur. Ani başlayan ateş ve özellikle temporal lob tutulumu HSV ensefalitinin tipik klinik özellikleridir. Bu yazımızda spinal anestezi sonrası meningoensefalitte, olağan dışı bir etken olan herpetik ensefalit olgusunu sunmayı amaçladık. Cerrahi sonrası 5. günde şiddetli baş ağrısı, konvülziyon gelişen hastanın vücut ısısı 38,3 °C ve ense sertliği geliştiği görüldü. Klinik, laboratuvar ve manyetik rezonans görüntüleme ile herpes ensefaliti tanısı konulan hastaya hızla asiklovir tedavisi başlandı. Hasta 14. gün şifa ile evine taburcu edildi. Spinal anestezi sonrası postoperatif dönemde görülen bilinç kaybı ve ateşli konvülsiyonlar her zaman bakteriyel menenjite bağlı olmayabilir, ancak bazen HSV ile ilişkili akut herpetik ensefalite bağlı olabilir. Hızlı teşhis ve tedavi hayat kurtarıcıdır.

Anahtar kelimeler: Asiklovir, ensefalit, herpes simpleks, spinal anestezi

Introduction

Encephalitis is characterized by the sudden onset of fever, headache, focal neurological signs, epileptic seizures, and impaired consciousness (1). The causes of meningoencephalitis may include infectious agents such as bacteria, viruses, parasites, and non-infectious factors (2). The most commonly encountered infectious agent is the herpes simplex virus (HSV type 1), which selectively affects the temporal and frontal lobes, leading to necrotizing encephalitis characterized by edema, necrosis, and hemorrhage (3). It is usually observed due to the acute exacerbation of the latent virus (3,4). Early diagnosis plays a crucial role in recovery without sequelae (5). In this case report, we aimed to present a case of herpetic encephalitis (HE) following ureterorenoscopy (URS) under spinal anesthesia.

Case Report

Informed consent was obtained from the patient and a 34-year-old male patient who underwent elective URS operation under spinal anesthesia developed

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severe headache, fever, nausea, and vomiting on the 5th postoperative day. The symptoms progressively worsened, and later the patient experienced delirium and a few minutes of generalized tonic-clonic convulsion. Upon initial examination, the patient's consciousness was confused and agitated, with impaired cooperation and nuchal rigidity. Heart rate was 120-130 beats/min, blood pressure 130/76 mmHg, respiratory rate 25/min, peripheral oxygen saturation 97%, and axillary body temperature 38.3 °C. According to the perioperative anesthesia records, spinal anesthesia was applied sitting at the lumbar 4-5 space, using 15 mg of heavy marcaine under sterile conditions, with no premedication. The patient received 400 mg of intravenous ciprofloxacin 2x1 in the postoperative period. The patient was admitted to our hospital's intensive care unit (ICU) for further investigation and treatment, suspecting meningitis based on the clinical presentation. Following admission to the ICU, blood tests revealed a leukocyte count of 20,000/mm^3, with no other pathology detected. Electroencephalography showed a slow-wave pattern. While cranial computed tomography was standard, hyperintense areas in the temporal lobe were observed on cranial magnetic resonance imaging (MRI) T2 sequence (Figure 1). Focal encephalitis in the temporal lobe and EEG findings suggested herpes encephalitis (1-6). Cerebrospinal fluid (CSF) microscopy showed 80.000 leukocytes/mm^3 (80% lymphocyte predominance), 56 erythrocytes/mm^3, and 96 mg/dL protein. CSF culture did not yield any bacterial growth. ELISA tests showed positive HSV-1 IgG and negative HSV-1 IgM, supporting the diagnosis, although polymerase chain reaction (PCR) could not be performed. The patient was diagnosed with HE and started on 30 mg/kg/day acyclovir. On the 2nd day of treatment, the patient began to cooperate, and by the 6th day, his general condition had improved, and he was transferred to the ward. The patient was discharged home on the 14th day of treatment, with complete recovery and no sequelae.

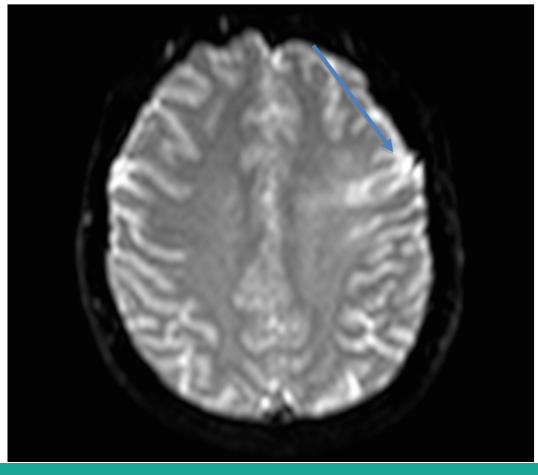

Figure 1. Hyperintense appearance in temporal region T2 sequence in cranial MRI

MRI: Magnetic resonance imaging

Discussion

HSV, whose only natural reservoir is human, is common worldwide.The virus spreads through body secretions and causes skin, eyes, and central nervous system infections, primarily around the mouth and genital regions (7). Following recovery, the virus can remain latent in neurons, leading to recurrent infections. However, the mechanism by which the virus becomes activated to cause encephalitis is unknown (8).

