**EM Basic- Hyponatremia**

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**Hyponatremia-** serum sodium less than 135 meq/L

-First decision point- seizing, obtunded, or altered mental status?

-If yes- go to critical care section

-If no- then DO NOTHING (well, not quite nothing but don’t try to start correcting the patient’s sodium level in the ED)

**Symptoms-** Can be vague and non-specfic

-Weakness, fatigue, headache, confusion, etc.

-May be relatively asymptomatic and hyponatermia discovered

during workup for something else

**Usual patient-** older patient with “weakness” who is alert and oriented with a sodium of 130 meq/L

-This patient accounts for the vast majority of ED patients with hyponatermia

**Management- alert and oriented patient**

-**First step- water restrict**

-Write a nursing order to make patient NPO

-Tell patient that they have to be water restricted

-**Second step- investigate for whether this is acute or chronic**

-Look back in the medical record

-If patient has 3 sets of labs over past 3 months with same

sodium level then not that worried

-May be possible to discharge that patient if they don’t need admission for something else

-If this is new for the patient then go to the next step

-**Third step- investigate for possible cause of hyponatermia**

-Medications are a common cause

-Hydrochlorothiazide and SSRIs are common causes

-SSRIs- Prozac (fluxoetine), Zoloft (sertraline)

-MDMA (street drug “ecstasy) also a cause

-Inappropriate secretion of antiduretic hormone (ADH) leads to increase free water retention and dilution of sodium level

**Causes of hyponatremia (continued)**

**-**Volume losses

-Vomiting and diarrhea

-“Leaky fluid states”

-Severe liver disease, congestive heart failure (CHF)

-Renal failure

-Endocrine causes

-Hypothyroidism and adrenal insufficiency

-“Beer potomania”

-Excessive alcohol consumption- alcohols lack electrolytes so drinking large amounts without eating solid food can deplete sodium levels

-Cancer

-Lung cancer is notorious for causing hyponatremia

-Ask about red flags (unexplained weight loss, night

sweats, unexplained bone or muscle pain, new back pain in an elderly patient)

**Fourth Step- Admit the patient and DO NOTHING**

**\*\*\*PEARL\*\*\*- Correcting the sodium too rapidly can lead to Central Pontine Myelinolysis which can cause permanent neurological damage and death**

-**Don’t try to correct sodium level in the ED- JUST WATER RESTRICT!**

-Resist the urge to gently hydrate with normal saline- even this can raise the patient’s sodium too fast

-Inpatient team may want urine electrolytes, osoms, etc.

**Hyponatremia critical care-** patient is seizing, altered or obtunded

-Much different patient

-Hypertonic saline to correct sodium until they stop seizing

-Only need to raise sodium about 3-5 points to do this

-Hypertonic saline

-3 mls per kilogram IV with theoretical max of 100 mls

-Rapid sequential boluses over max 10 minutes or until

seizures stop

-Central access preferred but can give it through a GOOD peripheral IV (AC peripheral, not small hand vein)

**Hyponatremia critical care (continued)**

-Sodium Bicarbonate

-A substitute for hypertonic saline in a pinch

-Equivalent to about 11% hypertonic saline

-One amp usually is 50 mls but more Na than 3%

-One amp approx. 210 mls of 3% hypertonic saline

-Push this slower since more concentrated than 3%

-Benzodiazepenes

-Give Ativan (lorazepam) or Valium (diazepam) in case hyponatremia is not causing seizures and it is a primary seizure disorder instead

**\*\*\*PEARL- If you have a patient with seizures that isn’t responding to benzos, consider hyponatremia as a cause\*\*\***

**-Patient with low sodium (115) but just a little altered and not seizing**

**-**Give 3% hypertonic saline- 100 mls over one hour

-Will raise sodium by 2 points

-How much to correct the sodium safely?

-Rule of Sixes (borrowed from EmCrit, borrowed from review article)

-**Six points for Severe Symptoms in then Stop**

-Once you correct 6 points in 6 hours, stop until the 24 hour mark to avoid overcorrection

-**Six a day makes Sense for Safety**

**-**More for chronic hyponatremia- don’t correct more than 6

points over a 24 hour period

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