



Altered Mental Status in the Elderly

Mental status changes in the elderly are a source of concern and challenge for the emergency physician. A variety of medical conditions and psychiatric disturbances are potential causes of symptoms. Acute changes must be differentiated from alterations in chronic conditions. This presentation will focus on the emergency evaluation, treatment, and differential diagnosis of this symptom complex.

- Define delirium and dementia and identify distinguishing characteristics.
- Describe a systematic approach to the elderly patient with an acute change in mental status.
- Discuss the cost-effective approach to the diagnostic workup and emergency treatment of the elderly patient with an acutely altered mental status.

TU-91
Tuesday, October 12, 1999
1:30 PM - 2:25 PM
Room # N227
Las Vegas Convention Center

FACULTY

Tracy G Sanson, MD, FACEP

Assistant Medical Director,
Department of Emergency Medicine,
Brandon Regional Hospital, Brandon,
Florida

Altered Mental Status in the Elderly
Tracy G. Sanson MD, FACEP

A variety of medical conditions and psychiatric disturbances are potential causes of symptoms. This presentation focuses on the emergency evaluation, treatment, and differential diagnosis of this symptom complex.

Evaluation

Acute changes must be differentiated from alterations in chronic conditions
Acute alteration Vs Progressive deterioration

Mental Status Exam

General conversation

Memory

repetition of three items

recall the current and first US presidents

Mini Mental Status Exam

surveys:

orientation

memory

attention

calculation

language function

_____ (5) what is the date?

_____ (5) where are we?

_____ (3) recall three objects

_____ (5) spell *world* backward, serial 7's

_____ (3) recall the previous three objects (ask for the three objects given previously)

_____ (2) name a pencil and a watch

_____ (1) repeat "no ifs, ands, or buts"

_____ (3) follow three-stage command

_____ (1) read and obey "*CLOSE YOUR EYES*" written on paper

_____ (1) have the patient write a sentence (ignore spelling)

_____ (1) copy a design

_____ total (a score of 30 is normal)

Formal mental status evaluation

(JIM A. MOTSIG)

Judgment

Intelligence

Memory

Affect

Mood

Orientation

Thought process and content

Speech

Insight

Grooming

History and Physical Exam

HX:

question the family as well as the patient
time of onset of symptoms
hallucinations
delusions
depression
recent impairment of ADL
incontinence

PMHX:

chronic illnesses
recent infections
cancer
psychiatric dysfunction
review *all* medications
recent surgeries or hospitalizations

SHX:

review of support system
alcohol use
recent significant life-altering events

Vital Signs

Physical Exam:

subtle signs of trauma, possible abuse or neglect
toxidromes
infection, meningeal signs
full neurological exam
 cranial nerves
 motor strength
 muscle tone and bulk
 presence of tremor
 brief sensory evaluation
 DTR's
 pathologic reflex testing
 cerebellar testing
 gait and station if possible
myoclonus or asterixis

Diagnostic Tests:

CT scan for acute alteration or focal neurological deficits
LP if meningitis or encephalitis are suspected
 or to rule out SAH if CT is negative
Immediate bedside glucose and oxygen saturation

Further tests based on clinical history and physical exam

Pertinent blood tests
 CBC
 electrolytes

renal function tests
liver function tests
thyroid function tests
arterial blood gas for pH and CO₂
toxicological screens (especially salicylate levels)
ETOH level
PT/PTT or ammonia level if liver dysfunction is suspected
carboxyhemoglobin

EKG
ischemia, dysrhythmia or drug effects

CXR
CHF, pneumonia, masses

Culture
blood, urine, CSF as indicated

Differential Diagnosis

Normal physiologic changes of aging

Dementia and delirium

Dementia

Deterioration in memory, spatial and temporal orientation, judgment, abstract thought, control of emotions

Dysfunction interferes with ADL's

Onset generally slow and gradual

Present in up to 10 % of US adults by age 65 and 30-50% by age 85

Most common dementia disorder is Alzheimer's

< 10% of cases are reversible

Delirium

Rapid deterioration

Alteration of consciousness

Inability to concentrate

DSM IV: Four categories

- 1) due to general medical conditions
- 2) substance-induced
- 3) multiple etiologies
- 4) other

