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CASE REPORT
OLGU SUNUMU

Intensive Care Management of a Patient with Comorbidity of Pneumonia and Herpetic Encephalitis

Pnömoni ve Herpetik Ensefalitli Komorbid Hastada Yoğun Bakım Yönetimi

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Summary

A self-sufficient 77-year-old patient with no systemic disease other than type 2 diabetes mellitus and hypertension sought treatment at a private medical center because she gave inconsistent and nonsensical responses to relatives and developed confusion. Cranial magnetic resonance imaging showed acute cytotoxic edema. Patient was transferred to emergency unit with high fever and right lower extremity jerking. Examination of cerebrospinal fluid (CSF) revealed positive polymerase chain reaction for herpes simplex virus type 1, and based on diagnosis of viral encephalitis, acyclovir therapy was initiated. On the fourth day of follow-up in the neurology clinic, the patient was orotracheally intubated and admitted to intensive care unit (ICU) because of respiratory distress and loss of consciousness. Thoracic computed tomography revealed atelectasis and air bronchogram in the right lung, which indicated pneumonia. On the seventh day in the ICU, the patient was able to opened her eyes spontaneously and follow commands. Weaning from mechanical ventilation was initiated and the patient was discharged home with cure on the sixteenth day of admission. Detection of virus in CSF analysis, prompt administration of antiviral therapy and ICU support ensured rapid recovery without any residual sequelae in this case of herpes simplex encephalitis.

Keywords: Acyclovir; herpes simplex encephalitis; intensive care; pneumonia.

Özet

Diabetes mellitus tip II ve hipertansiyon tanıları dışında sistemik hastalığı olmayan 77 yaşında hasta, kendi işlerini yapabiliyorken yakınlarının sorularına anlamsız, tutarsız cevaplar vermesi ve bilinç bulanıklığı gelişmesi nedeniyle özel sağlık merkezine başvuruyor ve kranyal manyetik rezonans görüntüleme yapılması öneriliyor. Manyetik rezonans görüntülemede akut sitotoksik ödem saptanıyor. Hasta yüksek ateş ve sağ bacakta atma şikayeti ile acil servise götürülüyor. Beyin omurilik sıvısı (BOS) analizinde Herpes simpleks virüs Tip 1 polimeraz zincir reaksiyonu pozitif bulunarak viral ensefalit tanısıyla asiklovir tedavisine başlanıyor. Hasta nöroloji servis takibinin dördüncü gününde solunum sıkıntısı ve bilinç kaybı sonrasında orotrakeal entübe edilerek yoğun bakım ünitesine (YBÜ) kabul edildi. Toraks bilgisayarlı tomografisinde hava bronkogramı, sağ akciğerde atelektazi görünümü pnömoni olarak değerlendirildi. Yoğun bakım ünitesine yatışının yedinci gününde spontan göz açan, komutlara uyabilen hasta mekanik ventilasyondan ayrılmaya başlandı, hastaneye yatışının 16. günü şifa ile evine taburcu edildi. Herpes simpleks viral ensefalitinde BOS incelemesinde viral tespit, erken antiviral tedavi ve YBÜ desteği verilmesinin hızlı ve sekelsiz iyileşmeyi sağladığını düşünmekteyiz.

Anahtar sözcükler: *Asiklovir; herpetik ensefalit; yoğun bakım; pnömoni.*

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Introduction

The human being is the only natural source of the herpes simplex virus (HSV), and it is prevalent throughout the world. Herpes simplex encephalitis (HSE) is transmitted via oral route, and its incidence is reported as 2 to 3 cases per million people.[1] Following prodromal period of 2–3 days that starts with fever and headache, it induces symptoms such as psychotic behavior, hemiplegia, speech disorders, amnesia, stupor, or coma. Characteristically, focal hemorrhagic necrosis is observed in the temporal lobe. Detection of HSV DNA in cerebrospinal fluid (CSF) using polymerase chain reaction (PCR) is accepted as optimal diagnostic method. In untreated cases, mortality rate is 70%, but early-onset treatment success rate approaches 92%.[2]

