ICCN Poster Presentations

Clinical nutrition: diagnosis and management

Sequential body composition analysis by impedance early post-kidney transplantation.

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Background: Phase angle studied by bioelectrical impedance analysis (BIA) correlates with morbidity and mortality among hemodialysis (HD) patients, and intracellular water (ICW) volume is a reliable surrogate of protein metabolism. While chronic renal failure patients present a significantly disturbed body water composition, no studies have been done on its behaviour following kidney grafting. We report the changes associated with a successful kidney transplant (Tx) on body composition evaluated by BIA, during first months post-surgery.
Methods: Twelve Tx patients (7 males, 5 females) were studied. Each patient received triple-drug immuno-suppressive therapy. BIA was assessed before Tx, at month 1 post-Tx and at month 3 post-Tx. Total body water (TBW), extracellular water (ECW), intracellular water (ICW), Na:K exchange rate (Nae:Ke) and phase angle (PA) were studied. An healthy group and a HD group were evaluated three times in a year interval, and HD group was evaluated both before and after a dialysis session.
Results: When we compared body composition before Tx with month 1 post-Tx, TBW, ECW and Nae:Ke increased, while ICW and PA decreased significantly. When we compared month 1 with month 3 post-Tx, we observed that ECW decreased, while ICW and PA increased. On comparing month 1 post-Tx with the healthy group, Nae:Ke was greater and PA was lower at month 1; at month 3, only TBW was greater among Tx patients.
Conclusions: Our study shows that following successful grafting, kidney transplant recipients reach a new body water composition equilibrium, which is rapidly attained during the first period post-surgery. More importantly, BIA showed that the different body water compartments of kidney transplant recipients quickly match the constitution of normal individuals, overcoming both potential drug therapy side-effects and a suboptimal glomerular filtration as compared to two-kidney healthy controls.

Determination of 25-hydroxyvitamin D by competitive protein-binding assay and ^{125}I-based radioimmunoassay method: a validation study

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Vitamin D is an essential component in the regulation of calcium and bone metabolism. Vitamin D status can be assessed by measuring the serum concentration of 25-hydroxyvitamin D [25(OH) D]. This can act as a clinical indicator of vitamin D deficiency and bone health status. The aims of this study were: (1) to establish the coefficients of variation (CVs) of different 25 (OH) D assay procedures of animal and human sera, (2) to determine whether purification of serum extracts improved accuracy in a competitive protein-binding assay (CPBA) and a commercially available ^{125}I-based radioimmunoassay (RIA) kit for the assay of 25(OH) D and (3) to compare these two different assays techniques. Intra- and inter-assays CVs of 25(OH) D, for low, medium and high values of standard serum samples for CPBA ranged from 9.9 to12.8%, compared to 3.8% to 8.1% for RIA. There was a highly significant difference between purified and non-purified extracts in the CPBA, whereas no significant difference was found in the RIA in assaying various human and animal sera. Mean (and SD) concentrations of $25(OH)D_{CPBA}$ and $25(OH)D_{RIA}$ were 39.72 (SD 19.78)nmol/L and 51.85 (SD 21.10)nmol/L respectively. Comparison between the two methods by the Bland-Altman approach (n=120) showed that the estimate of 25(OH) D level measured by RIA was 12.13nmol/L higher than by CPBA, with the 95% limits of agreement for paired observations by the two methods ranging from -16.91 to 41.17nmol/L. In general, the mean serum 25(OH) D level measured by RIA was significantly higher by an average of 37% (95% CI: 29% to 46%) than that measured by CPBA (paired t=9.75; P<0.0001). In summary, a purification step in CPBA is considered as essential to assess the circulating 25(OH) D. Our results show that using the two different methods produce greatly differing estimates of the 25(OH) D levels, so careful cross-calibration needs to be performed when comparing vitamin D status in studies using different assay techniques.