ASSESSMENT OF EXTRACELLULAR FLUID VOLUME IN HEMODIALYSIS PATIENTS BY USING CALF BIOIMPEDANCE SPECTROSCOPY

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Calf bioimpedance spectroscopy (cBIS) is a reliable and simple method to estimate hydration status in hemodialysis (HD) patients. The aim of this study was to investigate whether the calf extracellular fluid volume (cECV) proportionally reflects the whole body ECV (wECV). Nineteen stable HD patients (11males) were studied with 265 measurements. Whole body BIS (WBIS) and cBIS studies were performed pre- and post-dialysis continuously throughout each treatment. Patients were divided into three groups according to the criteria of resistance slope and μ (normalized resistivity): Group 1 (N=5): Dry weight (DW) was reached as determined by flattening of the slope of the resistance curve during HD *and* μ being the normal range (μ>0.18/0.20 $\Omega m^3/kg$ for men/women); group 2 (N=7) possible DW (PDW) by flattening of the slope but μ not in the normal range; and group 3 (N=6) non DW (NDW) satisfied neither the flattening nor μ criterion. Linear regression was used to test for relationship between cECV and wECV. Table 1 shows the correlations of cECV and wECV pre- and post-dialysis. The correlation was higher with DW than with PDW and NDW pre-dialysis (pre-HD) which indicates that homogenous distribution of body fluid is present when patients were close to normal hydration. Patients in the NDW group showed the poorest correlation between cECV and wECV either pre-HD or post-HD. These data confirmed that monitoring calf ECV reflects whole body ECV. These findings support the notion that cBIS can be used to aim at DW in HD patients.

Table 1 Correlation between cECV and wECV at the beginning (pre-HD) and the end (post-HD) of HD in the three patients groups

		Group		
Time point	All	DW	PDW	NDW
Pre-HD	0.863	0.898	0.868	0.681
Post-HD	0.843	0.858	0.926	0.745

All P<0.01