

Original Article

Guided optimization of fluid status in haemodialysis patients

Petr Machek¹, Tomas Jirka¹, Ulrich Moissl², Paul Chamney² and Peter Wabel²

¹Fresenius Medical Care Ds, Prague, Czech Republic and ²Fresenius Medical Care D GmbH, Bad Homburg, Germany

Correspondence and offprint requests to: Peter Wabel; E-mail: peter.wabel@fmc-ag.com

Abstract

Background. Achieving normohydration remains a non-trivial issue in haemodialysis therapy. Guiding the haemodialysis patient on the path between fluid overload and dehydration should be the clinical target, although it can be difficult to achieve this target in practice. Objective and clinically applicable methods for the determination of the normohydration status on an individual basis are needed to help in the identification of an appropriate target weight.

Methods. The aim of this prospective trial was to guide the patient population of a complete dialysis centre towards normohydration over the course of approximately 1 year. Fluid status was assessed frequently (at least monthly) in haemodialysis patients ($n = 52$) with the body composition monitor (BCM), which is based on whole body bioimpedance spectroscopy. The BCM provides the clinician with an objective target for normohydration. The patient population was divided into three groups: the hyperhydrated group (relative fluid overload $> 15\%$ of extracellular water (ECW); $n = 13$; Group A), the adverse event group (patients with more than two adverse events in the last 4 weeks; $n = 12$; Group B) and the remaining patients ($n = 27$; Group C).

Results. In the hyperhydrated group (Group A), fluid overload was reduced by 2.0 L ($P < 0.001$) without increasing the occurrence of intradialytic adverse events. This resulted in a reduction in systolic blood pressure of 25 mmHg ($P = 0.012$). Additionally, a 35% reduction in antihypertensive medication ($P = 0.031$) was achieved. In the adverse event group (Group B), the fluid status was increased by 1.3 L ($P = 0.004$) resulting in a 73% reduction in intradialytic adverse events ($P < 0.001$) without significantly increasing the blood pressure.

Conclusion. The BCM provides an objective assessment of normohydration that is clinically applicable. Guiding the patients towards this target of normohydration leads to better control of hypertension in hyperhydrated patients, less intradialytic adverse events and improved cardiac function.

Keywords: adverse event; bioimpedance spectroscopy; fluid overload; hypertension; normohydration