

CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

Acid-Base Balance-Electrolyte Quiz – Case 23

A 72-year-old man with IgG_k multiple myeloma is presented. Laboratory investigation showed glucose 90 mg/dL, creatinine 1 mg/dL, sodium 135 mEq/L, potassium 4 mEq/L, calcium 10.4 mg/dL, phosphate 1.1 mg/dL, magnesium 1.8 mEq/L, uric acid 6.1 mg/dL, PTH 52 pg/mL, total proteins 8.2 g/L and globulin 5.8 g/L. Urine analysis showed +3 albumin with few red and white blood cells.

Which is the cause of the patient's decrease of serum phosphate levels?

- a. Inappropriate phosphaturia due to light chain disease
- b. Inappropriate phosphaturia due to hyperparathyroidism
- c. Spurious hypophosphatemia
- d. Shift of phosphate to the cells

Comment

In patients with monoclonal –but occasionally also with polyclonal– hyperglobulinemia, pseudohypophosphatemia should be

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taken into consideration and the serum phosphate levels should be re-evaluated after serial sample dilution. The absence of other findings of renal tubular disease, such as impaired renal function cylindruria, glucosuria or other characteristics of a generalized proximal tubular dysfunction (Fanconi syndrome), such as hypokalemia and hypouricemia, lessens the possibility of inappropriate phosphaturia due to light-chain disease. In fact, fractional phosphate excretion was 5%, a finding that excludes the possibility of this disease. The patient did not exhibit hyperparathyroidism (normal serum calcium and PTH levels). Furthermore, there is no clear evidence of situations associated with increased entry of phosphate into cells. It is worth mentioning that hyperglobulinemia-induced spurious hyperphosphatemia has also been reported.

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Diagnosis: Spurious hypophosphatemia