

HOSPITAL PHYSICIAN®

NEUROLOGY BOARD REVIEW MANUAL

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The *Hospital Physician Neurology Board Review Manual* is a peer-reviewed study guide for residents and practicing physicians preparing for board examinations in neurology. Each manual reviews a topic essential to the current practice of neurology.

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Clinical Case Studies in Epilepsy

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Clinical Case Studies in Epilepsy

Tracey A. Milligan, MD

INTRODUCTION

A *seizure* is a temporary alteration in brain function due to excessive and/or hypersynchronous neuronal activity. *Epilepsy* is the tendency to have recurrent unprovoked seizures. Approximately 10% of individuals will have 1 seizure in his or her lifetime, and up to 3% will suffer from epilepsy.¹ However, the prevalence of active epilepsy is only 0.8%. In the United States, approximately 2 million people have epilepsy, with 100,000 new cases diagnosed per year. People of every background and age are affected. Epilepsy is associated with impaired quality of life, and its treatment can have serious consequences. Unfortunately, 20% to 40% of patients with epilepsy continue to experience occasional seizures despite treatment.²⁻⁵

Epilepsy is not a single condition but a symptom of various disorders and reflects underlying brain dysfunction. The International League Against Epilepsy (ILAE) currently has 2 classification schemes for epilepsy that are designed to be used together. The first divides seizures into 3 types, with subtypes of each: partial (focal seizures involving only part of the brain), generalized (seizures involving both hemispheres of the brain), and unclassifiable (**Table 1**).⁶ This system allows for simple classification that may determine diagnostic evaluation, choice of medication, and prognosis. A supplement to this system, the ILAE Classification of Epilepsies and Epileptic Syndromes,⁷ divides epilepsies into 4 groups: localization-related (involves 1 or more focal areas of the brain), generalized (involves both hemispheres of the brain at the same time), undetermined, and special syndromes. The localized and generalized groups further divide into idiopathic (no identifiable cause and no associated neurologic abnormalities, although underlying genetic mutations are increasingly being discovered), symptomatic (cause is identified), or cryptogenic (presumed symptomatic, but the cause is unknown) epilepsy syndromes. Epilepsy syndromes are defined by the specific seizure type, clinical findings (including age of onset), and type of EEG abnormality. Epilepsy syndromes include the catastrophic epilepsy syndromes of infancy and childhood (eg, West syndrome, Lennox-

Gastaut syndrome, myoclonic epilepsies), idiopathic partial epilepsy syndromes (eg, benign epilepsy with centrotemporal spikes), idiopathic generalized syndromes (eg, benign neonatal convulsions, juvenile myoclonic epilepsy [JME]), and special syndromes such as febrile seizures. A specific epilepsy syndrome may require specific anticonvulsant drug treatment and is frequently associated with a predictable prognosis. The ILAE is currently developing a third diagnostic scheme aimed at providing a standardized description of individual patients rather than a fixed classification.⁸ This scheme uses 5 axes: ictal phenomenology (axis 1); seizure type (axis 2); syndrome, when known (axis 3); genetic defect or specific pathologic substrate for symptomatic focal epilepsies (axis 4); and impairment classification (axis 5).

This review presents 4 cases that evolve over the course of the discussion to encompass evaluation of a first seizure, diagnosis and management of epilepsy in the elderly, management of epilepsy during pregnancy, and evaluation and management of acute mental status change in a patient with epilepsy.

EVALUATION OF A FIRST SEIZURE

CASE 1 PRESENTATION

A 19-year-old woman is referred to a neurologist for evaluation after experiencing a convulsion while jogging. The patient is otherwise healthy and takes no medications besides oral contraceptives. Records from the emergency department (ED) visit document that a physician who was jogging behind the patient witnessed the event and did not notice any prodrome or focal findings. Evaluation in the ED showed a postictal period of confusion for 20 minutes followed by a normal examination. Electrolytes, renal function, complete blood count, and a computed tomography (CT) scan of the patient's head were normal.

DIAGNOSING EPILEPSY

- What is the differential diagnosis for a seizure?