

Normal Bone Turnover by the 1-84 PTH/7-84 PTH Corresponds to Optimal Anemia Control

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The importance of renal bone disease cannot be overstated. Consequences of renal bone disease begin at the bones with fractures, pain and infections and ripple out disturbances in mineral metabolism. This gives rise to soft tissue calcification, including calciphylaxis, vascular stenosis, and organ dysfunctions which eventually result in the most common cause of death in ESRD patient—cardiac events. One consequence of renal bone disease that is oftentimes not considered, but creates one of the major challenges for the clinician, is anemia management. Considering the role of bone in the biogenesis of erythrocytes, it is easy to see the impact of renal bone disease on anemia. Drs. Malluche, Tokumoto and Amerling have demonstrated with bone biopsies that a combination of the 1-84 PTH/7-84 PTH ratio is the most accurate predictor of bone status for ESRD patients. It has been shown that ratio values of less than 1.4 correspond to adynamic bone disease, ratio values of 1.4-2.0 correspond to normal bone turnover, and ratio values >2.0 correspond to high bone turnover disease. Therefore, we studied levels of hemoglobin and doses of erythropoietin for specimens from patients within categories of 350 specimens as adynamic bone disease (ABD), 340 specimens as normal bone turnover (NBT) and 323 specimens as high bone turnover (HBT) according to the ratio. Hemoglobin levels were found using the ratio for categorization of specimens. They were ABD = 12.2, NBT = 12.6 and HBT = 12.2. The dose of erythropoietin corresponded as follows: ABD = 8017, NBT = 7607 and HBT = 9057. These data are in accordance with the presumption that achieving normal bone turnover with an accurate PTH measurement will also achieve the highest hemoglobin level and require the least amount of erythropoietin for anemia management.

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