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Acid-Base Balance-Electrolyte Quiz – Case 21

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A 46-year-old woman was admitted to the hospital with long-standing generalized bone and muscle pain, fatigue and lower limb weakness. Laboratory investigation showed severe hypophosphatemia (1 mg/dL) with inappropriate phosphaturia ($FEPO^{3-4}$ 40%) along with normal potassium (4.6 mmoL/L), calcium (9 mg/dL) and PTH (42 pg/mL) levels.

Which is the most likely diagnosis?

a. Primary hyperparathyroidism

b. Underlying hypomagnesemia

c. Alcohol abuse

d. Tumor-induced osteomalacia

Comment

The patient had tumor-induced osteomalacia (oncogenic osteomalacia) due to a small mesenchymal tumor. The diagnosis is based on the long-term history of non-specific symptoms along with hypophosphatemia associated with inappropriate phosphaturia. Alcoholic patients commonly exhibit multiple interrelated electrolyte abnormalities, including hypophosphatemia, which is not the case in our patient. Patients with primary hyperparathyroidism have hypercalcemia, while patients with hypomagnesemia commonly exhibit hypokalemia and hypocalcemia. In oncogenic osteomalacia, the tumor can produce phosphatonins, such as fibroblast growth hormone 23 (FGH23) which decrease phosphate reabsorption leading to hypophosphatemia and osteomalacia.

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Diagnosis: *Tumor-induced osteomalacia*