Case Report

A 77-year-old woman weighing 80 kg without any systemic disease excluding previously diagnosed diabetes mellitus (DM) type 2 and hypertension was brought to a private medical center after giving nonsensical and incoherent responses to questions of relatives and experiencing clouded consciousness. After initial short medical examination, she was given acetylsalicylic acid (100 mg od) and cranial magnetic resonance imaging (MRI) examination was recommended. MR images indicated large but circumscribed area of acute cytotoxic edema in left hippocampal and perihippocampal neural parenchyma. Subsequently, she was brought to intensive care unit (ICU) with complaints of high fever (>38°C) and twitching of the right leg. Partial tonic seizures were arrested with intravenous (IV) administration of 10 mg diazepam and loading dose of phenytoin (20 mg/kg). Patient had a tendency to sleep, was without place and time orientation, and uttered meaningless words. With these symptoms, she was transferred from emergency service to neurology clinic, and lumbar tap was performed once her health state was stabilized. PCR analysis of CSF sample revealed HSV Type 1 positivity, which established diagnosis of HSE, and acyclovir (Klovirex tab. 750 mg tid) was added to her treatment. Onset of coughing, expectoration, dyspnea, and increase in urea and creatinine levels suggested initial diagnosis of pneumosepsis, which necessitated initiation of IV piperacillin/tazobactam (Tazocin, 3x4.5 g/d). On fourth day, respiratory distress was aggravated and Glasgow Coma Score (GCS) was 7 points; orotracheal intubation was applied. After informed, written consent of her relatives was obtained, she was admitted to ICU. At time of ICU admission, patient was in poor condition: eye-opening response could not be elicited, and leg withdrawal response to painful stimuli was observed. In addition, pupillary light reflex (PLR) +/+, isochoric pupils, and verbal response while intubated were seen. Mechanical ventilation support at synchronized intermittent mandatory ventilation (SIMV)-volume control (VC) mode was provided (tidal volume [TV]: 540 mL, frequency [f]: 12 breaths/min, positive end-expiratory pressure [PEEP]: 5 cm H_2O, pressure support ventilation [PSV]: 15 mmHg, fraction of inspired oxygen [FiO_2]: 60%). Bilateral, coarse rales were auscultated occasionally in both lungs. Some vital parameters were as follows: ambulatory blood pressure (ABP): 130/64 mmHg, maximum heart rate (MHR): 110/min, blood oxygen saturation (SpO_2): 96%, arterial blood gas (ABG) pH: 7.33, carbon dioxide partial pressure (PCO_2): 49 mmHg, arterial oxygen partial pressure (PaO_2): 65.8 mmHg, hydrogen carbonate and (HCO_3): 25.8 mmol/L. On chest X-ray, pneumonic infiltration on the right upper lobe, and left perihilar infiltration were detected (Figure 1a). Based on these findings, diagnosis of viral encephalitis associated with pneumonia was made. Patient had increased levels of white blood count (WBC) (>10000/mm^3), and C-reactive protein (CRP): 454 (normal: 0–8 mg/L), underwent right vena subclavia and right arteria femoralis catheterization to monitor central venous pressure and intra-arterial pressure, respectively. Under midazolam (0.1 mg/kg/hr) and remifentanil (0.05 mcg/kg/min) sedation, treatment with acetylcysteine (Asist 3x300 mg/d PO), ranitidine (Ulcuran 4x150 mg/d PO), and infusion of balanced electrolyte solution at a dose of 100 mL/hr were initiated. Samples of blood, urine, and tracheal secretion were sent to laboratory for culture. Cranial computed tomograms (CT) revealed hypodense area on the left temporal lobe (Figure 1b) that was evaluated as encephalitis of the temporal lobe. Thoracic CT and air bronchogram suggested presence of compression atelectasis of the right lung, bilateral pleural effusion, and adjacent compression atelectasis (Figure 1c) that required addition of bronchodilator (Beta2-agonist inhaler) to treatment protocol. On fourth day in ICU, sedation was discontinued and she was allowed to wake up. On the fifth day, patient opened her eyes to verbal command, localized painful stimuli, no verbal response was evaluated, and GCS was 8 points.

