CHRONIC KIDNEY DISEASE

Parathyroid hormone measurements not useful for the assessment of bone turnover

Current methods for the noninvasive assessment of bone turnover are not useful for the diagnosis of renal osteodystrophy in patients with chronic kidney disease (CKD), reports a new study. The study researchers call for the development of new methods that enable

Figure 1 | Photomicrograph of an undecalcified bone section from a patient with stage 5 chronic kidney disease and high turnover renal osteodystrophy. Permission obtained from H. H. Malluche, Division of Nephrology, Bone and Mineral Metabolism, University of Kentucky, KY, USA.

the precise assessment of bone turnover in these patients.

Renal osteodystrophy is a common complication of CKD; nearly all patients with stage 5 CKD who require renal replacement therapy are affected by this disorder. Assessment of bone turnover by histomorphometry in bone biopsy samples is considered the gold standard (Figure 1); however, this procedure is limited by its invasiveness and associated costs. Consequently, measurements of parathyroid hormone are often used for the assessment of bone turnover in these patients.

Hartmut Malluche and colleagues from the University of Kentucky performed a cross-sectional study to assess the predictive value of the five most frequently used assays for intact serum PTH in 84 patients with stage 5 CKD. Bone biopsies were also performed to assess bone turnover by histomorphometry and to classify patients into one of three bone turnover categories: low, normal, or high. Although the PTH measurements

obtained by the five different assays correlated with the bone turnover categories, the assays varied considerably with regard to their absolute values of serum PTH. When the researchers applied a cut-off level of >80% specificity, all assays performed poorly for the diagnosis of low and high bone turnover.

The researchers say that the demonstrated differences in absolute values might relate to differences between the assays in their detection of different PTH fragments or to methodological disparities. They also say that recommended PTH levels for these patients should be adjusted for each assay, and that other markers of bone turnover should be assessed for improved diagnosis of renal osteodystrophy in patients with CKD.

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Original article Herberth, J. *et al.* The five most commonly used intact parathyroid hormone assays are useful for screening but not for diagnosing bone turnover abnormalities in CKD-5 patients. *Clin. Nephrol.* **72**, 5–14 (2009).