

Increased Ferritin Observed with Low 1-84 PTH/7-84 PTH

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It has been observed that elevated ferritin levels are an independent mortality risk factor. Its high concentration is a measure of iron stores in dialysis patients, but is also an acute phase reactant which may be a marker of morbidity and mortality in these patients. According to K/DOQI guidelines, iron administration is to be withheld for ferritin values greater than 800 ng/ml. There might be a mechanism whereby the body seeks to compensate for lower erythrocyte production with an increase in ferritin levels. Although this hypothesis has not been proven, we proceeded with the premise that normal bone turnover should correspond with the highest level of erythrocyte production and have the lowest ferritin levels, and both high bone turnover disease and adynamic bone turnover disease should show elevated ferritin levels as the body seeks to compensate for lowered erythrocyte production. Accurate non-invasive assessment of bone turnover has been challenging with recent bone biopsy studies demonstrating that the intact PTH assay is non-predictive of bone turnover when intact PTH values are greater than 100 pgm/ml. Recently, 7-84 PTH has been elucidated to be a potent parathyroid hormone with a myriad of actions some of which result in a lowering of bone turnover. Therefore, the 1-84 PTH/7-84 PTH ratio was proposed to be a reliable surrogate marker for bone turnover and, indeed, this has been demonstrated with bone biopsies. Therefore, we used the ratio to categorize patients as follows: Ratio values <1.4 correspond to adynamic bone disease; ratio values 1.4-2.0 correspond to normal bone turnover; and ratio values >2.0 correspond to high bone turnover disease. With this categorization, 350 specimens corresponding to adynamic bone disease had an average ferritin level of 674 ng/ml; 340 specimens corresponding to normal bone turnover had an average ferritin level of 613 ng/ml; and 323 specimens corresponding to high bone turnover disease had an average ferritin level of 693 ng/ml. These data are in keeping with the premise that normal bone turnover is a desirable goal in order to maintain ferritin at the lowest level.

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