

CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

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ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2007, 24(6):632

M.S. Elisaf

*Department of Internal Medicine,
Medical School, University of Ioannina,
Ioannina, Greece*

Acid-base Balance-Electrolytes Quiz - Case 1

A 58 year old smoker with chronic non productive cough of 3 months duration developed muscle weakness. Laboratory investigation showed: glucose 84 mg/dL, urea 36 mg/dL, creatinine 1 mg/dL, K⁺ 1.5 mEq/L, Na⁺ 144 mEq/L, Mg²⁺ 1.7 mEq/L, pH 7.56, PCO₂ 31 mmHg, HCO₃⁻ 34 mEq/L, urine pH 6 (in a urine specimen). Blood pressure 140/90 mmHg. What is the diagnosis?

- a) Primary aldosteronism
- b) Paraneoplastic hypokalemia
- c) Stress-induced hypokalemia
- d) Surreptitious diuretic administration

Comment

The patient developed hypokalemia-induced muscle weakness. Hypokalemia was associated with inappropriate kaliuresis (urine potassium > 25 mEq/L) and metabolic alkalosis (alkalemia due to increased HCO₃⁻ concentration with a compensatory increase of PCO₂). The absence of hypertension excludes the possibility of primary aldosteronism, while the inappropriate kaliuresis is not compatible with the diagnosis of stress-induced hypokalemia, which is associated with potassium entry into the cells (redistribution of potassium).

A careful history can exclude the possibility of surreptitious diuretic administration, while the patient's history (heavy smoker with cough) points towards the diagnosis of paraneoplastic hypokalemia due to a small cell carcinoma of the lung. In such causes hypercortisolism can result from hypersecretion of ACTH.

In fact CT scan of the thorax showed a lung tumor, while the appropriate laboratory investigation confirmed the diagnosis of ectopic ACTH hypersecretion.

Corresponding author:

M.S. Elisaf, Department of Internal Medicine, Medical School, University of Ioannina, GR-451 10 Ioannina, Greece
e-mail: egepi@cc.uoi.gr

Diagnosis: Paraneoplastic hypokalemia