"Evaluation of 16 months of clinical use of cinacalcet in haemodialysis and peritoneal dialysis patients: an observational study in Belgium (ECHO-B)"

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Utility of AlkPhos for clinical decision making in CPD patients are indicated.

T. Tourelle, V. Verriers; Medical Center, Salem, VA; Amgen Belgium; and Parathyroid Hormone (PTH) in Chronic Peritoneal Dialysis


INTRODUCTION AND AIMS: Fibroblast growth factor 23 (FGF23) induces urinary phosphate excretion, suppresses 1,25-dihydroxyvitamin D synthesis, and inhibits parathyroid hormone (PTH) secretion. Recent data suggest that FGF23 plays a role in the development of iatrogenic hyperphosphatemia in subjects with normal kidney function. The aim of this study was to examine the effect of intravenous iron therapy on serum FGF23 levels and mineral metabolism in patients undergoing hemodialysis.

METHODS: This prospective study enrolled 27 patients who were receiving hemodialysis for more than three months and had iron-deficiency anemia defined by a hemoglobin concentration less than 10.5 g/dL and serum ferritin less than 100 mg/ml. Intravenous sucrohexetinate ferric gluconate (SFG) at a dose of 40 mg was administered three weekly over three weeks. Serum FGF23, intact PTH and other parameters were prospectively monitored for five weeks.

RESULTS: Intravenous iron therapy resulted in a significant increase in hemoglobin and ferritin levels at wk 3 (10.0 ± 0.5 g/dL to 10.6 ± 0.5 g/dL; P < 0.001, 2.7 ± 2.7 g/dL to 153.8 ± 83.9 pg/ml; P < 0.001, respectively). Serum FGF23 increased from 4906 ± 6201 pg/ml at baseline to 8824 ± 11041 pg/ml at wk 3 (P < 0.031) whereas intact PTH decreased from 146 ± 109 to 77 ± 77 pg/ml (P < 0.001). TRACP-5b decreased from 477 ± 254 ml/dL to 412 ± 254 ml/dL (P < 0.001) at wk 3. These levels gradually returned to baseline but did not show any significant changes in serum calcium and phosphorus during the study period.

CONCLUSIONS: Intravenous iron therapy results in further increase in FGF23 levels in hemodialysis patients. This increase does not induce hypophosphatemia or improve the absence of functioning kidney, but may lead in transient PTH suppression and its related decreased bone resorption.

Disclosure of Financial Relationships: nothing to disclose

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Differential Changes in Vitamin D, Parathyroid Hormone and Fibroblast Growth Factor-23 Levels in Patients with Severe Chronic Kidney Disease

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Purpose: Abnormalities of mineral metabolism have not been described across races in patients with severe CKD, but not on dialysis, who participated in the Homocysteine in Kidney and End Stage Renal Disease study. 25-hydroxyvitamin D (25(OH)D), calcitriol (1,25(OH)2D), intact parathyroid hormone (iPTH), and fibroblast growth factor (FGF-23) levels were measured in plasma samples. Multivariable regression analyses were performed to examine the association between race and vitamin D, iPTH, and FGF-23 levels.

Results: There were a total of 1059 patients without CCR of 18 ± 6.5 ml/min/1.73 m2. 57% of the cohort was non-Hispanic white (NHW), 26% was non-Hispanic black (NHB) and 17% were categorized as other races. NHB had the lowest 25(OH)D levels when compared to NHW and others (44 ± 9 pg/ml vs. 43 ± 10 pg/ml respectively; p < 0.0001). However there was no significant difference in 1,25(OH)2D levels among races. NHB had higher iPTH levels than NHW and others (248 ± 208 vs. 167 ± 131 vs. 210 ± 156 pg/ml respectively; p < 0.0001). The median [IQR] FGF-23 levels were 324 [185-654] RU/mL for NHB and others were 324 [185-654], 431 [223-1036], and 364 [219-895] RU/mL respectively (p < 0.0001) for the three groups. After adjustment for demographics, cardiovascular risk factors, and GFR, NHB was independently associated with lower 25(OH)D (β = -0.25; p < 0.0001) and higher iPTH (β = 0.22; p < 0.0001) levels. There were no racial differences in multivariable-adjusted 1,25(OH)2D and FGF-23 levels.

Conclusions: Low 25(OH)D and elevated iPTH levels are more severe in NHB when compared to non-Hispanic whites and other races.

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Preliminary Validation of Three Commercially Available Assays for Measurement of Human Plasma FGF23

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FGF23 is a bone-derived peptide hormone that is emerging as an integral regulator of phosphorus balance and vitamin D hydroxylations, yet its clinical significance in CKD and ESRD is poorly understood. The purpose of this study is to perform preliminary validation of 3 commercially available assays for measurement of FGF23 in human plasma.