HE is the most common type in the general population and has a high mortality rate. HSV-1 has been reported as the causative agent in 0.8-30% of all encephalitis cases and 20-75% of necrotizing encephalitis cases (9). It predominantly affects the temporal and frontal lobes, causing focal encephalitis. The annual incidence ranges from 0.002-4% (5). It can cause infection in individuals of any age, gender, or demographic, independently of these factors. However, research has indicated that HE is more common in adult patients (7).

The disease can manifest in various clinical forms, ranging from high fever to loss of consciousness and convulsions (1-9). If left untreated, the mortality rate can reach 70%, and the resulting sequelae are often permanent (5-10). Conversely, if treatment is initiated early, before the development of consciousness loss, a 92% recovery rate without sequelae can be achieved (9-12). Therefore, early diagnosis is of great importance. The first symptom of the disease is a headache. Postspinal headache is the first consideration in cases of headache following spinal anesthesia. Thus, in our case, the developing headache was initially evaluated in this manner, and treatment was planned accordingly. However, this situation also delayed treatment for a potential case of meningitis. Therefore, clinical findings should be closely monitored in cases of postspinal headache, and meningitis should not be overlooked (13). Fever is an important finding but also a common postoperative symptom.

The sudden onset of fever, headache, focal neurological signs, epileptic seizures, and impaired consciousness characterizes Meningoencephalitis. The differential diagnosis should consider other causes of

meningoencephalitis (10,12,13). Bacterial meningitis is the most common cause following spinal anesthesia. In our patient, we initially suspected bacterial meningitis after observing fever, loss of consciousness, and convulsions.

Diagnosing herpes encephalitis based solely on clinical findings is challenging. Clinical data must be supported by laboratory and imaging results. However, laboratory findings are generally non-specific. Bacterial, viral, and fungal cultures obtained from blood and CSF samples usually do not yield any growth (9,12). Antibody titers for specific viral antigens typically only rise weeks after the onset of the disease (8-13). Detection of HSV-DNA in CSF using the PCR method is currently considered the "gold standard" for diagnosing HSV encephalitis. HSV-DNA in CSF can be detected by PCR from the first 24 hours of symptom onset up to one week after treatment initiation. However, HSV-DNA has been detected in only 1-19% of cases with suspected viral encephalitis. Studies have reported that PCR has a 98% sensitivity and 94-100% specificity for detecting HSV-DNA (9-12). PCR analysis is not accessible in every institution.

In cases of acute viral encephalitis, meningeal or parenchymal involvement can be reliably demonstrated in the early stages using MRI. In HE, it has been reported that hyperintense lesions characterized by localized edema, necrosis, and hemorrhage in the temporal and frontal lobes can be observed in T2 sequence examinations (6). This specific involvement in HE is essential as a distinguishing feature from other types of encephalitis (10). In healthcare institutions where PCR is unavailable or limited, diagnosis using MRI findings becomes critically important. Since the PCR method was unavailable in our center, the patient's diagnosis was made based on clinical results, CSF microscopy, and MRI findings specific to the disease (Figure 1).

The most effective agent for treatment is considered to be acyclovir (12). Studies have shown that mortality was 50-55% in patients treated with vidarabine, while in patients treated with acyclovir, mortality was 20-30% (8,13,14). It is widely accepted that the best treatment option for HE is intravenous acyclovir at a dose of 10 mg/kg every 8 hours for 14-21 days (14,15). In our case, the patient recovered without sequelae following a 21-day course of acyclovir treatment at a dose of 3x10 mg/kg/day. Anti-edema support therapy is also crucial in managing the disease (1,2,14,15).

In conclusion, bacterial meningitis is the first consideration in patients who develop meningitis symptoms after spinal anesthesia. However, as seen in this case, surgical stress may trigger latent HSV-1 by causing immunosuppression and leading to acute herpes encephalitis. This possibility should be kept in mind.

This case report demonstrates that viral encephalitis can also occur following surgery. Furthermore, as illustrated by this case, we would like to emphasize the importance of MRI imaging in healthcare institutions where PCR is unavailable.

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Ethics

Informed Consent: Informed consent was obtained.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: Y.İ., R.G., Concept: R.G., B.K.U., Design: R.G., M.A.T., Data Collection or Processing: Y.İ., M.A.T., Analysis or Interpretation: Y.İ., B.K.U., Literature Search: Y.İ., M.A.T., B.K.U., Writing: Y.İ., R.G.

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