Antiepileptic Drug Selection for People with HIV/AIDS

Case Presentation

A consult was requested from you for a 42-year-old male with epilepsy and a recent HIV diagnosis. His seizures are characterized by a "funny" sensation in his head followed by left-leg tingling and numbness and loss of consciousness with generalized tonic–clonic activity. He has had epilepsy since he sustained a head injury at age 28 that occurred as a result of a motor vehicle accident. His initial seizure occurred 8 months after the head injury. Imaging performed at that time was interpreted as normal. An EEG was obtained within 24 hours of the seizure, and the report indicates right frontal epileptiform discharges were seen. His doctor at the time discussed with him the risk of seizure recurrence, and the patient opted not to initiate antiepileptic drug (AED) therapy. He had a second seizure 2 months later, and carbamazepine (CBZ) was started. He is currently taking CBZ XR 400 mg po BID and has been seizure free for the past 3 years. An attempt to wean him from CBZ 8 months ago was associated with recurrence of the left-leg hemisensory aura. For the past 5 years his primary care physician has managed his epilepsy and prescribed the CBZ.

As part of a health screening program for additional insurance coverage, he was recently tested for HIV and diagnosed as HIV positive. Risk factors for HIV infection include unprotected sex with commercial sex workers during international travel to southern Africa and Southeast Asia. The primary care physician initiated referrals to an HIV specialist and a neurologist simultaneously. The HIV care provider saw the patient last week, and after his initial evaluation, including review of his CD4 count and viral load, the decision is made to delay HIV treatment at this time. He is scheduled for follow-up in 3 months. He remains seizure free on CBZ.

His past medical history is unremarkable, and a 10-point review of systems is negative. He is clearly distressed about his HIV status. He is unmarried, lives alone, does not smoke, and drinks 1–2 alcoholic beverages a week.

On examination, his vital signs are T 98.8, BP 124/74, HR 85, and RR 14. On general examination, his pulmonary, cardiac, and ENT systems are normal. Funduscopic examination is normal. Neurologically, he is a good historian with no evidence of psychomotor slowing. He is oriented to person, place, and date. He can add and subtract numbers, and recall of past events is excellent. He can repeat sentences. Digit span is 7 forward and 5 in reverse. His short-term memory is intact for 3 of 3 objects at 5 minutes. His cranial nerves reveal normal visual fields, EOM movements, facial movement and sensation, normal hearing to finger rub, normal palate and tongue movement, and good strength in neck rotation to the right and left. Strength is 5/5 throughout, and tone is normal in all four limbs. Deep tendon reflexes are 2+ throughout, and sensory testing is normal, including distal sensation for all modalities, with no evidence of allodynia or hyperpathia. Coordination testing of the upper and lower extremities is normal, and gait is normal.

Laboratory results from a blood draw last week are available for your review. A complete blood count and electrolytes are all within normal limits. His CBZ level is 8.2.

You personally review the brain MRI scans and agree they are normal. You also personally review the EEG tracings and agree with the official interpretation.

Questions[1]

1. Given the patient's HIV status, you should
A. Immediately stop the CBZ
B. Continue the CBZ and advise him to call for an appointment when the HIV specialist starts him on treatment
C. Contact the HIV specialist to discuss the patient's situation and coordinate care

The correct answer is C. The patient is not presently taking any antiretrovirals (ARVs), but he is likely to require treatment for HIV infection in the future. Past efforts to wean him from CBZ have resulted in a recurrence of the partial sensory seizures, making seizure-free AED withdrawal unlikely. No changes are needed urgently; however, the patient will eventually require both AEDs and ARVs. Because he is taking an enzyme-inducing AED (IE-AED) that may interact with and decrease the efficacy of protease inhibitors (PIs) and nonnucleoside reverse transcriptase inhibitors (NNRTIs), waiting until he is prescribed ARVs before considering changes in his AED regimen is unwise, as evidence indicates that there may be adverse consequences from combining ARVs and EI-AEDs (**Level C**).

You contact the HIV specialist, who plans to reassess the patient clinically and follow his viral load and CD4 count every 3 months. The patient's baseline genotype testing shows no relevant ARV mutations. You review the ARV regimen the HIV specialist considers to be reasonable for the patient if/when he requires treatment.

2. Which ARV should be avoided in this patient, regardless of his AED usage?
A. Any NNRTI
B. Efavirenz
C. Any PI
D. Raltegravir

The correct answer is B. Efavirenz may cause neuropsychiatric symptoms and is known to lower the seizure threshold. ARV combinations that include efavirenz should be avoided. ARV treatment requires combining at least three medications. Although most combinations include an NNRTI and or PI, the integrase inhibitor raltegravir may also be a potential option for this patient. Raltegravir has favorable characteristics, including lack of drug interactions with EI-AEDs and with most other drugs, and has minimal CNS adverse effects.

