

Electrolyte Imbalance

Patient Profile

E.G. is a 73-year-old woman whose daughter brings her to see the health care provider because she has had a case of the “stomach flu,” with vomiting and diarrhea for the past 3 to 4 days and is now experiencing occasional light-headedness and dizziness. Her medical history includes hypertension, hypercholesterolemia, and mild heart failure. She is taking:

- Digoxin 0.125 mg po daily
- Captopril 25 mg po twice daily
- Furosemide 40 mg po daily
- Potassium chloride 20 mEq po daily
- Atorvastatin 20 mg po at bedtime

Subjective Data

- Has been following a low-sodium diet
- States her abdomen feels bloated and she has been constipated since the onset of the “flu”
- Has been taking her medications except for the potassium chloride pill because it upsets her stomach.
- Occasionally takes an extra “water pill” when her ankles are swollen

Objective Data

Physical Examination

- Temperature 98.2°F, pulse 88, respirations 20, BP 138/86
- Lungs clear to auscultation, breathing regular and unlabored
- +1 edema bilaterally in ankles
- Muscle strength in upper extremities normal and equal and in lower extremities weak
- Sensation to all extremities normal
- Abdomen distended with hypoactive bowel sounds

Diagnostic Studies

- Lab values
 - Sodium 139.0mEq/L
 - Potassium 3.0mEq/L
 - HCO₃⁻ 25.4mEq/L
 - Chloride 99.5 mEq/L

Discussion Questions

1. What is a possible pathophysiologic cause of E.G.’s muscle weakness and dizziness? What other symptom does E.G. have that may be related to this problem?

Answer: Hypokalemia, another symptom is her constipation

Rationale: E.G. has been vomiting and having diarrhea for the past couple days which have affected her electrolyte status by depleting her fluids. Also, she has stopped taking her KCl and adding a “water pill” which happens to be a potassium wasting diuretic “Furosemide.” Low potassium also affects GI motility and can cause constipation which is another symptom that E.G. is experiencing. Potassium of 3.0 is considered to be on the low end.

2. What factors contributed to the development of this electrolyte imbalance?

Answer: E.G. had vomiting and diarrhea for the past couple days. Lack of KCl medication because it upset her stomach. Taking an extra water pill.

Rationale: Received from subjective and objective data.

3. What should you be on an alert for in a patient who is on furosemide and digoxin and why?

Answer: You should be on alert for hypokalemia and any electrolyte imbalances, also things such as vomiting and diarrhea.

Rationale: When there are electrolyte imbalances or a depletion in fluids it can increase digoxin effects.

4. What additional signs and symptoms should you assess E.G. for?

Answer: Weak pulses in the extremities, cap refill for perfusion or pulse oximetry, cardiac dysrhythmias

Rationale: The heart would be my main concern because of the patient's history, lack of compliance with medications, and subjective and objective data. Also, because hypokalemia and lead to dysrhythmias.

5. What diagnostic test is indicated and why?

Answer: Basic Metabolic Panel, Electrocardiogram

Rationale: The BMP will show differences in the electrolytes and be able to show the decrease in potassium and the electrocardiogram will be used to see the electrical signals of the heart to see if there are any defects because of current potassium and digoxin medications but also because history of hypertension and mild heart failure.

6. Write three nursing diagnoses that are appropriate for E.G.

Answer: Fluid and Electrolyte Imbalance, Risk for Noncompliance, Risk for Urinary Retention

Rationale: Currently the patient is already having fluid and electrolyte problems such as hypokalemia. Part of the reason for this is not taking her KCl and taking an extra diuretic pill which, both contributed to the current electrolyte problem. Chances are this could happen again (hypokalemia), and a decrease in potassium can affect of the kidneys to work properly.

7. What interprofessional care would you anticipate for E.G.?

Answer: Physician, Dietician, Case management

Rationale: The physician would likely check on her to make sure things are okay and to see if anything regarding home medication or changing to different medications are necessary. A dietician to make sure the patient knows different foods that are high in potassium. Case management regarding home medications, hospital visit, the need for home health because the patient is a little bit older and may need more assistance especially if this problem continues.

8. What instructions should you give E.G. regarding the signs and symptoms of this electrolyte imbalance and how to prevent it?

Answer: I would give her exact signs and symptoms to expect such as weakness, constipation, fatigue, arrhythmias, muscle cramps, etc.. and if she starts to experience any to call her health care provider. Also, making sure she adheres to her medication regime but also giving some education on foods that are high in potassium (banana's, green leafy vegetables) just in case she gets into a scenario again where her supplement can't be tolerated.

Rationale: It is important for the patient to be educated on specific symptoms so that they can recognize when they need to initiate interventions on their own but also when to seek help from a medical professional.