May be presenting symptom of life threatening condition

ex: sepsis, MI

May be unable to render even basic self-care leading to secondary problems

ex: dehydration

Symptoms unrecognized in as many as 70%

May have fluctuating course with periods of lucency

Dementia and psychiatric condition is most frequent misdiagnosis

Differentiating delirium and dementia

onset
fluctuance of alertness
hallucinations
vital sign abnormalities

abnormally high or low levels of alertness

Medical conditions

When a cause can be determined
 metabolic or toxic etiology is found in 65% of cases
 focal structural lesions present in 33% of patients
 psychiatric problems accounting for the remaining two percent

subdural hematoma	neurosyphilis
subarachnoid hemorrhage	fungal infections
cerebral hemorrhages, CVA	chronic alcoholism
meningitis, encephalitis	hypertensive encephalopathy
cerebral abscess	myocardial infarction
unusual CNS infections	congestive heart failure
HIV CNS damage	dysrhythmias, atrial fibrillation
complex migraine	pneumonia
temporal arteritis	urinary tract infections
space occupying lesion	variety of metabolic and
cancer treatment	electrolyte disorders
progressive dementias	hypothermia and hyperthermia
normal pressure hydrocephalus	substance abuse

Life threatening causes of altered mental status:

WHHH**I**M**P**
 Wernicke's
 Hypoglycemia
 Hypertensive encephalopathy
 Hpxia
 Intracerebral hemorrhage
 Meningitis
 Poisoning

Polypharmacy and medication effects

side effects
 decreased or altered metabolism
 drug interactions

Medications contributing to altered mental status

anticonvulsants	muscle relaxants
sedative	cimetidine
hypnotics	barbiturates
narcotics	methotrexate
antihistamines	clonidine
antidepressants	neuroleptics

5-fluorouracil	antispasmodics
corticosteroids	propranolol
diuretics	antibiotics
interferon	antivirals
digitalis	reserpine
theophylline	salicylates
cyclosporin	thyroid hormones
NSAIDs	ocular cycloplegics
antiemetics	mydriatics
levadopa	

Differential Diagnosis

Dementia	hyperthyroidism
Alzheimer's	hypoparathyroidism
Vascular	hyperparathyroidism
Delirium	glucocorticoid excess
Infectious	adrenal insufficiency
sepsis	
cerebral abscess	Environmental
meningitis	hypothermia
encephalitis	hyperthermia
HIV CNS infections	Primary neurological disorder
neurosyphilis	CVA/TIA
Pharmacological/Poisoning	space occupying lesion
medication reaction, interaction	subdural/epidural hem.
polypharmacy	hemorrhage
neuroleptic malignant syndrome	subarachnoid
lithium toxicity	intracerebral
salicylate poisoning	intraventricular
anticholinergic toxicity	epilepsy & post-ictal state
serotonin syndrome	complex migraine
alcohol or drug withdrawal	temporal arteritis
alcohol or illicit drugs	nl pressure hydrocephalus
carbon monoxide poisoning	
Metabolic	
hypoglycemia	Substance abuse
hyperglycemia	alcohol
renal failure	medications
hepatic failure	withdrawal addictive subst
dehydration	Cardiovascular disease
hypercalcemia	myocardial ischemia
hypocalcemia	CHF
hypernatremia	
hyponatremia	arrhythmias
hypermagnesemia	hypertensive encephalopathy
hypermagnesmia	Pulmonary disease
vitamin deficiency	hypoxia
Endocrinopathies	hypercarbia
hypothyroidism	Psychiatric disorders

ED Management

Disposition

admit
the exception is rapidly reversible or resolving mental status changes such as those seen post-ictally in the patient with known epilepsy, or with a hypoglycemic reaction in a patient with insulin-dependent diabetes mellitus

Acute Intervention:

