

CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

Acid-base Balance-Electrolytes Quiz – Case 4

A 39-year-old male with IgG-κ multiple myeloma was admitted to hospital for further evaluation and treatment. Laboratory investigation showed: arterial pH 7.25, serum bicarbonate 16 mEq/L, serum sodium 145 mEq/L, Cl⁻ 113 mEq/L, potassium 3 mEq/L, creatinine 1.4 mg/dL, uric acid 1.5 mg/dL, phosphate 1.6 mg/dL with renal glucosuria and proteinuria (0.3 g/day). Urine pH was 7.

What is your diagnosis?

- a) Distal renal tubular acidosis type I
- b) Multiple myeloma-induced Fanconi syndrome with proximal renal tubular acidosis (type II)
- c) Lactic acidosis due to the underlying disease
- d) Hypoaldosteronism.

Comment

The patient presented with a normal anion gap (10 mEq/L)

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hyperchloremic metabolic acidosis (a finding that can exclude the possibility of lactic acidosis) without evidence of gastrointestinal bicarbonate loss associated with signs of a generalised proximal tubular dysfunction (hypokalemia, hypouricemia, hypophosphatemia, glucosuria and proteinuria), indicating a diagnosis of Fanconi syndrome. As patient also had a relatively high urine pH (7), renal tubular acidosis (RTA) seems very likely in this case. Patients with Fanconi syndrome commonly exhibit proximal (type II) RTA. Studies have shown that Fanconi syndrome secondary to multiple myeloma might be related to the presence of κ-type light chains, which can accumulate in proximal tubular cells and impair their function. It is worth mentioning that hypoaldosteronism is associated with hyperkalemia, which is not the case in this patient.

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Diagnosis: Multiple myeloma-induced Fanconi syndrome with proximal renal tubular acidosis (type II)
