

### QUESTION

1. A patient with a long history of chronic kidney disease (CKD) is being treated with a diuretic. The patient's serum sodium level is 125 mEq/L. The patient is also taking a beta-blocker and a calcium channel blocker. The patient's blood pressure is 140/90 mmHg. The patient's creatinine level is 2.5 mg/dL. The patient's potassium level is 3.5 mEq/L. The patient's bicarbonate level is 18 mEq/L. The patient's hemoglobin level is 10 g/dL. The patient's hematocrit level is 30%. The patient's ferritin level is 100 ng/mL. The patient's transferrin saturation level is 20%. The patient's erythropoietin level is 100 U/mL. The patient's parathyroid hormone-related protein (PTHrP) level is 100 pg/mL. The patient's 25-hydroxyvitamin D level is 10 ng/mL. The patient's calcium level is 8.5 mg/dL. The patient's phosphorus level is 3.5 mg/dL. The patient's magnesium level is 1.5 mg/dL. The patient's albumin level is 3.5 g/dL. The patient's total protein level is 6.5 g/dL. The patient's globulin level is 3.0 g/dL. The patient's A/G ratio is 0.8. The patient's uric acid level is 6.5 mg/dL. The patient's creatinine clearance is 15 mL/min. The patient's estimated glomerular filtration rate (eGFR) is 15 mL/min/1.73 m<sup>2</sup>. The patient's urine protein level is 1.5 g/day. The patient's urine creatinine level is 200 mg/day. The patient's urine sodium level is 100 mEq/day. The patient's urine potassium level is 40 mEq/day. The patient's urine calcium level is 200 mg/day. The patient's urine phosphorus level is 100 mg/day. The patient's urine magnesium level is 50 mg/day. The patient's urine albumin level is 100 mg/day. The patient's urine total protein level is 150 mg/day. The patient's urine globulin level is 50 mg/day. The patient's urine A/G ratio is 0.8. The patient's urine uric acid level is 100 mg/day. The patient's urine creatinine level is 200 mg/day. The patient's urine sodium level is 100 mEq/day. The patient's urine potassium level is 40 mEq/day. The patient's urine calcium level is 200 mg/day. The patient's urine phosphorus level is 100 mg/day. The patient's urine magnesium level is 50 mg/day. The patient's urine albumin level is 100 mg/day. The patient's urine total protein level is 150 mg/day. The patient's urine globulin level is 50 mg/day. The patient's urine A/G ratio is 0.8. The patient's urine uric acid level is 100 mg/day.

Parameter	Value
Serum sodium	125 mEq/L
Blood pressure	140/90 mmHg
Creatinine	2.5 mg/dL
Potassium	3.5 mEq/L
Bicarbonate	18 mEq/L
Hemoglobin	10 g/dL
Hematocrit	30%
Ferritin	100 ng/mL
Transferrin saturation	20%
Erythropoietin	100 U/mL
PTHrP	100 pg/mL
25-hydroxyvitamin D	10 ng/mL
Calcium	8.5 mg/dL
Phosphorus	3.5 mg/dL
Magnesium	1.5 mg/dL
Albumin	3.5 g/dL
Total protein	6.5 g/dL
Globulin	3.0 g/dL
A/G ratio	0.8
Uric acid	6.5 mg/dL
Creatinine clearance	15 mL/min
eGFR	15 mL/min/1.73 m <sup>2</sup>
Urine protein	1.5 g/day
Urine creatinine	200 mg/day
Urine sodium	100 mEq/day
Urine potassium	40 mEq/day
Urine calcium	200 mg/day
Urine phosphorus	100 mg/day
Urine magnesium	50 mg/day
Urine albumin	100 mg/day
Urine total protein	150 mg/day
Urine globulin	50 mg/day
Urine A/G ratio	0.8
Urine uric acid	100 mg/day

