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YEARS OF ADVANCING
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Altered Mental Status in the Elderly: Neurologic Nightmares

The elderly patient with altered mental status presents a difficult diagnostic challenge to the emergency physician. Differentiating acutely decompensated progressive dementia from other organic and reversible causes of altered mental status is challenging. The speaker will dissect these difficult diagnostic dilemmas and present how to approach elderly patients with altered mental status in a comprehensive but selective and cost-effective manner.

- Review the diagnostic approach to elderly patients with altered mental status.
- Discuss the unique challenges of elderly patients with altered mental status.
- Describe how to differentiate between dementia and reversible causes of altered mental status.
- Present the appropriate and cost-effective evaluation of elderly patients with altered mental status.

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Altered Mental Status in the Elderly: Neurologic Nightmares

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Epidemiology

The number of people over the age of 65 will double in the United States in the next 30 years. As the population ages, the elderly will comprise a higher proportion of patients overall. This is especially true in the emergency department (ED). Persons age 65 and older account for 17.5 million ED visits in the U.S. annually and 15.4% of total ED visits. In 30 years, ED visits for elderly patients are predicted to increase to 25% to 30%. At least 25% of all ED patients over age 65 years have some form of altered mental status. The emergency department and acute hospital wards have the highest rates of patients presenting with delirium. Agitation in younger patients presenting to the ED are much more likely to be the result of substance abuse or underlying psychiatric disease (psychotic or mood disorder), than in the elderly population. Delirium or mental status change is a leading presenting symptom for acutely ill elderly persons.

Definition

There are two main components to the category of altered mental status. The first consists of the level of consciousness, or arousal. The second consists of the content of consciousness, or cognition. The level of consciousness, especially in delirium, may be waxing and waning. Patients at times may be awake and inattentive, then progress to a hyperalert state requiring constant supervision, and later may be lethargic. Delirium is an organic mental syndrome defined by a global disturbance in consciousness and cognition. It is characterized by a global cognitive impairment due to a medical condition, which develops abruptly and often fluctuates over the course of the day.

Delirium is a medical emergency requiring prompt evaluation and treatment. It is generally reversible if the underlying cause is discovered and addressed, and can be fatal if overlooked and untreated. Hospital mortality rates in patients with delirium ranges from 25 – 33%. Elderly patients who develop delirium during hospitalization have a 22 – 76% chance of dying during that hospitalization. Several studies have found the 3 month mortality in patients discharged home with undiagnosed delirium ranges from 14-30%.

DSM-IV Criteria for Delirium

- 1) Disturbance of consciousness (ie, reduced clarity of awareness of the environment) with reduced ability to focus, sustain, or shift attention.
- 2) A change in cognition (such as memory deficit, disorientation, language disturbance) or the development of a perceptual disturbance that is not better accounted for by a pre-existing, established, or evolving dementia.
- 3) The disturbance develops over a short period of time (usually hours to days) and tends to fluctuate during the course of the day.
- 4) Delirium has a specific cause such as a general medical condition, substance induced, or multiple etiologies.

Key Features of Delirium

- Altered level of consciousness ranging from stupor to agitation
- Often associated with sleep/wake cycle disturbance
- Precipitated by medical illness, substance intoxication/withdrawal or medication effect

- Leading presenting symptom of illness in the elderly
- Life-threatening etiologies require immediate intervention
- Underlying medical etiology must be determined and treated
- Presume that altered mental status is delirium until proven otherwise

Characteristic	Delirium	Dementia	Psychiatric
Onset	sudden	insidious	sudden
Course over 24h	fluctuating	stable	stable
Consciousness	reduced	alert	alert
Attention	disordered	normal	may be disordered
Cognition	disordered	impaired	may be impaired
Orientation	impaired	often impaired	may be impaired
Hallucinations	visual and/or auditory	often absent	usually auditory
Delusions	transient, poorly organized	usually absent	sustained
Movements	asterixis, tremor may be present	often absent	absent

Confusion Assessment Method (CAM) Diagnostic Tool

The Confusion Assessment Method (CAM) has been developed as an easy to use, sensitive, specific, and reliable diagnostic tool for the rapid detection of delirium. It has a sensitivity of 93 – 100% and specificity of 90 – 95% for the diagnosis of delirium.