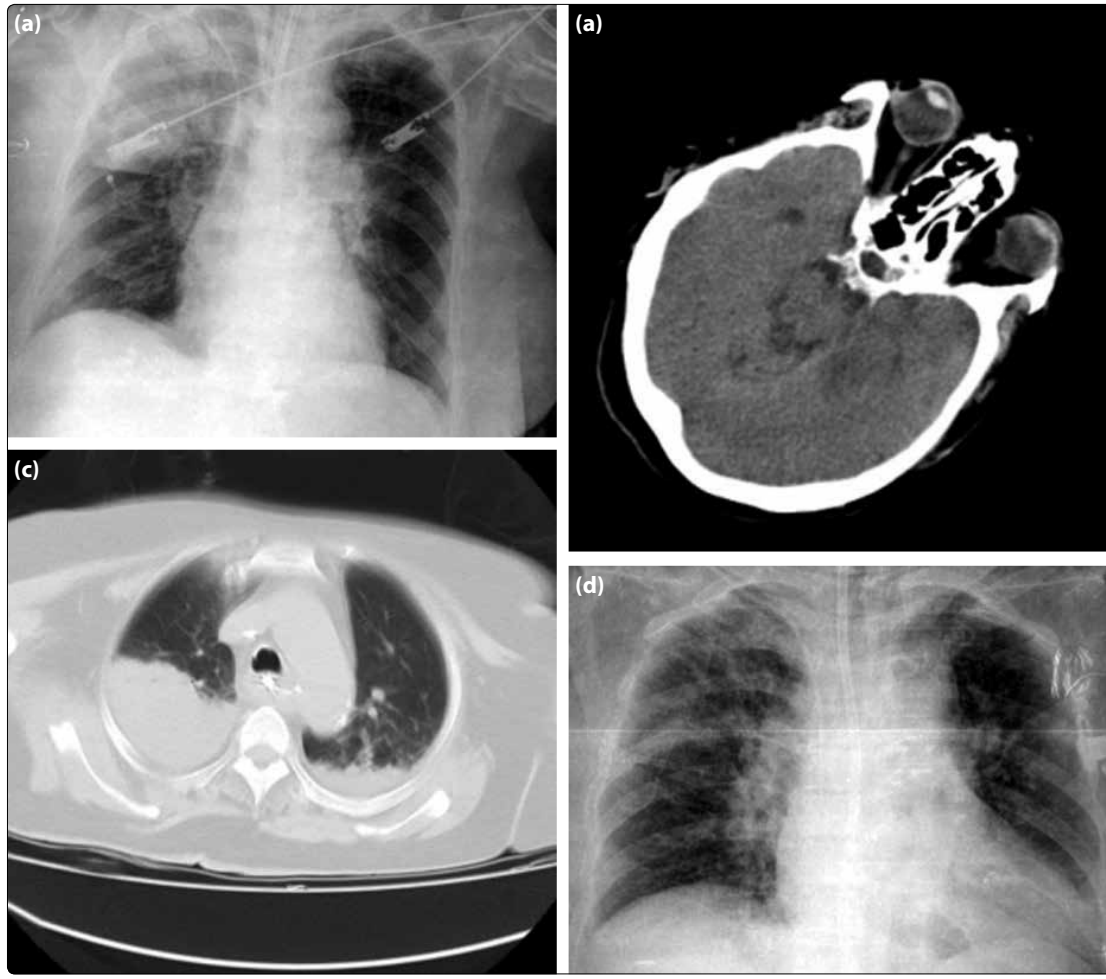

Figure 1. ICU **(a)** chest X-ray at admission, **(b)** cranial CT at admission, **(c)** thoracic CT at admission, **(d)** chest X-ray at discharge.

Despite persistence of leukocytosis, patient urea and creatinine levels were within normal limits, and no bacterial growth was detected on cultures. Linezolid (ZYVOXID IV 2 mg/mL 300 mL bid) was added to treatment regimen of the patient, whose CRP was 196 mg/L.

On seventh day of ICU stay, patient opened her eyes spontaneously and obeyed commands. Weaning from mechanical ventilation was initiated once some parameters showed improvement (GCS: 13, CRP: 83.3 mg/L, WBC and body temperature within normal limits) Settings of continuous positive airway pressure (CPAP) mode were adjusted as follows: FIO2: 50%, PEEP: 5 cm H_2O, and PSV: 15 mmHg. The patient was extubated on eighth day of hospitalization. Breathing exercises, respiratory physiotherapy, bedside coughing, and exercises were performed with Triflo respiratory equipment. Lack of pneumonic infiltration was noted on chest X-ray (Figure 1d). On 10th day of her ICU stay, she was fully conscious, alert, cooperative, and oriented. Her GCS was 15 points, and she regained spontaneous breathing in room environment. Her ABP (164/90 mmHg), MHR (84/min), and SpO_2 (94%) were within normal limits, and she could tolerate oral nutrition. When biochemical and hemodynamic parameters stabilized, she was transferred to the infectious disease clinic. On 16th day of hospitalization, patient was sent home and asked to follow-up with neurology and chest disease clinics.

