

Original Article

Evaluation of clinical dry weight assessment in haemodialysis patients using bioimpedance spectroscopy: a cross-sectional study

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Abstract

Background. Dry weight assessment (DWA) is essential to efficient therapy of haemodialysis (HD) patients. However, so far objective methods for DWA have not been applicable to daily routine. Thus, exact fluid management in HD remains difficult and is often based on clinical criteria. The aims of this study were (1) to objectively define pre- and post-dialytic ranges of extracellular volume in a large cohort of HD patients (in whom DWA had been defined according to clinical criteria), (2) to compare the hydration status between diabetic and non-diabetic patients, and (3) to assess a patient subgroup that might benefit from correction of target weight.

Methods. We measured fluid overload (FO) prior to a mid-week HD session in 370 randomly selected HD patients (50% with diabetes) from five dialysis centres. A new bioimpedance spectroscopy (BIS) device that implies a validated body composition model was applied. This tool allows correct quantification of extracellular FO or – deficiency in comparison to a healthy reference population (normal range –1.1 to 1.1 L according to the 10th and 90th percentile of measurements). In addition, weight and blood pressure were recorded before and after treatment.

Results. Pre-dialytic FO ranged from –0.5 to 4 L and post-dialytic FO from –2.5 to 2 L (10th and 90th percentile of measurements), indicating that on average the hydration status of healthy subjects is considered as the optimal target weight in HD patients. Comparison of FO between diabetic and non-diabetic patients revealed no difference. Based on the consideration that an FO < –1.1 L before and >1.1 L after HD indicates inadequate DWA, we identified 98 (26%) patients who might benefit from correction of target body weight.

Conclusion. BIS is an interesting, objective method to support clinical DWA. Further studies should be performed to investigate beneficial clinical effects of this approach.

Keywords: bioimpedance spectroscopy; extracellular volume; haemodialysis