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The *Hospital Physician Neurology Board Review Manual* is a 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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Encephalopathy: Approach to Diagnosis and Care

Editor:
Alireza Atri, MD, PhD
Instructor in Neurology, Harvard Medical School; Assistant in Neurology, Memory Disorders Unit, Massachusetts General Hospital, Boston, MA

Associate Editor:
Tracey A. Milligan, MD
Instructor in Neurology, Harvard Medical School; Associate Neurologist, Brigham and Women's and Faulkner Hospitals, Boston, MA

Contributors:
Kiran C. Reddy, MD
Senior Resident in Neurology, Harvard Medical School, Departments of Neurology, Massachusetts General and Brigham and Women's Hospitals, Boston, MA

Andrew S. Kayser, MD, PhD
Instructor in Neurology, Memory and Aging Center, Department of Neurology, University of California at San Francisco; Staff Neurologist, Northern California VA Healthcare System, San Francisco, CA

Alireza Atri, MD, PhD

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Encephalopathy: Approach to Diagnosis and Care

Kiran C. Reddy, MD, Andrew S. Kayser, MD, PhD, and Alireza Atri, MD, PhD

APPLYING A SYSTEMATIC APPROACH

A request for the evaluation of a patient with altered mental status is one of the most common reasons for a neurology consultation. A wide range of conditions can result in this clinical presentation—from primary neurologic disorders (seizure, stroke) to systemic diseases (urinary tract infection, hyponatremia). The neurologist must be able to quickly clarify the nature of the cognitive change, prioritize the diagnostic possibilities, decide on an expeditious work-up, and start appropriate therapy, as early treatment is critical for many of these conditions (eg, prompt administration of intravenous antibiotics for meningococcal meningitis). Because the scope of potential causes of encephalopathy is broad and the time for action is frequently short, following a systematic approach to evaluation is critical.

RECOGNIZING ENCEPHALOPATHY

One of the first challenges is to recognize a patient with altered sensorium and to distinguish the disorder as encephalopathy. The neurologist's use of the term *altered mental status* is generally synonymous with encephalopathy and conforms, in broad terms, with the psychiatrist's definition of *delirium* (ie, a disturbance of consciousness that develops over hours to days and that is accompanied by a change in cognition that cannot be better accounted for by a preexisting or evolving dementia). Encephalopathy, therefore, is a generalized cortical dysfunction characterized by an acute-to-subacute course (hours to days), prominent fluctuations in the level of consciousness, poor attention, frequent hallucinations and delusions, and changes in the level of psychomotor activity (generally increased but at times decreased).

A study assessing housestaff awareness of risks for delirium among older hospitalized patients found that clinical trainees had poor knowledge of patient orientation to place and time.[1] In a large retrospective study, only 4% of patients had a recorded diagnosis of delirium,[2] yet an episode may occur in up to 56% of older hospitalized patients.[3] Some studies have emphasized the need for standard cognitive assessment of all inpatients, such as the Confusion Assessment Method (CAM), to improve clinician awareness of delirium.[4]

CHARACTERIZING THE COGNITIVE CHANGE

Once encephalopathy is recognized, the next step is to characterize the precise nature of the cognitive change, which directs the subsequent work-up. This step requires characterizing the time course as acute, subacute, or chronic and as monophasic or multiphasic (single or multiple episodes) and determining whether generalized cortical dysfunction is accompanied by focal neurologic signs and symptoms.

Distinguishing the nature of the illness has implications for the urgency of treatment, which is usually much less in the case of a chronic, progressive condition such as dementia. One must be wary of delirium complicating the course of dementia, a disorder typically characterized by chronicity, a normal level of consciousness, relatively normal psychomotor activity, better preservation of attention, and, usually, less frequent hallucinations and delusions until late in the course of the illness.[5] Various studies estimate the prevalence of delirium in community-dwelling and hospitalized patients with dementia to be from 22% to 89%.[6] Moreover, changes over the course of minutes to hours can occasionally be inherent to a dementing illness. For example, patients with Lewy body dementia are known to have prominent fluctuations in awareness (attention/vigilance) and vivid visual hallucinations during the day.[7] It is even more important to be aware of focal deficits that can be mistaken for encephalopathic changes. For example, patients with embolic distal left middle cerebral artery (MCA) distribution strokes can be erroneously classified as "demented" when their "cognitive difficulties" are primarily limited to their language,[8] and patients with right MCA/parietal strokes can occasionally present primarily with agitation.[9]

NARROWING THE DIFFERENTIAL

Once encephalopathy/delirium is determined to be present, further evaluation of the patient is aimed at defining the range of etiologic possibilities. Simply hearing the presenting complaint will allow one to narrow the differential significantly. Nonetheless, having a systematic approach ensures that no potential diagnosis

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