



EM Clerkship: Altered Mental Status



Objectives

- Review the initial approach to patients in the ED with altered mental status (AMS)
- Review important physical findings
- Differential diagnosis for patients with AMS
- Identifying studies to aid in diagnosis

Altered mental status

- Defined as an acute or abrupt change in behavior
- Multiple etiologies
 - Traumatic
 - Toxicologic
 - Medical / Metabolic
 - Psychiatric
 - Other (environmental, etc.)

Critical to assume acute emergency to determine cause of AMS!

AMS Management: the first 60 seconds...

- Immediate assessment/management of airway breathing, circulation
- Rapid assessment of mental status
- Treat quickly reversible causes (with naloxone, glucose, etc.)

DO the “DONT” Regimen!

- D = *DEXTROSE* (check fingerstick glucose, if low [< 60 mg/dL] then administer)
- O = *OXYGEN* (should already be on patient as part of the “safety net”)
- N = *NALOXONE* (opioid antagonist)
- T = *THIAMINE* (for alcoholics or the malnourished)

Management of AMS: the next few minutes

- Obtain as much history as possible on patient (bystanders, EMS, medical records)
- Physical Exam (focus on signs of trauma, drugs of abuse stigmata, focused neurologic exam)
- Generate Differential Dx
- Order appropriate labs/imaging studies (CT Head, BS, chem 7, abg)

DDx of Altered Mental Status

- **A** = alcohol, ammonia (liver)
- **E** = electrolytes, endocrine
- **I** = insulin
- **O** = opioids, oxygen (lack of)
- **U** = uremia
- **T** = trauma, temp., toxins
- **I** = infection
- **P** = psychiatric causes
- **S** = space occupying lesions, stroke, seizure, SAH, subdural hematoma



Case 1

- 55 y/o female is found down with in a park. She is disheveled and has the strong smell of alcohol on her.



Case 1

- EXAM
- VS: 130/80, HR 110, Temp 37.0 RR 16
- No trauma noted
- RRR
- CTAB
- Slurred speech and confused
- Localizes to pain
- Opens eyes to pain
- Grips your hand on command
- PERRLA

What is your next action?



Case 1

- Action:
- IV, O2, monitor
- Labs
- Which bedside stat lab would you get?



Case 1



- BS 40!!
- How would you treat this?



Case 2

- 45 y/o male found down in an alleyway by friends. He is dropped off in the ambulance bay.
- BP 160/110, HR 59, RR 6, temp 36.0
- As you are exposing him, you notice trauma to the head.....



Case 1

- What are these physical findings called?
- What are they suggestive of?



Case 2

- Poor respiratory effort
- No gag reflex
- Flexes his upper extremities to pain (no localization)
- No eye opening to pain
- Garbled sounds from mouth to pain

What is this patient's GCS?

What is the most immediate action?



Case 2

- After the patient is intubated you continue your exam and notice...

OD

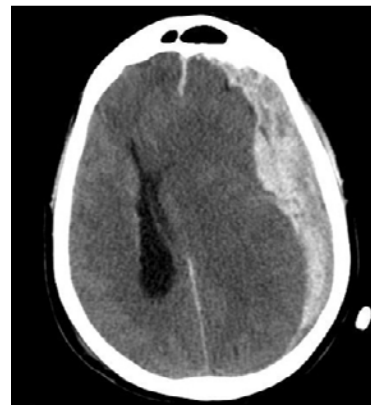
OS



what is most likely causing this physical finding?



CT head shows



- What do we do NOW?
- CALL NEUROSURGERY!
- What can we do while we wait for Neurosurgery to crash this patient to the OR for craniotomy?



Therapy: ICH with shift

- Mannitol 20%
 - Bolus 1-2 kg/kg
- Elevate head of bed 30 degrees
- Possibly consider brief hyperventilation (controversial)
- Consider antiepileptics (esp. if sz)



Case 3

- 37 y/o male with worsening headache over past 2 days. He lives in a large group home. He has no significant past medical history. His group home friends report he is acting weird, talking nonsense and more sleepy than usual
- VS: BP 110/60 HR 115 Temp 39.0
- What is your differential?



Case 3

- ROS: unable to obtain secondary to AMS
- PMH: From records—schizophrenia, polysubstance abuse
- Meds: Seroquel
- All: Haldol
- SH: lives in group home; past crack cocaine use, +tob, no ETOH



Case 3

- VS BP 110/60 HR 115 Temp 39.0
- Gen: Obese male, awake but disoriented, moaning intermittently
- HEENT: Dry mucous membranes
- Lungs: CTAB
- Heart: Tachy, regular, no murmur
- Abd: Soft, non-tender, non-distended
- Neuro: No focal deficits, unable to follow commands consistently.



