ORIGINAL ARTICLE

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Assessment of therapeutic effect in patients with secondary hyperparathyroidism using bone scintigraphy

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Objective: The semi-quantitative method of bone scintigraphy [bone to soft tissue (B/ST) ratio] has been used in diagnosing and evaluating systemic metabolic bone diseases. The aim of this study is to evaluate of the therapeutic effect of secondary hyperparathyroidism (SHP). ***Methods:*** The subjects were ten hemodialysis patients with SHP. Seven patients underwent parathyroidectomy (PTX), and 22-Oxacalcitoriol (derivative of 1,25-dihydroxyvitamin D_3) (OCT) was given to three patients. Bone scintigraphy and blood tests [intact parathyroid hormone (PTH), alkaline phosphatase (ALP), calcium (Ca), phosphorus (P), bone alkaline phosphatase (BALP), and deoxypridinoline (DPYD)] were performed before and after treatment. Regions of interest were drown around cranium, lumbar vertebrae, femoral neck and soft tissue of left medial thigh to calculate the B/ST ratio. ***Result:*** The B/ST ratios of cranium, lumbar vertebrae, and femoral neck were reduced significantly after PTX (cranium, $p = 0.0079$, lumbar vertebrae, $p = 0.0282$, femoral neck, $p = 0.0252$). Intact PTH, ALP, Ca, P, BALP and DPYD levels were reduced significantly after PTX (intact PTH, $p = 0.003$, Ca, $p = 0.0005$, P, $p = 0.0393$, ALP, $p = 0.0051$, DPYD, $p = 0.0232$, BALP, $p = 0.0324$). After OCT administration, the B/ST ratio of each bony region showed tendency to diminish, although not significantly. Intact PTH levels were reduced significantly, although ALP, BALP, and DPYD levels were not. Ca and P levels were increased significantly because of the medicinal action of OCT. ***Conclusion:*** The B/ST ratio of cranium may be non-invasive method and have potential in evaluating the therapeutic effect of SHP.

Key words: ^{99m}Tc-hydroxy-methylene-disphosphonate (^{99m}Tc-HMDP), bone scintigraphy, secondary hyperparathyroidism (SHP), parathyroidectomy (PTX), 22-Oxacalcitoriol (OCT)