**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**

 **F**ace- facial droop- ask patient to smile, positive if asymmetric

 **A**rms- lift arms to shoulder level with palms up, close eyes, positive if

asymmetry or one side falls to the stretcher

**S**peech- slurred speech? “You can’t teach an old dog new tricks”

**T**ime- 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 **T-** Toxidromes / Trauma / Temperature

**E-** Electrolytes **I-** Infection

**I-** Insulin (too much)/ Ischemia **P-** Psych / Polypharmacy

**O-** Oxygen (hypoxia/hypercarbia) **S-** Stroke/Space occupying lesion / SAH

**U-** Uremia

**Condensed differential- TINE (or NETTI?)**

**T-** Trauma / Tox

**I-** Infection

**N-** Neurologic

**E-** Electrolytes

**Tox**

**Opiates-** vicodin, Percocet, oxycontin, heroin- somnolent, lethargic, respiratory depression, pinpoint pupils, treatment with Narcan (naloxone)

**Benzodiazepenes-** valium, Ativan- 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

**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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