After consultation with the HIV specialist and the patient, the decision is made to transition the patient from CBZ treatment to levetiracetam (LVT) treatment. You continue the CBZ treatment and initiate LVT, titrating to 1000 mg po BID before weaning the patient from the CBZ. The patient remains seizure free on LVT. You inform the HIV specialist that there are no known drug–drug interactions between ARVs and LVT. The HIV specialist indicates that he will contact you when ARV therapy is initiated in this patient so comanagement can be continued.

Diagnosis Coding[2]

Both the *ICD-9-CM Official Guidelines for Coding and Reporting* and the *ICD-10-CM Official Guidelines for Coding and Reporting* have specific rules for code sequencing in patients with HIV. The information in the case above suggests that the patient is asymptomatic. In such a case, a "status" code is added as a second code to the primary reason for the patient visit, which in this case is epilepsy, to indicate that this condition was considered in the recommendation of appropriate treatment. Also, to clarify the cause of the epilepsy, a "late effects" code should be added. The ICD-9-CM codes for this visit would be:

345.50	Localization related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, without mention of intractable epilepsy
907.0	Late effect of intracranial injury without mention of skull fracture
V08	Asymptomatic human immunodeficiency virus [HIV] status

After October 1, 2013, ICD-10-CM codes are mandatory for reporting, and the codes would then be:

G40.109	Localization related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, not intractable, without status epilepticus
S06.9x9S	Unspecified intracranial injury with loss of consciousness of unspecified duration, sequela
Z21	Asymptomatic human immunodeficiency virus [HIV] status

If the patient should develop symptomatic HIV infection, according to the guidelines the code for HIV should be sequenced first unless the visit or admission is for a condition that is unrelated to HIV, as is indicated in the above discussion. The ICD-9-CM coding would then be:

345.50	Localization related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, without mention of intractable epilepsy
907.0	Late effect of intracranial injury without mention of skull fracture
042	Human immunodeficiency virus [HIV] disease

After October 1, 2013, code:

G40.109	Localization related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, not intractable, without status epilepticus
S06.9x9S	Unspecified intracranial injury with loss of consciousness of unspecified duration, sequela
B20	Human immunodeficiency virus [HIV] disease

Had the epilepsy been related to HIV infection, 042 (ICD-9-CM) or B20 (ICD-10-CM) would be listed as the first code. Also, a hospital coder would add yet a fourth code to indicate the motor vehicle accident as a cause of the head injury for Medicare Part A billing. It is not yet clear whether the use of these "external cause" codes will be required for Part B billing or other third-party claims using ICD-10-CM codes.

Evaluation and Management Coding
In assessment of this patient, a comprehensive history and physical examination are performed, and high-complexity medical decision making is employed (new diagnosis to the neurologist requiring treatment and extensive number of data reviewed ([personal review of head MRI and prior EEGs]). In addition, there is high risk associated with the temporary continuation of CBZ, the institution of LVT, and the ARV medications. Thus, the neurologist can comfortably code for 99245, which is a level 5 outpatient consultation.

Routine Electroencephalography (EEG)
EEG codes 95812-95822 include hyperventilation and/or photic stimulation when appropriate. Routine EEG codes 95816-95822 include 20 to 40 minutes of recording. Extended EEG codes 95812-95813 include reporting times longer than 40 minutes.

95812 Electroencephalogram (EEG) extended monitoring; 41-60 minutes

95813 greater than one hour

95816 Electroencephalogram (EEG); including recording awake and drowsy

95819 including recording awake and asleep

There is no specific code to reimburse the physician for reviewing an EEG done elsewhere. However, review of the EEG can be used to determine the appropriate evaluation and management code. Documenting the review of the report, reviewing the actual recording, and speaking with the individual who performed the test will raise the level of medical decision making.

1. Birbeck GL, French JA, Perucca E, et al. Evidence-based guideline: Antiepileptic drug selection for people with HIV/AIDS: Report of the Quality Standards Subcommittee of the American Academy of Neurology and the Ad Hoc Task Force of the Commission on Therapeutic Strategies of the International League Against Epilepsy. Neurology® 2012;78:139–145. Epub 2012 Jan 4.
2. Centers for Disease Control and Prevention. International classification of diseases, ninth revision, clinical modification (ICD-9-CM). *www.cdc.gov/nchs/icd/icd9cm.htm.*
3. Centers for Disease Control and Prevention. International classification of diseases, tenth revision, clinical modification (ICD-10-CM). *www.cdc.gov/nchs/icd/icd10cm.htm.*

Disclaimer
This statement is provided as an educational service of the American Academy of Neurology. It is based on an assessment of current scientific and clinical information. It is not intended to include all possible proper methods of care for a particular neurologic problem or all legitimate criteria for choosing to use a specific procedure. Neither is it intended to exclude any reasonable alternative methodologies. The AAN recognizes that specific patient care decisions are the prerogative of the patient and the physician caring for the patient, based on all of the circumstances involved.