

Assessment of Hydration Status in Hemodialysis Patients

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In most hemodialysis (HD) centers, dry weight (DW) is clinically determined but this process needs long period of trial-and-error process and frequently fails to detect the subtle changes in hydration status, leading to overhydration. Recent researches focus on the objective measurements of hydration status. Initially, biochemical volume markers such as atrial natriuretic peptide and cyclic guanidine monophosphate were evaluated but cardiac disease, interpatient variability, and detection of underhydration limit their uses. Plasma brain natriuretic peptide has some value for the assessment of overhydration. Measurement of inferior vena cava diameter may be better for the detection of both over- and under-hydration because it correlates with circulating blood volume. Interpatient and interoperator variability and the presence of right-sided heart failure limit its use. With blood volume monitoring, determination of the extent of both intradialytic decreases in blood volume and post-HD vascular compartment refill seemed to help assess patient DW. Finally, bioimpedance analysis (BIA) has been used for assessment of DW. Initially, ratio between extracellular fluid and total body water, resistance ratio between ECF and intracellular fluid were used. Recently, normovolemia/hypervolemia slope method, resistance-reactance graph method, and continuous intradialytic calf bioimpedance method were introduced. In summary, although none of these methods gives an accurate estimate of DW, the combination of these tools are promising for the accurate assessment of hydration status. Further refinement of the methods and application to clinical fields are needed.