

## 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
  - HCO<sub>3</sub><sup>-</sup> 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:** The patient is exhibiting signs of Hypokalemia which causes the muscle weakness and dizziness. Other symptoms of hypokalemia are constipation, abdomen distention, and heart palpitations.

**Rationale:** Potassium affects the heart muscles therefore a low-level causes muscle contractions and functions to be low. The muscles in the abdomen aren’t able to contract properly causing a paralytic ileus.

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

**Answer:** The patient is taking Furosemide that is a diuretic. This diuretic causes potassium wasting causing the patient to lose their Potassium. In the Subjective data the patient reported that they stopped taking their potassium supplement causing them to not gain that potassium lost.

**Rationale:** Due to the patient taking Furosemide and not replacing the lost potassium, it caused an imbalance in the electrolytes.

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

**Answer:** Furosemide causes the body to pull fluids off while wasting Potassium. Digoxin is to treat heart failure by helping the heart pump better.

**Rationale:**

- If the patient isn't taking potassium while taking furosemide it can lead to hypokalemia.
- Hypokalemia can cause a higher absorption rate of the Digoxin causing Digoxin toxicity. This can cause dysrhythmias and possible death.
- We want to monitor these serum levels and make sure they are within therapeutic range and watch vital signs.

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

**Answer:** I would want to assess for signs of dehydration. The patient reported having vomiting and diarrhea for the past 3-4 days. The patient is also experiencing light-headedness and dizziness, I want to monitor blood pressure, make sure the patient doesn't get up without assistance. I want to also watch for hypovolemia by doing daily weights, strict I and So, and level of consciousness.

**Rationale:**

- Due to the patient losing lots of fluids the patient is at risk for orthostatic hypotension. I want to watch vital signs for dysrhythmias, urinary output, and for the muscle weakness because of the hypokalemia.

5. What diagnostic test is indicated and why?

**Answer:** An ECG can be performed to monitor for the dysrhythmias. We also want to perform blood labs to monitor potassium levels and other electrolytes.

**Rationale:** The reason why an ECG would be beneficial is because the low level of potassium changes the heart muscles in the heart and makes the heart not able to contract properly. We would see a depressed ST segment.

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

**Answer:** 3 nursing diagnoses that are appropriate are monitoring for dysrhythmias, fluid loss related to diarrhea and vomiting, and electrolyte imbalance.

**Rationale:**

- Its important to watch these because the patient can go into hypovolemic shock due to volume loss and electrolyte imbalance.

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

**Answer:** I would anticipate administering IV fluids, and possibly give the patient potassium on the IV pump. Also, strict I and Os to monitor intake and daily weights.

**Rationale:**

Its important to get the electrolyte imbalance under control to prevent the dysrhythmias. Doing daily weights can help track if the patient is retaining fluids or losing more than they are taking in. This could help by preventing more damage regarding electrolyte imbalance.

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

**Answer:** We want to teach the patient to watch out for muscle weakness, irregular pulses, diarrhea, vomiting, and leg cramps. We would want them to call their HCP and start them on a potassium rich diet to help with the potassium loss related to the furosemide.

**Rationale:**

- **It's** important to teach the patient what to watch out for to help prevent further complications and help the patient gain potassium in their diet.