

Case Study: When the PTH Ratio does not Agree with iPTH or 1-84 PTH

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The Intact PTH (iPTH) assay is used to diagnose and guide the treatment of renal bone disease. When iPTH levels cannot be suppressed to less than 800 pgm/mL parathyroidectomy is often considered. It is presumed that high bone turnover disease is accompanied with elevated levels of iPTH. It has been demonstrated that iPTH measures both 1-84 PTH and 7-84 PTH and that 7-84 PTH lowers bone turnover. Therefore, adynamic low bone turnover might also be associated with elevated levels of iPTH. The ratio of 1-84 PTH/7-84 PTH has been demonstrated to be predictive of bone turnover (high ratio predicts high bone turnover and low ratio predicts adynamic low bone turnover). A 41 year old African American male on long term dialysis was measured by the Nichols Advantage iPTH assay in February at 1283 pgm/mL and in April at 1483 pgm/mL. Parathyroidectomy was planned. Parallel samples were measured by the Scantibodies total intact PTH assay and the values were 858 pgm/mL (February) and 1138 pgm/mL (April). The Scantibodies 1-84 PTH values were 479 pgm/mL (February) and 573 pgm/mL (April). Calcium values ranged from 10.2 to 12.9 mg/dL. Phosphate values ranged from 5.7 to 8.1 mg/dL. Calcium x phosphate product ranged from 77 to 97. The Scantibodies 1-84 PTH/7-84 PTH ratio was 1.3 in February and 1.0 in April. Based on both the actual value and trend of the ratio, surgery was cancelled. In this case both the Nichols and Scantibodies intact PTH assay and the Scantibodies 1-84 PTH assay indicated high bone turnover disease. However, the Scantibodies 1-84 PTH/7-84 PTH ratio and its trend indicated adynamic low bone turnover disease. Bone biopsy is a valuable diagnostic confirmation whenever parathyroidectomy is contemplated.

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