

## CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

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### Acid-Base Balance-Electrolytes Quiz – Case 9

A young male came to the emergency room complaining of palpitation and extreme muscle weakness after vigorous physical activity, evolving to complete leg paralysis. The patient reported having experienced sporadic muscle tiredness associated with strenuous physical activity for the past 4 years. Laboratory investigation showed: Na<sup>+</sup> 139 mEq/L, K<sup>+</sup> 1.9 mEq/L, Cl<sup>-</sup> 99 mEq/L, HCO<sub>3</sub><sup>-</sup> 23 mEq/L, Mg<sup>2+</sup> 1.5 mEq/L, Ca<sup>2+</sup> 9 mg/dL, creatinine 0.8 mg/dL, glucose 90 mg/dL, arterial pH 7.40 and urine potassium 15 mEq/L.

Which is the underlying cause of hypokalemia?

- a) Inappropriate kaliuresis
- b) Hypomagnesemia
- c) Thyrotoxic hypokalemic periodic paralysis
- d) Stress-induced increase of catecholamines

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#### Comment

*Hypokalemic paralysis should be considered whenever a patient presents with muscle weakness of sudden onset simultaneously with serum potassium levels <3.5 mEq/L. Strenuous physical activity or heavy carbohydrate ingestion precedes episodes of muscle weakness. Frequent episodes of palpitations and low heat tolerance suggest the possibility of thyrotoxicosis, which is confirmed by the appropriate laboratory investigation. Control of hyperthyroidism is the ultimate treatment of this condition. To preclude further episodes, precipitating factors, such as vigorous physical activity, heavy carbohydrate intake or alcohol abuse should be avoided.*

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**Answer:** The correct answer is "c".

**Diagnosis:** Thyrotoxic hypokalemic periodic paralysis

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