Confusion Assessment Method (CAM)

- 1) Acute onset and fluctuating course
- 2) Inattention, distractibility
- 3) Disorganized thinking, illogical or unclear ideas
- 4) Alteration in consciousness

The diagnosis of delirium requires the presence of both features 1 and 2, plus either feature 3 or 4.

Disorganized thinking is defined as “rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject”

History

A detailed medical history is important in elucidating the etiology of delirium. It is important to obtain information from as many sources as possible including the patient, emergency medical service providers, witnesses, family, caregivers and primary care providers. Information regarding the patient’s baseline mental status and level of functioning should be ascertained. It is helpful to know if the patient has underlying dementia, if there has been an acute change and what underlying medical conditions exist. A very thorough review of medication use is important, as medications are very common precipitants of delirium in the

elderly. The history should focus on causal factors related to the acute presentation such as history of trauma or fall, lack of oral intake, presence of systemic disease including metabolic and cardiopulmonary disorders, symptoms of infection, and substance use or withdrawal.

Physical Examination

Vital signs should be carefully reviewed and an accurate temperature and oxygen saturation measurement obtained. A bedside glucose determination is often considered the “fifth vital sign” and is particularly important in the evaluation of the agitated patient. A meticulous physical examination must be performed, including neurologic and mental status examination. The examination should search for evidence of medical or surgical causes for the patient’s condition, including trauma, infections and focal neurologic deficits.

Differential Diagnosis

Delirium is a manifestation of various medical disorders of cerebral metabolism or neurotransmission. The etiologies can be divided into four broad categories:

- 1) primary intracranial diseases
- 2) systemic diseases that affect the brain secondarily
- 3) exogenous toxins
- 4) withdrawal from substances

Primary CNS Disease

Cerebrovascular accident
Acute or chronic subdural hematoma
Encephalitis
Meningitis
Seizures
Nonconvulsive status epilepticus
Postictal state
Hypertensive encephalopathy

Infections Diseases

Sepsis
Pneumonia
Urinary tract infections
Skin and soft tissue infections

Cardiopulmonary Disorders

Hypotension and hypoperfusion
Acute myocardial infarction
Congestive heart failure
Arrhythmia
Cardiogenic shock
Acute or chronic respiratory failure
Hypoxia

Hypercarbia

Acute Abdominal Disorders

Diverticulitis

Appendicitis

Mesenteric ischemia

Volvulus

Uremia

Hepatic encephalopathy

Fluid or Electrolyte Abnormalities

Dehydration

Hyper - Hyponatremia

Hyper - Hypoglycemia

Hyper - Hypocalcemia

Endocrinopathies

Thyroid

Adrenal

Medications

Anticholinergic medications

Antihistamines

Antiemetics

Antiparkinsonian medications

Antispasmodics (gastrointestinal)

