ARCHIVES OF HELLENIC MEDICINE: ISSN 11-05-3992

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ARCHIVES OF HELLENIC MEDICINE 2014, 31(6):753
ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2014, 31(6):753

Acid-Base Balance-Electrolyte Quiz – Case 46

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A 30-year-old woman with a long-term history of muscle weakness was admitted to the clinic. Blood pressure (BP) was 120/80 mm/Hg. Laboratory investigation showed: Glucose 80 mg/dL, creatinine 1 mg/dL, K^+ 2.8 mEq/L, Na^+ 140 mEq/L, Ca^{2+} 9.8 mg/dL, HCO_3^- 40 mEq/L. In a spot urine, sample Na^+ and K^+ concentrations were 60 and 90 mEq/L, respectively.

The probable cause of the patient's clinical-laboratory findings was:

a. Laxative abuse

b. Chronic administration of thiazide diuretics

c. Severe hypomagnesemia

d. Primary aldosteronism

Comment

The patient exhibited hypokalemia associated with urinary K^+ wasting and metabolic alkalosis. Primary aldosteronism can be excluded, since the patient's blood pressure is normal. Severe hypomagnesemia is commonly associated with hypocalcemia, which is not the case in our patient. Laxative abuse is commonly associated with metabolic acidosis due to HCO_3^- losses in the stool. Surreptitious diuretic use is associated with natriuresis and kaliuria leading to hypokalemia, as well as metabolic alkalosis. Alternatively, vomiting can also lead to similar laboratory findings; in such cases, the urine Cl^- concentration is useful. In fact, a value <25 mEq/L is consistent with vomiting, while a higher value suggest diuretic use or even Bartter (and Gitelman) syndrome. The last two conditions can usually be distinguished by a urinary assay for diuretics.

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Answer: *Chronic administration of thiazide diuretics*