2. A patient with a long history of chronic kidney disease (CKD) is being treated with a diuretic. The patient's serum sodium level is 125 mEq/L. The patient is also taking a beta-blocker and a calcium channel blocker. The patient's blood pressure is 140/90 mmHg. The patient's creatinine level is 2.5 mg/dL. The patient's potassium level is 3.5 mEq/L. The patient's bicarbonate level is 18 mEq/L. The patient's hemoglobin level is 10 g/dL. The patient's hematocrit level is 30%. The patient's ferritin level is 100 ng/mL. The patient's transferrin saturation level is 20%. The patient's erythropoietin level is 100 U/mL. The patient's parathyroid hormone-related protein (PTHrP) level is 100 pg/mL. The patient's 25-hydroxyvitamin D level is 10 ng/mL. The patient's calcium level is 8.5 mg/dL. The patient's phosphorus level is 3.5 mg/dL. The patient's magnesium level is 1.5 mg/dL. The patient's albumin level is 3.5 g/dL. The patient's total protein level is 6.5 g/dL. The patient's globulin level is 3.0 g/dL. The patient's A/G ratio is 0.8. The patient's uric acid level is 6.5 mg/dL. The patient's creatinine clearance is 15 mL/min. The patient's estimated glomerular filtration rate (eGFR) is 15 mL/min/1.73 m<sup>2</sup>. The patient's urine protein level is 1.5 g/day. The patient's urine creatinine level is 200 mg/day. The patient's urine sodium level is 100 mEq/day. The patient's urine potassium level is 40 mEq/day. The patient's urine calcium level is 200 mg/day. The patient's urine phosphorus level is 100 mg/day. The patient's urine magnesium level is 50 mg/day. The patient's urine albumin level is 100 mg/day. The patient's urine total protein level is 150 mg/day. The patient's urine globulin level is 50 mg/day. The patient's urine A/G ratio is 0.8. The patient's urine uric acid level is 100 mg/day.

### ANSWER

The patient has a long history of chronic kidney disease (CKD) and is being treated with a diuretic. The patient's serum sodium level is 125 mEq/L, which is below the normal range of 135-145 mEq/L. This is likely due to the diuretic treatment. The patient is also taking a beta-blocker and a calcium channel blocker. The patient's blood pressure is 140/90 mmHg, which is slightly above the normal range of 120/80 mmHg. The patient's creatinine level is 2.5 mg/dL, which is above the normal range of 0.6-1.2 mg/dL. The patient's potassium level is 3.5 mEq/L, which is below the normal range of 3.5-5.0 mEq/L. The patient's bicarbonate level is 18 mEq/L, which is below the normal range of 22-28 mEq/L. The patient's hemoglobin level is 10 g/dL, which is below the normal range of 12-16 g/dL. The patient's hematocrit level is 30%, which is below the normal range of 37-47%. The patient's ferritin level is 100 ng/mL, which is above the normal range of 0-100 ng/mL. The patient's transferrin saturation level is 20%, which is below the normal range of 20-50%. The patient's erythropoietin level is 100 U/mL, which is above the normal range of 0-100 U/mL. The patient's parathyroid hormone-related protein (PTHrP) level is 100 pg/mL, which is above the normal range of 0-100 pg/mL. The patient's 25-hydroxyvitamin D level is 10 ng/mL, which is below the normal range of 20-80 ng/mL. The patient's calcium level is 8.5 mg/dL, which is below the normal range of 8.8-10.0 mg/dL. The patient's phosphorus level is 3.5 mg/dL, which is below the normal range of 2.8-4.5 mg/dL. The patient's magnesium level is 1.5 mg/dL, which is below the normal range of 1.7-2.2 mg/dL. The patient's albumin level is 3.5 g/dL, which is below the normal range of 3.5-5.0 g/dL. The patient's total protein level is 6.5 g/dL, which is below the normal range of 6.0-8.0 g/dL. The patient's globulin level is 3.0 g/dL, which is below the normal range of 2.0-3.5 g/dL. The patient's A/G ratio is 0.8, which is below the normal range of 1.0-1.5. The patient's uric acid level is 6.5 mg/dL, which is above the normal range of 3.0-7.0 mg/dL. The patient's creatinine clearance is 15 mL/min, which is below the normal range of 15-120 mL/min. The patient's estimated glomerular filtration rate (eGFR) is 15 mL/min/1.73 m<sup>2</sup>, which is below the normal range of 15-120 mL/min/1.73 m<sup>2</sup>. The patient's urine protein level is 1.5 g/day, which is above the normal range of 0-0.3 g/day. The patient's urine creatinine level is 200 mg/day, which is above the normal range of 0-100 mg/day. The patient's urine sodium level is 100 mEq/day, which is above the normal range of 0-100 mEq/day. The patient's urine potassium level is 40 mEq/day, which is above the normal range of 0-40 mEq/day. The patient's urine calcium level is 200 mg/day, which is above the normal range of 0-200 mg/day. The patient's urine phosphorus level is 100 mg/day, which is above the normal range of 0-100 mg/day. The patient's urine magnesium level is 50 mg/day, which is above the normal range of 0-50 mg/day. The patient's urine albumin level is 100 mg/day, which is above the normal range of 0-100 mg/day. The patient's urine total protein level is 150 mg/day, which is above the normal range of 0-150 mg/day. The patient's urine globulin level is 50 mg/day, which is above the normal range of 0-50 mg/day. The patient's urine A/G ratio is 0.8, which is below the normal range of 1.0-1.5. The patient's urine uric acid level is 100 mg/day, which is above the normal range of 0-100 mg/day.