LABupdate

Fibroblast Growth Factor (FGF-23) Testing

Fibroblast growth factor 23 (FGF-23) is an endocrine hormone produced primarily by bone osteocytes. FGF-23 regulates phosphorus and vitamin D metabolism by inhibiting phosphate reabsorption and 1,25-dihydroxy vitamin D (1,25-D) production by the kidney. Measurement of FGF-23 can aid in the diagnosis of patients with disorders associated with hypophosphatemia and hyperphosphatemia.

FGF-23 is elevated in several inherited and acquired disorders of mineral metabolism characterized by rickets and osteomalacia, including the following[1,2]:

- Tumor-induced osteomalacia (TIO)
- X-linked hypophosphatemic rickets (XLH)
- Autosomal dominant hypophosphatemic rickets (ADHR)
- Autosomal recessive hypophosphatemic rickets (ARHR)

These disorders have in common hypophosphatemia due to renal phosphate wasting and inappropriately low 1,25-D levels.

Chronic kidney disease (CKD) is the most common condition associated with elevations of FGF-23. In CKD, measurement of FGF-23 may have a diagnostic, prognostic, and therapeutic role. Recent studies have shown that elevated FGF-23 levels develop early in CKD and rise progressively with advancing disease.[3-5] Not only might this elevation help maintain phosphate balance in the setting of kidney disease, but it also might decrease 1,25-D levels, which act as a feedback inhibitor of parathyroid hormone (PTH), thus contributing to secondary hyperparathyroidism, a common CKD complication.[3,5]

In CKD, FGF-23 elevation has been associated with the following:

- Early abnormalities in mineral metabolism prior to elevation of PTH and phosphate or decline of 1,25-D[6,7]
- Increased risk of cardiovascular disease[8-10]
- Increased risk of kidney disease progression[11,12]
- Increased mortality in both CKD and end-stage renal disease[12,13]
- Increased mortality and allograft loss in kidney transplant patients[14]

Additional studies have shown that FGF-23 levels can be reduced with established CKD therapies, including phosphate binders in normophosphatemic CKD patients[15] and cinacalcet in hemodialysis patients.[16]

LabCorp offers an enzyme-linked immunosorbent assay (ELISA) for measurement of FGF-23 (004380). This assay has been used in many large clinical studies in which FGF-23 was measured.[5-7;9-14] It is a second-generation C-terminal assay that measures both the intact molecule and C-terminal fragments.[17]

References

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