What do you do now? Ddx? Orders?

Results

- WBC 14.2 Hct 39 Plt 240
- C7 normal except glucose 180 and creatinine 1.6
- Venous lactate 2.8
- CXR no infiltrates
- UA negative, Utox negative
- CTH no acute abnormalities



What did you order before he went to CT?
What do you do after CT?

Case 3

- CSF shows 1250 WBC, poly predominance
- CSF glucose 42, protein 220
- Admit to neurology for presumed bacterial meningitis
 - Vanco/Ceftriaxone/Acyclovir/steroids
 - *Call group home to prophylactically treat close contacts (also notify ED staff who worked with patient)



Case 4

- 57 y/o male found agitated in a shelter. Shelter workers state he was under control a when he first arrived a day ago but is now writhing uncontrollably. History notable only for alcohol abuse, No psychiatric history



Case 4

- VS= BP 170/110
- HR 130 bpm
- RR 24
- Temp 37.9
- Pupils: dilated 7mm bilateral
- Neuro: 3+DTR both knees, +tongue fasciculations. Patient attempting to fight overhead light.



What is on your differential? Actions?

Case 4

- IV, LABS, monitor
 - 12 lead ECG
 - IV benzodiazepines
 - IV thiamine
 - IV fluids
 - Consider CT head to r/o structural cause
 - Pt likely to require admission for alcohol withdrawal
- LABS: BS 160,
BAL neg
- Electrolytes: nml



Case 5: 82yo female with AMS

- Brought in by family c/o changes in behavior x 3d
- ROS: +fatigue/minimal cough/nausea; fever/abd pain/CP/SOB
- PMH: HTN, DMII, A-fib
- Meds: HCTZ, Metformin, ASA, Digoxin
- All: Sulfa
- SH: -tob/etoh/drugs; lives independently
- FH: DM

ACTIONS?



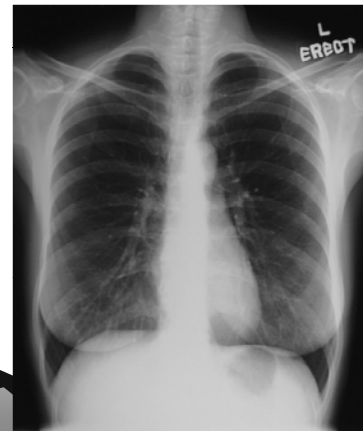
Case 5

- VS T 38.1 P 104 BP 104/70 92%RA
- Gen: Frail, elderly woman, awake but disoriented, interactive, NAD
- HEENT: Dry mucous membranes, no icterus
- Lungs: Coarse bibasilar crackles, no wheeze
- Heart: Tachy, irregular
- Abd: Soft, non-tender, non-distended
- Neuro: No focal deficits, no meningismus

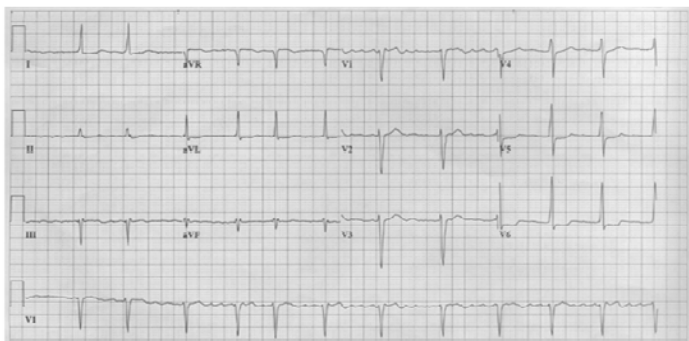
Differential? ACTIONS? Labs? Radiology?



82yo female with AMS



82yo female with AMS



Case 5

- WBC 12, HCT 34
- Venous lactate 4.8
- Creatinine 1.8, BUN 20, K 4.1, Na 136
- LFTs normal
- Troponin negative
- UA +LE +Nit 3+WBC 1+RBC <5 epi +bacteria
- Digoxin level 1 (normal)

Actions? Diagnosis?



AMS Overview

- ABCs, “Safety Net”
- DON’T regimen
- Ensure staff safety
- Rule out life-threatening conditions
- Evaluate for treatable conditions
- Determine disposition

