04/8/25 Morning Report with @CPSolvers

*"One life, so many dreams" **Case Presenter**: Hee Mun (@HeeMun8) **Case Discussants**: Lea (@lifemadeseen) and Rahul (@RahulPottabath1)*

CC: Bradycardia and miosis

HPI:
88 yo male with 3 days of dizziness, confusion, weakness and 1 day of anuria, noted HT 40, mild miosis, nausea and vomiting. Daughter reports he was without heat at home due to broken heater. No syncope, chest pain, palpitations, recent med change or sick contact

ROS: No fevers, cough, SOB, HA, focal neuro deficit, edema, wt change, constipation

PMH:
CKD stage 3b (CrCl 30
HTN

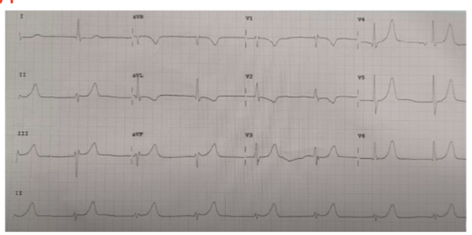
Meds:
Amlodipine
Atenolol

Fam Hx:

Soc Hx: He lives in the southwestern US, no recent travel, tick bites, prosthetic valve surgery or substance use
Health-Related Behaviors:
No alcohol or drugs
Allergies:NKDA

Vitals: T:35 BP:90/60 RR:18 HR: Sat: 96% RA
Exam: Gen: confuse and weak
HEENT: pupils less than 2mm, reactive to light
CV: RRR, normal S1/S2
Pulm: Clear breath sounds, symmetric expansion
Abd: soft, non-tender, no rigidity
Neuro: disoriented to time/place, no FND, no meningeal signs
MSK: DTRs WNL, mild peripheral edema, cold extremities

Notable Labs & Imaging:
EKG: regular narrow-complex bradycardia (40 bpm) with absent P waves and peaked T waves, consistent with junctional bradycardia and hyperkalemia



Hematology:
WBC: 5.6 Hgb: 8.4 (8.7) Plt:wnl MCV normocytic
Chemistry
Na:130 K: 7.5 Cr: 4.5 (bs 1.6) BUN: 60
Ca, CRP, ESR LFTs WNLs
Lactate 4.4
Ph 7.3 HCO3 10.8 pCO2 21.7
Management -> IV fluids, Ca gluconate, insulin w dextrose, atropine -> no improvement BP HR -> hydrocortisone and glucagon -> no response -> HR and BP dropped 80/50 -> dopamine -> transvenous pacing -> ICU admission for close monitoring
B12, folate, B1, TSH, cortisol wnl, HIV, hep B and C neg
UA: no cast, protein or RBC, tox screen neg
Imaging:
CXR: WNL
TTE - normal EF with preserved wall motion and no pericardial effusion
Renal US: small sized kidneys (stable from prior), no HDN, stones or masses
Trigger (eg hypovolemia) -> renal dysfunction -> accumulation of AV nodal blockers and potassium -> bradycardia -> decreased cardiac output -> shock -> worsening renal perfusion -> cycle continues
Dx: BRASH syndrome

Problem Representation: 88yo M presenting with 3 days of bradycardia, miosis and 1 day of anuria. Found to be hypotensive, EKG junctional bradycardia with peaked T waves c/f hyperkalemia. Labs showing AKI, met acidosis, elevated lactate

Teaching Points (SEEME):

Approach to bradycardia and miosis:
Patients often explain bradycardia as tiredness or dizziness. Opioids can contribute to these symptoms. Bradycardia can be due to increased vagal tone, can be in tick borne diseases like Lyme disease or hypothermia or hypothyroidism.Usually associated with activation of parasympathetic nervous system which might be secondary to ingestion. We can check the electrolytes.

Approach to dizziness, weakness and anuria:
Medication history and metabolic labs should be considered.Examination and urine analysis would be helpful. Anuria can be related to kidney disease. Kidney US can show small kidneys and electrolytes (especially potassium) would be helpful. Vital signs, hemoglobin and PTH level can indicate presence of kidney disease. Electrolyte abnormalities can explain bradycardia. Uremia can also contribute to confusion. Beta blockers can also contribute to bradycardia.We can think of a focal or generalized underlying cause. Amlodipine has effect on peripheral vasculature.

Approach to ECG and Hyperkalemia:
Hyperkalemia can cause peaked T waves and bradycardia. Hyperkalemia can be secondary to renal disease.Hyperkalemia can be treated with calcium gluconate, insulin and loop diuretics. Atropine can be used for bradycardia. Stopping the medications should also be considered. We should consider beta blockers toxicity or overdose of calcium channel blockers.

Brash syndrome:
It is a syndrome characterized by the vicious cycle of hyperkalemia, renal dysfunction, bradycardia and AV blockade.