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Bone Densitometric Analysis in Egyptian Hemodialysis Patients

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End-stage renal failure (ESRF) is the ultimate consequence of chronic renal failure, in which case dialysis is generally required. In dialysed patients, almost all patients have abnormal bone histology and their lower values of glomerular filtration rate have been associated with lower bone mineral density (BMD) at all sites. The objective of the present study was to investigate the effect of hemodialysis (HD) on body-composition (BC), specially segmental and total BMD, in Egyptian ESRF patients. Forty ESRF patients [20 male/20 female; mean age (± SD): 52.11 ± 12.97 yr] undergoing regular HD 3 times/week (duration: 6.50 ± 5.68 yr) using bicarbonate dialysis and polysulphon membrane, and other 40 age- and sex-matched healthy controls volunteered in the study. Blood samples were obtained for monitoring serum levels of calcium (Ca), inorganic phosphate (P), osteocalcin (OC), and parathormone (PTH) for all participants. BC was evaluated by dual X-ray absorptiometry. HD patients manifested lower segmental and total BMD values in comparison with age-matched healthy controls (Z-score: -0.17 ± 1.12) due to significantly higher levels of P (4.04 ± 1.33 vs. 3.39 ± 0.51 mg/dl, $p < 0.001$), PTH (538.17 ± 363.99 vs. 48.86 ± 19.64 ng/L, $p < 0.0001$), and OC (50.39 ± 34.91 vs. 16.32 ± 5.37 mg/L, $p < 0.0001$). Pelvis, lumbar spine, and total BMD (g/cm2) for HD patients were significantly correlated with HD duration (yr) ($R = 0.94$, 80, and 92, respectively, $p < 0.0001$). Thus, BC analysis is of utmost importance for efficiently providing tailored individual mineral supplementation to HD patients.

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