Pharmacology Rounds: Electrolyte Repletion

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PEARLS

- For all electrolyte issues, it's important to identify the underlying cause. This is particularly important if there is a culprit medication as repletion will be challenging, if not impossible, without stopping the medication.

- Potassium repletion
  - Oral repletion
    - Use the oral route as long as the patient can take medication orally and their GI tract is working.
    - Potassium chloride
      - Comes as immediate release packet and extended release tabs
      - Unpleasant taste is a major issue
      - May be more beneficial if patient is chloride depleted
      - Typical dosing: 40-60 mEq PO
    - Potassium bicarbonate
      - Effervescent tab typically comes as 25 mEq
      - More palatable than potassium chloride
      - May be more beneficial in patients with metabolic acidosis
      - Typical dosing: 50 mEq PO
  - Intravenous repletion
    - Works more rapidly than oral potassium
    - Indications
      - Serum concentration < 3.0 mEq/L
      - Patient not tolerating PO
      - Moderate to severe symptoms
      - ECG changes from hypokalemia
    - Central access allows for more rapid administration.
      - Most institutions have protocols setting a maximum infusion rate (typically 20 mEq/hour through a peripheral IV and 60 mEq/hour through a central line).

- Magnesium supplementation
  - "HypoK = HypoMg" (a mantra from Dr. Corey Slovis)
  - Repletion of magnesium is critical in repleting potassium.
    - Oral: Magnesium oxide 400-800 mg tablet
    - IV: Magnesium sulfate 2-4 g
  - Recheck labs
    - Oral repletion: After 60 minutes
    - IV repletion: After 30-60 minutes
  - Home supplementation
    - Potassium rich foods
    - Can use either potassium chloride or potassium bicarbonate
- Magnesium repletion
  - Mg 1.6 - 1.9 mEq/L: Give Magnesium sulfate 1-2 g IV
  - Mg 1.0 - 1.4 mEq/L: Give Magnesium sulfate 2-4 g IV
  - Mg < 1.0 mEq/L: Give Magnesium sulfate 4-8 g IV
  - Caution with outpatient supplementation if patient has renal insufficiency
- Calcium repletion
  - Sick patient: IV calcium gluconate 2 g over an hour
  - Non-sick patient: Oral supplementation with calcium carbonate
- Phosphate repletion
  - Typically will replete if phosphate < 1.0 mEq/L
  - Sick patient
    - IV repletion
    - Potassium phosphate (if serum potassium is low) or sodium phosphate (if serum potassium is high)
    - Can give 15, 30, or 45 mmol depending on how low phosphate level is.
    - Typically given at about 15 mmol/h

- Non-sick patient
  - Oral repletion
  - Potassium phosphate or sodium phosphate 250 mg PO

Related Segments

EM:RAP 2018 August Electrolyte Emergencies - Part 1 - All Things Potassium

CorePendium: Hypokalemia