**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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