

CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

Acid-Base Balance-Electrolyte Quiz – Case 17

A 68-year-old diabetic woman with chronic lymphocytic leukemia treated with chlorambucil developed asymptomatic hyperkalemia with serum potassium levels between 6.1 and 7 mEq/L. Her medications included carvedilol (12.5 mg×2/day) and metformin (850 mg×2/day). The electrocardiogram did not show signs of hyperkalemia. Laboratory investigation showed: White blood cell count 120 k/mL, platelet count 40 k/μL, hemoglobin 11 g/dL, glucose 140 mg/dL, serum creatinine 0.9 mg/dL, CK 160 IU/L, LDH 340 IU/L, arterial pH 7.40 with bicarbonate 22 mEq/L.

Which is the cause of hyperkalemia?

- a. Treatment-induced tumor lysis syndrome
- b. Pseudohyperkalemia
- c. The administration of carvedilol
- d. The coexistent hyperglycemia

Comment

In the present case of an asymptomatic patient with normal

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renal function without any evidence of an increased potassium intake or rapid moving of potassium to the extracellular fluid (such as tumor lysis syndrome), the diagnosis of pseudohyperkalemia should be suspected. It should be mentioned that the administration of carvedilol and the hyperglycemia may contribute to the increased potassium levels. However, both conditions can not explain the profound increase of serum potassium levels observed in this patient with normal renal function. Pseudohyperkalemia is due to the coexistent leucocytosis and can be attributed to the fragility of these leukemic cells.

A discrepancy between the serum and plasma potassium levels of >4 mEq/L is helpful for the diagnosis. It is worth mentioning that transportation of the sample via pneumatic tube may also contribute to the rupture of fragile leukemic cells and subsequently to the elevated potassium levels.

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Diagnosis: Pseudohyperkalemia
