OBJECTIVE: To evaluate the fluid distribution in patients on maintenance hemodialysis by the whole-body bio-impedance spectroscopy.

SUBJECTS /METHODS: A total of 119 patients with stable hemodialysis for more than 3 months were enrolled in this study. Pre- and Post-dialysis intracellular water (ICW) and extracellular water (ECW) were measured by whole-body multi-frequency bio-impedance spectroscopy (Bodystat, UK), and standardized by body weight to produce ICW% and ECW%. Eight-two normal individuals matched sex, age and body weight were used as controls.

RESULTS: Patients on maintenance hemodialysis had significantly higher ECW% and ECW/ICW ratio compared with normal controls (P<0.01). ECW % and ECW/ICW ratio decreased significantly after hemodialysis, but were still higher than those of controls. By contrast, pre- and post-dialysis ICW% values in HD patients were similar to those of controls. Lower ECW after dialysis was positively correlated with ultrafiltration volume (r=0.572, P<0.01 for males; r=0.556, P<0.01 for females). Patients with hypertension had higher pre- and post-dialysis ECW% values than those without hypertension. In patients with normal blood pressure, post-dialysis ECW% was similar to that of controls.

CONCLUSION: Hemodialysis patients have higher pre-dialysis ECW%. Fluid ultrafiltration is mainly derived from extracellular water during hemodialysis. Post-dialysis ECW% may be a useful parameter for the evaluation of dry weight in HD patients.


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