

Bone Histology and Assessment of the Intact PTH Assay in 167 ESRD Patients

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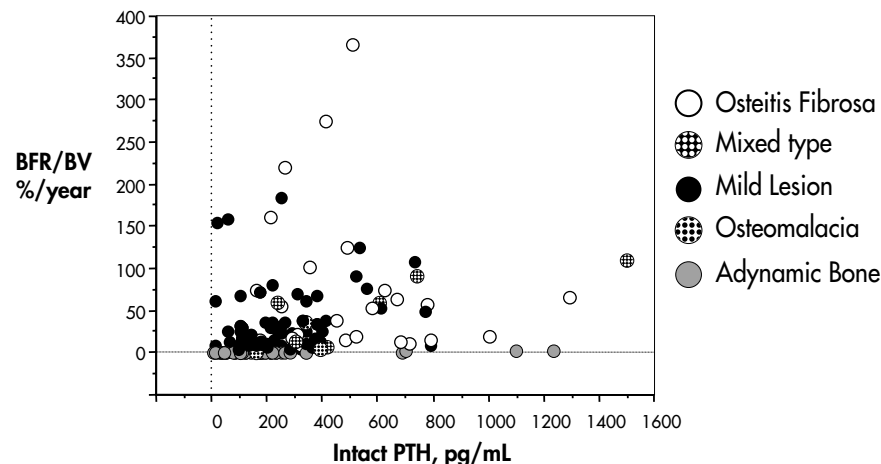
Since the introduction of the "intact" PTH (iPTH) diagnostic assay, the prevalence of adynamic low bone turnover disease has risen alarmingly. This study evaluates the bone turnover diagnostic utility of the iPTH assay with vertical iliac crest bone biopsies from 167 dialysis patients (pts) (128 HD; 39PD).

37 pts were receiving long-term dialysis at time of biopsy; 130 pts were biopsied 1 month after start of dialysis (80% of pts began dialysis at our facility). Histological examination was according to the classification proposed by Dr. Sherrard (Kidney Int. 1983; 43:436-442).

Histology revealed 15 adynamic bone disease (ADN) pts with low iPTH (<100pg/mL), 18 ADN pts with adequate iPTH (100-200 pg/mL), and 18 ADN pts with high iPTH (>200 pg/mL). Mild lesions were found in 11 pts with low iPTH, 27 pts with adequate iPTH, and 40 pts with high iPTH. Osteitis fibrosa was not found in any pt with low iPTH, but was found in 4 pts with adequate iPTH, and 22 pts with high iPTH. Mixed type lesions were found in 8 pts with high iPTH. Osteomalacia was found in 1 pt with adequate iPTH, and in 3 pts with high iPTH.

Only 43% (72/167) of pts were diagnosed correctly by iPTH. With increased use of Vit D sterols to treat HPT, the limitations of the iPTH assay must be regarded to predict bone status. An elevated iPTH could mean an elevated 1-84 PTH (driving to high bone turnover) or an elevated 7-84 PTH (driving to low bone turnover). Accurate assessment of bone turnover status must take into account both 1-84 PTH and large C terminal fragments (likely 7-84 PTH).

Relationship between Bone Formation Rate and Intact PTH level



Note: According to Dr. Sherrard, the BFR/BV cutoff for adynamic low bone turnover is less than 3.9%/year.

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