Herpes Simplex Encephalitis Is Anticoagulation Safe?

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Background: Herpes simplex encephalitis (HSE) still carries a high morbidity and mortality.

Review Summary: The authors report a 27-year-old patient who presented with an HSE manifested by a high temperature, seizures, and headaches. His hospitalization course was complicated by a pulmonary embolism. After anticoagulation was started, the patient developed a right temporal hematoma at the same region of the abnormal signal on magnetic resonance imaging. The patient underwent a craniotomy and evacuation of the hematoma with an uneventful postoperative outcome.

Conclusion: The safety of anticoagulation in HSE has not been raised in the literature previously, and it needs further study.

Key Words: herpes simplex, encephalitis, anticoagulation, hematoma

(The Neurologist 2005;11: 187-189)

erepes simplex virus encephalitis (HSVE) is the most common fatal sporadic encephalitis in humans.^{1,2} The incidence of HSVE has been estimated to be around 1 case per million per year.¹ Usually the manifestations of the HSVE are fever, headache, seizure, confusion, or focal neurologic symptoms.³ Overt hemorrhage in encephalitis is infrequent and is mainly seen in HSVE. There are only a few case reports in the literature describing intracerebral hematoma formation in HSVE.

The safety of anticoagulation in HSVE has not been raised in the literature. We present a young patient with HSVE and concomitant pulmonary embolism (PE), who had a temporal hematoma at the same region of abnormal signal on magnetic resonance imaging (MRI) of his brain after heparin was started. The patient underwent an evacuation of

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Copyright © 2005 by Lippincott Williams & Wilkins ISSN: 1074-7931/05/1103-0187 DOI: 10.1097/01.nrl.0000159761.57148.70 a right temporal hematoma, and an inferior vena cava filter placement, with a favorable outcome.

CASE REPORT

The patient, a 27-year-old man, presented to the emergency department (ED) for the onset of a generalized tonicclonic seizure 24 hours after being involved in a motor vehicle accident, with amnesia of the event and without any witness to the accident. The seizure was witnessed by his father and lasted for 30 seconds with postictal state. The paramedics report stated that the patient was awake but confused in the field and the car had hit a tree at the side of the road.

The patient at the ED was sleepy but easily aroused and oriented to time and place. He did not have any neurologic focal signs. An electroencephalogram was done at the ED but showed diffuse slowing without any epileptiform activity. He had a temperature of 38.7°C and he was complaining of headaches, which he stated began 3 days before his accident. A computed tomographic (CT) scan of the brain was unremarkable. A lumbar puncture showed 189 WBC with 50% lymphocytes, 6 RBC, 51 mg/dL proteins, and 83 mg/dL glucose. Bacterial cultures and viral polymerase chain reaction (PCR) in the cerebrospinal fluid (CSF) were sent for study and he was loaded with 1g intravenous phenytoin at the ED. He was admitted to the intensive care unit and was started on acyclovir 10 mg/kg intravenously twice daily and broad-spectrum antibiotics. The following day a brain MR image was acquired that showed a hypersignal at his right mesial temporal lobe on T2 and FLAIR weighted images (Fig. 1), and mild contrast enhancement. Once the bacterial cultures were confirmed to be negative, the antibiotics were stopped and the patient was kept on acyclovir. On day 4 of hospitalization, the PCR in the CSF came positive for HSV 1, clinically the patient was improving, and the plan was to treat him for a total of 10 days with acyclovir.

At day 8 he developed an acute onset of chest pain, with desaturation and tachycardia. He was diagnosed with a right upper lobe PE by spiral CT scan of the chest. A hypercoagulative workup was sent and included ProtC, S, antithrombin III, antiphospholipid, and anticardiolipin anti-

The Neurologist • Volume 11, Number 3, May 2005

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FIGURE 1. Axial brain MRI FLAIR sequence showing a hypersignal at the right mesial temporal lobe on day 2.



FIGURE 2. A brain CT scan without contrast showing the medial right temporal hematoma on day 9.

bodies the results of which came back negative later. The patient was started on intravenous heparin 1000 U/hour without any bolus. His coagulation profile before starting the heparin was normal. He was followed by serial PTTs every 6 hours, all of which were less than 60. On day 9 he developed a severe headache with lethargy and confusion, and on examination he was sleepy, hard to arouse, confused, disori-

ented to time and place, but could still follow simple commands. An emergent brain CT scan showed a 4×4 -cm right temporal lobe hematoma with early uncal herniation and intraventricular hemorrhage (Fig. 2). The patient developed partial third nerve palsy. He underwent emergent right temporal craniotomy with evacuation of the hematoma. During surgery the surrounding brain was noted to be friable, hyperemic, and edematous. Following that, he underwent an inferior vena cava filter placement. He tolerated both procedures well and had an uneventful postoperative course. He was discharged 1 week after his surgery with resolution of his partial third nerve palsy and a nonfocal neurologic examination.

The occurrence of the hemorrhage at the site of an abnormal MRI signal suggests that changes in the brain parenchyma and vessels induced by the encephalitis carry a potential risk of spontaneous bleeding.

DISCUSSION

HSV 1 encephalitis has a predilection for the limbic system³ and it causes a microscopic, hemorrhagic necrotizing meningoencephalitis not usually detected on CT.3-5 Overt hemorrhage with HSVE is rare, and to our knowledge there are 4 cases reported in the literature.^{3,4,6,7} Viral-induced coagulopathy has been evoked as a possible cause of bleeding,⁴ but in our case the patient had a normal coagulation profile and his PTT was still only 56 at the time of hemorrhage. Vascular changes have been described in HSVE with hemorrhagic necrosis and perivascular cuffing.^{4,5} The occurrence of the hemorrhage at the site of an abnormal MRI signal suggests that changes in the brain parenchyma and vessels induced by the encephalitis carry a potential risk of spontaneous bleeding. We are not able to answer the question about anticoagulation safety in HSVE on the basis of a single case report, but taken together with additional reported cases of hemorrhage in this condition, the question should be raised regarding the safety of anticoagulation in these cases, and this topic merits future study. Patients with encephalitis are often debilitated and bedridden, with increased proclivity for deep venous thrombosis and PE. In cases of deep venous thrombosis in these patients, placement of inferior vena cava filters may therefore be preferable to anticoagulation.

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