Discussion

As indicated in the literature, in cases of HSE, following prodromal period of 2 to 3 days consisting of lassitude, fever, and headache, symptoms such as psychotic behavior and severe neurological manifestations such as epileptiform seizures, hemiplegia, speech disorders, amnesia, stupor, or coma can be seen.[3,4] In the pres-

ent case, the first manifestations were speech disorder and clouded consciousness, and the patient was hospitalized following development of fever and partial epileptic seizures.

Detection of HSV DNA in CSF samples using PCR assay is currently accepted as optimal diagnostic method for HSE.[5]

Specificity and sensitivity of molecular methods in the diagnosis of HSE have been reported as 94–100% and 98%, respectively. Using this method, HSV in CSF may be detected 24 hours after onset of symptoms, and positively identified 1 week after initiation of the treatment.[5,6] In the present case, CSF sample was obtained following hospitalization in the neurology department, and HSV type 1 DNA PCR positivity established diagnosis of HSE.

Though clinical diagnosis of the disease is challenging, it has been reported that since HSV is a neurophagic virus, characteristically, focal hemorrhagic necrosis develops in the temporal lobe in HSV encephalitis, which helps discriminate it from other types of encephalitis.[2] Visualization of a hypodense area in the left temporal lobe on cranial CT can confirm diagnosis of encephalitis.

Cranial CT can detect an abnormality only at fifth day after onset of disease, while cranial MRI can reveal the presence of pathology on second day after onset.[6] MRI obtained at first admission of present patient disclosed a large circumscribed area of acute cytotoxic edema in the left hippocampal and perihippocampal neural parenchyma that was evaluated as encephalitis.

Mortality rate is 70% in untreated cases with HSE, while early-onset treatment can achieve success rate of up to 92%. This disease has been reported to be irreversible when sequelae develop.[3] Early treatment has been shown to significantly decrease mortality rate and development of neurological sequelae.[4,5,7] The best treatment alternative for HSE has been demonstrated to be IV acyclovir at daily doses of 30 mg/kg tid for 21 days.[3,4,8,9]

In the current case, early-onset acyclovir treatment was initiated, and treatment was continued with variations in doses based on urea and creatinine values, and no sequelae were seen.

In conclusion, early-onset treatment, antiviral treatment, and ICU support ensure faster recovery without sequelae.

Conflict of interest

None declared.

References

1. Fleming DT, McQuillan GM, Johnson RE, Nahmias AJ, Aral SO, Lee FK, et al. Herpes simplex virus type 2 in the United States, 1976 to 1994. N Engl J Med 1997;337:1105–11.
2. Whitley RJ, Soong SJ, Linneman C Jr, Liu C, Pazin G, Alford CA. Herpes simplex encephalitis. Clinical Assessment. JAMA 1982;247:317–20. Crossref
3. Corey L. Herpes simplex virus. In: Mandell GL, Bennett JE, Dolin R, editors. Mandell, Douglas, and Bennett's principles and practice of infectious diseases. 6th ed. Philadelphia: Elsevier; 2005. p. 1762–80.
4. Arıbaş E, Türk Ü. Herpes simplex virus encephalitis. Flora Derg 1996;1:123–6.
5. Eren SS, Öztoprak N, Çevik MA, Baran G, Erbay A, Akıncı E, et al. Herpes simplex encephalitis cases. Flora Derg 2005;10:148–50.
6. Karsen H, Karahocagil MK, Akdeniz H, Ersöz M, Çağaç A, Ekin S. Herpes ensefaliti, tanı takip ve tedavi: Bir olgu sunumu. Van Tıp Derg 2006;13:131–3.
7. Alp E, Yıldız O, Gökahmetoğlu S, Coşkun R, Köşklü A, Aygen B. The value of molecular and imaging methods for early diagnosis of herpes encephalitis: a case report. Flora 2005;10:145–7.
8. Sköldenberg B, Forsgren M, Alestig K, Bergström T, Burman L, Dahlqvist E, et al. Acyclovir versus vidarabine in herpes simplex encephalitis. Randomised multicentre study in consecutive Swedish patients. Lancet 1984;2(8405):707–11. Crossref
9. Durmaz Çetin B, Hasman H. Herpes ensefalitleri. Klinik Derg 2004;17:68–71.