EM Basic- Altered Mental Status (AMS)

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History

Vitals- temperature is most important (fever or hypothermia)
How is the patient altered?- talk with family, EMS, nursing home
Recent trauma or illness?
Onset of AMS?
Psychiatric history- don't attribute it automatically to this
Ingestions- legal or illegal
Talk to the patient- oriented to person, place, time, situation/president? Check recent memory of events

********BIG PEARL********

ALL PATIENTS WITH AMS ARE HYPOGLYCEMIC UNTIL PROVEN OTHERWISE
Check a d-stick, if below 80 give 1 amp D50 IV

Exam

Neuro exam- Cincinnati Prehospital Stroke scale- high yield exam
Face- facial droop- ask patient to smile, positive if asymmetric
Arms- lift arms to shoulder level with palms up, close eyes, positive if asymmetry or one side falls to the stretcher
Speech- slurred speech? "You can't teach an old dog new tricks"
Time- what was exact time of onset?

Pupils- check size and reactivity, evidence of nystagmus
Axilla- if suspecting a tox cause, if axilla are dry- suggest anticholinergic exposure/ingestion
Lungs- focal lung sounds suggesting pneumonia
Abdomen- tenderness or pain especially in elderly
Skin- GU area for infected decubitus ulcers, any rashes or petechiae?

Differential Diagnosis (Big list- AEIOU TIPS)

A- Alcohol/acidosis
E- Electrolytes
I- Insulin (too much)/ Ischemia
O- Oxygen (hypoxia/hypercarbia)
U- Uremia

T- Toxidromes / Trauma / Temperature
I- Infection
P- Psych / Polypharmacy
S- Stroke/Space occupying lesion / SAH

Condensed differential- TINE (or NETTI?)

T- Trauma / Tox
I- Infection
N- Neurologic
E- Electrolytes

Tox

Opiates- vicodin (hydrocodone/acetaminophen), percocet (oxycodone/acetaminophen), oxycontin (oxycodone), heroin- somnolent, lethargic, respiratory depression, pinpoint pupils, treatment with Narcan (naloxone)

Benzodiazepenes- valium (diazepam), Ativan (lorazepam)- somnolent, lethargic, not as much respiratory depression, supportive care, support ABCs

Sympathomimetics (uppers)- cocaine, PCP, meth, agitated, hyper, dilated pupils, supportive care, use benzos to sedate, RSI for uncontrolled agitation

Tox workup- D-stick, EKG, CBC, Chem 10, Serum Tylenol (acetaminophen), Serum ETOH, Serum Salicylate, +/- urine drug screen (lots of false positives, doesn't tell current intoxication)

PEARL- Unlike salicylate and ETOH use, Tylenol (acetaminophen) overdose don't have a specific toxidrome and will likely be asymptomatic, important to get this level given it is easily missed and mortality is high

Trauma- any history of falls either recent or remotely. Non-contrast head CT is test of choice upfront

PEARL- Have a low threshold to get a head CT in AMS, especially in patients with what appears to be new onset psychiatric disease even if they don't have neuro deficits

Infection- look for fever, hypotension, tachycardia, try to ID a source, make sure to do a thorough skin and GU exam

PEARLS

- The elderly and those on immunosuppression or steroids may not mount a fever in response to infection
- UTIs cause lots of AMS in the elderly
- Hypothermia in the setting of infection is especially concerning

Infection workup- CBC, Chem 10, blood cultures x2, UA and urine culture, chest x-ray, LP if suspecting meningitis

PEARL- You have several hours before antibiotics will affect culture results so give antibiotics early, especially if you suspect meningitis

Broad spectrum antibiotics

Zosyn (piperacillin/tazobactam)- 3.375 or 4.5 grams IV
Vancomycin- 15-20 mg/kg, usual dose 1 gram IV (many guidelines suggest 1st dose be 2 grams IV for faster therapeutic levels)
Ceftriaxone- (in some areas better than Zosyn for urinary pathogens) 1 gram IV, 2 grams IV if suspecting meningitis (along with Vancomycin)

Neurologic

Seizures- make sure they aren't from hypoglycemia first,

- Must have some sort of post-ictal state afterwards with AMS that slowly or quickly improves
- May be intermittently agitated and then somnolent
- If they have a seizure history and they didn't hit head, support ABCs and you can allow to wake up and try to find cause (usually missed medication doses)
- If new onset seizure, trauma, or other concerns, do appropriate workup

Stroke- New onset focal neuro deficits

- D-stick first, hypoglycemia can mimic a stroke
- Address ABCs then immediately get a non-contrast head CT
- Don't delay on the head CT, activate ED stroke protocol
- If no intracranial bleed and within 3 hours of onset, can give TPA if no contraindications
- Get a checklist of all contraindications and go through each one
- Certain patients qualify for 4.5 hour time window for TPA

Electrolytes (selected situations)

Glucose- if below 80, give 1 amp D50 IV and monitor response
PEARL- If you can't get d-stick quickly, just give D50, benefits >>>> risks

Hyponatremia

-**Asymptomatic**- water restrict
-**Below 120 and seizing**- hypertonic saline 3%, 2-3 cc/kg over 10 minutes and repeat until seizures stop
-**Below 120 but not seizing**- consult appropriate reference for slow replacement with hypertonic saline

Hyperkalemia

-**EKG changes (peaked T waves, QRS widening)**- immediately give 1 amp Calcium gluconate IV to stabilize cardiac membrane and prevent arrhythmias
-**Other treatments**- insulin/glucose, furosemide, albuterol, dialysis

General AMS workup (add or subtract testing as appropriate for clinical situation)

******D-STICK******	**Urine Drug Screen (with caution)**
EKG	**Serum acetaminophen (Tylenol) level**
CBC	**Serum ETOH level**
Chem 10	**Serum salicylate level**
UA/Urine Culture	**LP if suspecting meningitis**
Blood culture x2	**Chest x-ray**
VBG with lactate	**Non-contrast head CT**

MAJOR POINTS:

1) All patients with AMS are hypoglycemic until proven otherwise
2) Broad categories of AMS- TINE- Trauma/Tox, Infection, Neuro/Electrolytes
3) Have a low threshold for non-contrast head CT
4) Get a good neuro exam- quickest is Cincinnati Prehospital Stroke Scale- Face, Arms, Speech, Time

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