Intoxication or Withdrawal

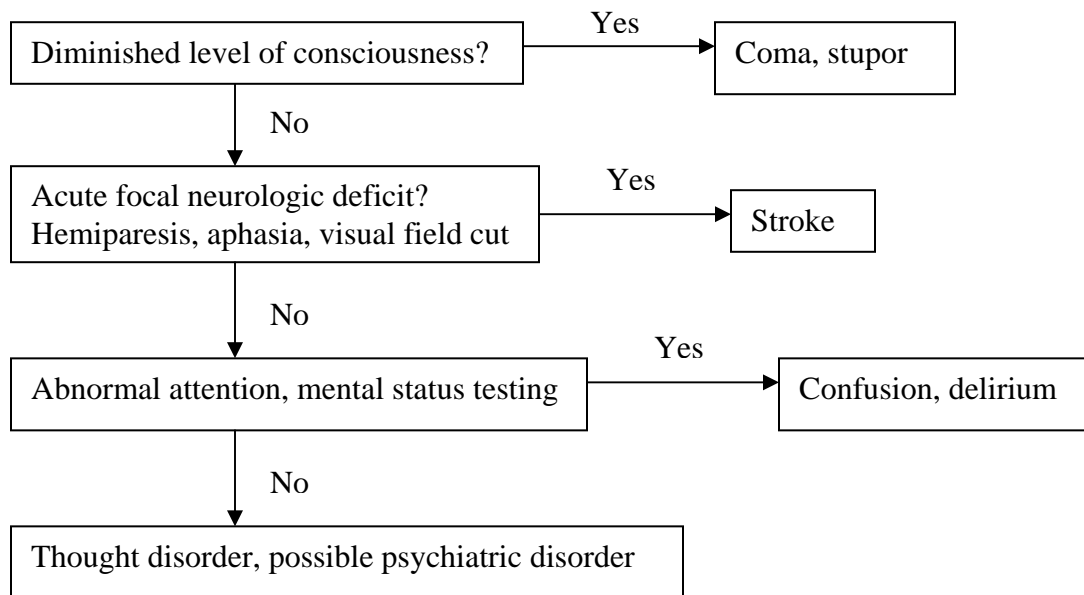
Alcohol

Sedative–hypnotics

“SMASHED”- Mnemonic for acute mental status change

S	Substrates Sepsis	hyperglycemia, hypoglycemia, thiamine
M	Meningitis Mental illness	meningitis and other CNS infections functional psychoses
A	Alcohol	intoxication, withdrawal
S	Seizures Stimulants	Seizure activity, post-ictal states anticholinergics, hallucinogens, cocaine
H	Hyper Hypo	hyperthyroidism, hyperthermia, hypercarbia hypothyroidism, hypothermia, hypoxia, hypotension
E	Electrolytes Encephalopathy	hyponatremia, hyponatremia, hypercalcemia hepatic, uremic, hypertensive, others
D	Drugs of any sort	

