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Acid-Base Balance-Electrolyte Quiz – Case 45

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Which is the most possible diagnosis in a patient with serum potassium 2.6 mEq/L, serum calcium 7.9 mg/dL, arterial pH 7.47 and urine potassium 60 mEq/L?

a. Vomiting

b. Diarrheal syndrome

c. Hypomagnesemia

d. Syndrome of inappropriate secretion of ADH (SIADH)

e. Gitelman syndrome

Comment

The above patient presented with mild metabolic alkalosis (increased arterial pH associated with increased HCO_3^- levels), hypocalcemia and hypokalemia accompanied by increased urine potassium secretion. Even though vomiting and Gitelman syndrome are associated with metabolic alkalosis and kaliuria-induced hypokalemia, hypocalcemia is not observed in these conditions. Diarrheal syndrome is followed by metabolic acidosis, while the above acid-base and electrolyte abnormalities are not compatible with the SIADH. On the other hand, hypomagnesemia is commonly associated with kaliuria-induced hypokalemia and hypocalcemia due to decreased PTH secretion and resistance to its action. Metabolic alkalosis is possible due to the coexistent hypokalemia, which is a potent stimulus to H^+ secretion and HCO_3^- reabsorption.

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Answer: Hypomagnesemia