ABC's
Endotracheal intubation with RSI as indicated
Maintain C spine immobilization if trauma is suspected
Pulse oximetry and supplemental oxygen as indicated
IV access and draw labs
Cardiac monitoring
Vital signs including core temperature
EKG
CXR
Narcan as indicated
Bedside glucose measurement
Administer D50 as indicated
 Consider thiamine IV prior to D50
Full examination
GI decontamination if suspected toxic ingestion
Acquire HPI, PMHx, SHx from as many sources as possible
 EMS, old records, family, caregivers
Determine need for:
 CT of the brain
 lumbar puncture
 cultures
 antibiotic administration
Treat hypotension or dehydration with closely monitored fluid boluses
Judiciously manage hypertension
Administer stress dose steroids as indicated
Cautiously treat hyponatremia

Control of the agitated or violent patient

Chemical Restraints

Use short acting agents for control
Benzodiazepines
 agitation
 alcohol withdrawal
 Lorazepam the preferred agent
 (0.5 mg IV, IM, or PO)
Antipsychotic
 Haloperidol (2.5 to 5.0 mg IV or IM initially)
May be given in combination

Initiate therapy with small doses in the elderly

Physical restraints

Document their indication

Time limit your order

Follow established hospital protocols for frequent (every 15 minutes)
visual checks of the patient

The impact of misdiagnosis and failure to treat appropriately can be personally and emotionally profound for the patient and family, with significant financial impact on society.

Emergency Department Management of an acute alteration in mental status

- 1) A thorough history and physical examination
- 2) Focused laboratory and radiological evaluation of the patient
- 3) Recognition and initiation of treatment for all life threatening or reversible causes.

Reference

handout from:

O'Keefe KP, Sanson TG: Elderly Patients with Altered Mental Status. *Emergency Medicine Clinics of North America* 16:701-715, 1998.

References

1. Araiza J, Araiza B: Neuroimaging. *EM Clinics of North America* 15(3):507-526, 1997.
2. Bates B: A guide to physical examination and history taking. Philadelphia, J.B. Lippincott Co., 1991.
3. J, Roberts MR, Reisdorff EJ: Evaluation of behavioral and cognitive changes: The mental status examination. *EM Clinics of North America* 9(1):1-12, 1991.
4. Brandt J, et al: Hereditary influences on cognitive functioning in older men: A study of 4000 twin pairs. *Arch Neurol* 50:599-603, 1993.
5. Breteler MM, Claus JJ, Grobbee DE, et al: Cardiovascular disease and distribution of cognitive function in elderly people: the Rotterdam study. *BMJ* 308:1604-1608, 1994.
6. Bross MH, Tatum NO: Delirium in the elderly patient. *Am Fam Physician*. 50(6):1325-1332, 1994.
7. Drachman DA, Swearer JM: Screening for dementia: Cognitive Assessment Screening Test (CAST). *Am Fam Physician* 54(6):1957-1963, 1996.
8. Early Identification of Alzheimers Disease and Related Dementias Panel: Clinical Practice Guidelines: Early identification of Alzheimer's disease and related dementias. *Am Fam Physician* 55(4):1303-1314, 1997.
9. Farrell KR, Ganzini L: Misdiagnosing delirium as depression in medically ill elderly patients. *Arch Intern Med* 155:2459-2464, 1995.
10. Ferrera PC, Chan L: Initial management of the patient with altered mental status. *Am Fam Physician* 55(5):1773-1780, 1997.
11. Folstein MF: Differential diagnosis of dementia: the clinical process. *Psychiatric Clinics of North America* 20(1):45-57, 1997.
12. Foy A, O'Connel D, Henry D, et al: Benzodiazepine use as a cause of cognitive impairment in