Algorithm for Assessing Altered Mental Status



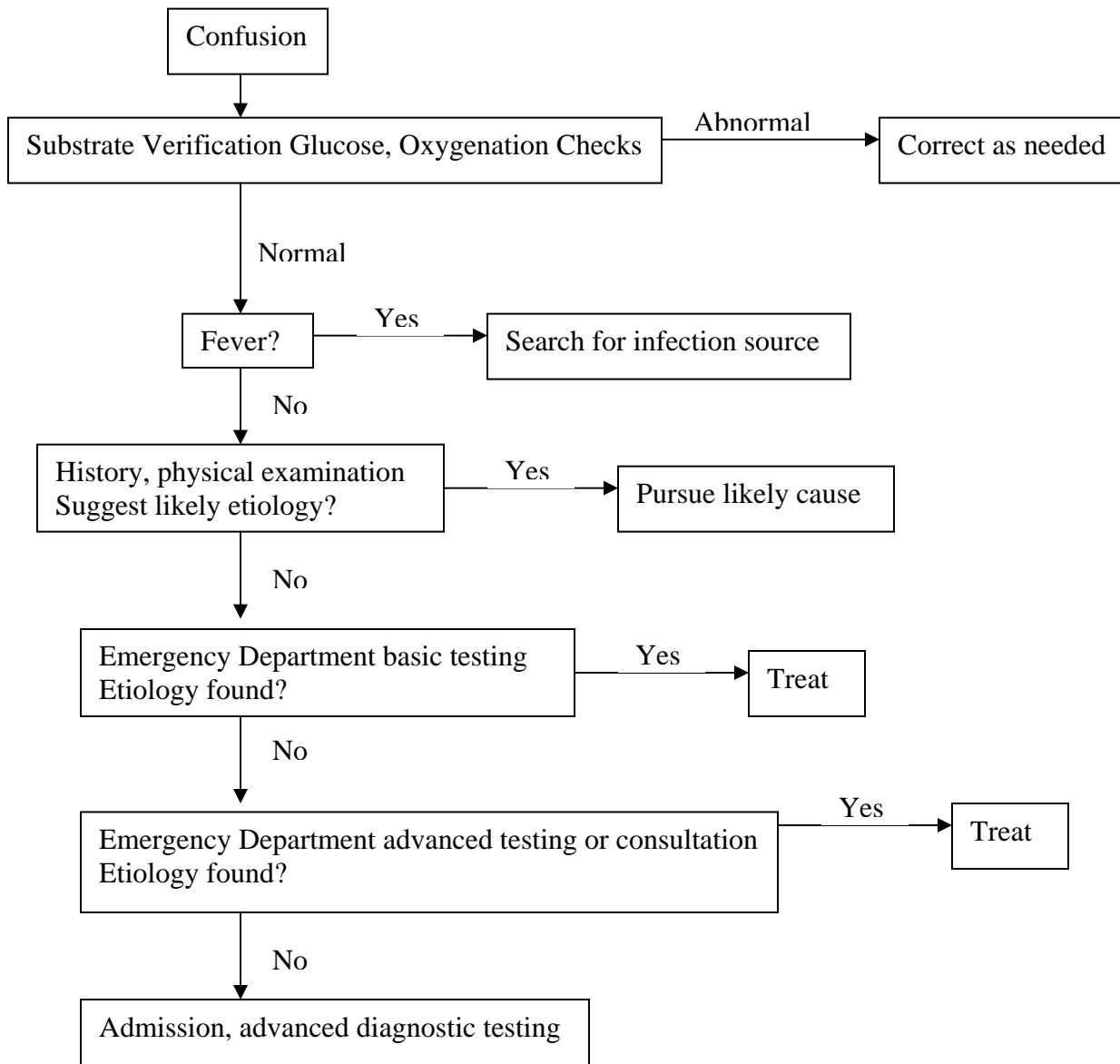
Initial Diagnostic Studies

- Glucose
- Pulse oximetry
- ECG
- CBC
- Electrolytes
- BUN/creatinine
- Urinalysis
- CXR
- CT head

Additional Tests as directed by history and physical examination

- LP
- Coagulation studies
- ABG
- Liver function tests
- Thyroid function tests
- Directed toxicologic screen
- Drug levels
- Carboxyhemoglobin
- Ammonia
- Selected cultures
- X-rays for trauma

Management Algorithm



Treatment

Pharmacologic treatment of the symptoms of delirium is preferred over physical restraint, particularly when the patient is likely to cause harm to themselves or others. Physical restraints often exasperate agitation caused by delirium because the patient lacks insight as to why they are restrained. Of the available drugs to treat the symptoms of delirium in older ED patients, the antipsychotic haloperidol is recommended most frequently. Although antipsychotic drugs are implicated in causing delirium, haloperidol has limited anticholinergic effects. Doses of haloperidol for this indication are lower than for other patients in need of chemical restraint; the usual recommended doses are 0.5 to 1.0 mg orally, intramuscularly, or intravenously. This can be repeated every 30 minutes until the desired effect is achieved. Atypical antipsychotics, such as Clozapine, Risperidone, Ziprasidone, Have also been used. Benzodiazepines, especially

lorazepam, are used commonly to treat the symptoms of delirium. They are especially beneficial for specific conditions, such as the treatment of delirium caused by alcohol or sedative hypnotic withdrawal or seizures. The risk for paradoxical central nervous system reactions that may worsen the patient's condition, however, is higher in older patients

Disposition

Most patients suffering from acute delirium need to be admitted in order to:

- 1) Manage their behavior if they are likely to cause harm to themselves or others
- 2) Find and treat the cause of the delirium.

Summary

- Provide immediate interventions for urgent medical conditions
- Assume the etiology of the altered mental status is delirium
- Assess for underlying etiology or exacerbating factors and manage appropriately
- Review history of present illness, medical history and medication profile
- Provide optimal environmental and supportive interventions
- Pharmacological agents should be considered when the patient has the potential to harm themselves or others, or is impeding medical evaluation and management

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