

QUESTION

A 65-year-old male patient with a long history of hypertension and a recent diagnosis of type 2 diabetes mellitus is being treated with lisinopril and metformin. He has been experiencing increasing fatigue and weakness over the past few weeks. His physical examination is unremarkable, and his laboratory tests show a hemoglobin level of 10 g/dL, a hematocrit of 30%, and a mean corpuscular volume (MCV) of 80 fL. His serum ferritin is 100 ng/mL, and his serum transferrin saturation is 20%. His renal function is stable, with a serum creatinine level of 1.2 mg/dL. What is the most likely cause of his anemia?

- A) Iron deficiency anemia
- B) Vitamin B12 deficiency
- C) Folate deficiency
- D) Anemia of chronic disease
- E) Hemolytic anemia

ANSWER: D

EXPLANATION: The patient's anemia is most likely due to anemia of chronic disease (ACD). The key features supporting this diagnosis are the presence of a microcytic anemia (MCV 80 fL) with a normal or increased serum ferritin (100 ng/mL) and a low transferrin saturation (20%). ACD is a common cause of anemia in patients with chronic inflammatory conditions, such as hypertension and type 2 diabetes mellitus. The anemia is typically normochromic and normocytic, but can become microcytic in severe cases. The pathogenesis of ACD involves the production of hepcidin by the liver, which binds to and degrades the transferrin receptor on the surface of erythroid precursors, leading to decreased iron availability for erythropoiesis. The anemia is usually mild to moderate and does not respond to iron therapy. The patient's renal function is stable, and there are no signs of hemolysis or other causes of anemia.

QUESTION



The diagram illustrates the transport of a substance across a cell membrane. A large arrow points from the extracellular space (top) through a protein channel to the intracellular space (bottom). A smaller arrow points from the intracellular space back to the extracellular space. This represents the net movement of the substance into the cell.

ANSWER: A