# The Characteristics of Fluid Shifts in Patients with Intra-Dialytic BP Variability

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**Background/Aims:** Fluid shifts are commonplace in hemodialysis(HD) patients during the intra-dialytic periods. However, characteristics of fluid shifts and which fluid space is affected is still undisclosed in patients with intra-dialytic blood pressure(IDBP) variability.Therefore, we designed this study to evaluate the fluid spaces most affected by ultrafiltration and find out whether hydration status, presence of diabetes mellitus(DM), age and gender may influence the fluid shifts in patients with intra-dialytic BP variability. **Methods:** This is a prospective cohort study of 56 prevalent HD patients [66.0±5.2 years(50% men; 50% with DM)] receiving thrice weekly HD. We used a body composition monitoring(BCM; Fresenius AG) to evaluate the changes of fluid spaces before, 1,2,3,4hr,30 min after HD. Patients with SBP variation under 20 mmHg and DBP variation under 10 mmHg were classified as stability(Group-A, $n$=28), and others as variability(Group-B, $n$=28) **Results:** Mean relative reduction of total body water(TBW) was not significantly different between two groups from the start to the end of HD(before,1.00; 1hr,0.98±0.01 vs 0.99±0.03;2hr,0.98±0.02 vs 0.98±0.02;3hr,0.96±0.02 vs 0.96±0.03; 4hr, 0.95±0.02 vs 0.95±0.03, 30mins after HD; 0.95±0.02 vs 0.95±0.03, respectively). Mean relative reduction of extracellular water (ECW) in group-B was steeper than group-A(before,1.00;1hr, 0.99±0.01 vs 0.98±0.02;2hr, 0.97±0.02 vs 0.95±0.02; 3hr, 0.95±0.02 vs 0.92±0.03; 4hr,0.92±0.02 vs 0.90±0.03,30mins after HD; 0.92±0.03 vs 0.88±0.04,respectively). Mean relative reduction of intracellular water(ICW) in group-B was not changed compared to group-A(before,1.00; 1hr, 0.98±0.02 vs 1.01±0.05; 2hr, 0.98±0.00 vs 1.00±0.04; 3hr, 0.98±0.04 vs 1.01±0.05; 4hr,0.98±0.04 vs 1.01±0.04,30mins after HD; 0.98±0.04 vs 1.01±0.04,respectively) **Conclusions:** There is no significant difference of hydration status, presence of DM, age, gender between two groups. In conclusion, patients with IDBP variability have the characteristics of fluid shifts that reduction of ECW was more steeper whereas that of ICW wan not changed compared to patients with IDBP stability. And, adequate control of pre-dialytic SBP may be essential part of reducing IDBP variability
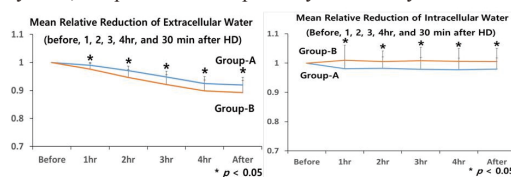


**Fig. 1. Mean Relative Reduction of Extracellular Water and Intracellular Water (Before, 1, 2, 3, 4hr, and 30 min after HD)**
- Group-A = Patients with intra-dialytic SBP and DBP stability (n=28)
- Group-B = Patients with intra-dialytic SBP and DBP variability (n=28)