- elderly hospital inpatients. *J of Gerontology* 50A(2): M99-M106.
13. Francis J: Delirium. *In* Cassel CK, Cohen HT, Larson ET, et al (eds): *Geriatric Medicine*, third edition. Springer, 1996, pp 917-922.
 14. Friedl W, et al: Mini-Mental State Examination: Influence of sociodemographic, environmental and behavioral factors and vascular risk factors. *J Clin Epidemiol* 49:73-78, 1996.
 15. Furner SE, Brody JA, Jankowski LM: Epidemiology and aging. *In* Cassel CK, Cohen HT, Larson ET, et al (eds): *Geriatric Medicine*, third edition. Springer, 1996, pp 37-43.
 16. Geldmacher DS, Whitehouse PJ: Evaluation of dementia. *NEJM* 335(5):330-336, 1996
 17. Gerson LW, Counsell SR, Fontanarosa PB, et al: Case finding for cognitive impairment in elderly emergency department patients. *Ann Emerg Med* 23:813-817, 1994.
 18. Greenstein RA, Ness DE: Psychiatric emergencies in the elderly. *EM Clinics of North America* 8(2):429-441, 1990.
 19. Hamill RW, Pilgrim D: Geriatric Neurology. *In* Bradley WG, Daroff RB, Fenichel GM, et al(eds): *Neurology in Clinical Practice*, vol II. Boston, Butterworth-Heinemann, 1996, pp 2077-2090.
 20. Hogan TM: Acute confusional states. *In* Cassel CK, Cohen HT, Larson ET, et al (eds): *Geriatric Medicine*, third edition. Springer, 1996, pp 145-147.
 21. Inouye SK, vanDyck CH, Alessi CA, et al: Clarifying confusion: The confusion Assessment method: A new method for detection of delirium. *Ann Int Med* 113(12):941-948, 1990.
 22. Inouye SK,: The dilemma of delirium: Clinical and research controversies regarding diagnosis and evaluation of delirium in hospitalized elderly medical patients. *Am J of Med* 97:278-288, 1994.
 23. Jacobson SA: Delirium in the elderly. *Psychiatric Clinics of North America* 20(1):91-110, 1997.
 24. Jarrett PG., Rockwood K, Carver D, et al: Illness presentation in elderly patients. *Arch Inter Med* 155:1060-1064,1995.
 25. Johnson JC: Delirium in the elderly. *EM Clinic of North America* 8(2):255-265, 1990.
 26. Juva K, et al: Usefulness of the Clinical Dementia Rating scale in screening for dementia. *Int Psychogeriatr* 7:17-24, 1995.
 27. Kalbfleisch N: Altered Mental Status *In* Sanders AB(ed): *Emergency care of the elder person*. St. Louis, MO, Beverly Cracom Publications, 1996.
 28. Kaminski HJ, Ruff RL: Neurologic complications of endocrine diseases. *Neurologic Clinics* 7(3):489-508, 1989.
 29. Kawas C, et al: A validation study of the Dementia Questionnaire. *Arch Neurol* 51:901-906, 1994.
 30. Kennedy GJ, Lowinger R: Psychogeriatric emergencies. *Geriatric Emer Care* 9(3):641-653, 1993.
 31. Larson EB, Reifler BV, Sumi SM, et al: Diagnostic tests in the evaluation of dementia: A prospective study of 200 elderly outpatients. *Arch Inter Med* 146:1917-1922, 1986.
 32. LoCurto MJ: The serotonin syndrome. *EM Clinics of North America* 15(3):665-675, 1997.
 33. Lundquist RS, Bernens A, Olsen CG: Comorbid disease in geriatric patients: Dementia and depression.

Am Fam Physician 55(8):2687-2694, 1997.

34. Maddens ME: Should elderly emergency department patients be screened for dementia? Ann Emerg Med 23:873-874, 1994.
35. Newton HB, Shah SM: Neurological syndromes and emergencies in the cancer patient: Differential diagnosis, assessment protocols, and targeted clinical interventions. EM Reports 18(15) 150-158, 1997.
36. Ott A, Breteler MB, de Bruyne MC, et al: Atrial fibrillation and dementia in a population-based study: The Rotterdam study. Stroke 28(2):316-321, 1997.
37. Riggs JE: Neurologic manifestations of fluid and electrolyte disturbances. Neurologic Clinics 7(3):509-525, 1989.
38. Schmitt FA, Ranseen JD, DeKosky ST: Cognitive mental status examinations. Clin Geriatr Med 5(3):545-564, 1989.
39. Schneider SM: Altered mental status in the elderly: Current assessment and management strategies for a complex clinical syndrome. EM Reports 17(5):43-53, 1996.
40. Sturmman K: The neurologic examination. EM Clinics of North America 15(3):491-506, 1997.
41. Wiley CA: Pathology of neurologic disease in AIDS. Psychiatric Clinics of North America 17(1):1-15, 1994.