

CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

Acid-Base Balance-Electrolyte Quiz – Case 11

A 68-year-old woman with chronic cholestasis due to primary biliary cirrhosis was found to exhibit asymptomatic hyponatremia (serum sodium 122 mEq/L). The serum osmolality measured by the freezing-point depression was 294 mosmol/kg. Serum glucose, creatinine, TSH, FT4 and cortisol levels were within normal levels. Urinary sodium levels were 82 mosmol/kg.

Which is the cause of hyponatremia?

- a. Syndrome of inappropriate antidiuresis
- b. Pseudohyponatremia
- c. Salt-wasting nephropathy leading to hyponatremia
- d. Pituitary insufficiency

Comment

Since the patient's serum osmolality was normal, pseudohyponatremia was the cause of hyponatremia. A further laboratory workup should include the measurement of serum proteins and a lipid profile in order to rule out hyperproteinemia and

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**M.S. Elisaf,
M. Florentin**

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

hyperlipidemia. It should be noted that the instruments for routine chemical analysis use indirect potentiometry. This method involves the dilution of the sample before the actual measurement is obtained resulting in lower serum sodium levels. In this patient laboratory investigation showed total cholesterol 1,400 mg/dL, triglycerides 204 mg/dL and total proteins 8.2 g/dL. These findings are diagnostic of pseudohyponatremia caused by severe hypercholesterolemia, which is due to high levels of lipoprotein X that has been described in patients with chronic cholestasis. It should be emphasized that there is a misconception that only hypertriglyceridemia and not hypercholesterolemia can cause pseudohyponatremia.

Corresponding author:

M.S. Elisaf, Department of Internal Medicine, Medical School,
University of Ioannina, GR-451 10 Ioannina, Greece