Nephrology Dialysis Transplantation 30 (Supplement 3): iii229–iii256, 2015
doi:10.1093/ndt/gfv179.57

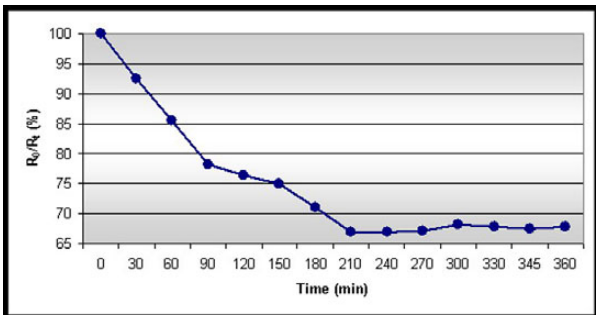
DIALYSIS. EXTRACORPOREAL DIALYSIS: TECHNIQUES AND ADEQUACY

FP528 PROBING THE DRY WEIGHT BY BIOIMPEDANCE: THE RE.S.T./COLLABORATIVE STUDY INITIATIVE

Carlo Basile[1], Pasquale Libutti[1], Piero Lisi[1], Luigi Rossi[1], Carlo Lomonte[1], Lucia Di Micco[2] and Biagio Di Iorio[2]

[1]*Miulli General Hospital, Division of Nephrology, Acquaviva delle Fonti, Italy,*
[2]*Hospital of Solofra, Division of Nephrology, Solofra, Italy*

Introduction and Aims: Probing the dry weight (DW) was largely dependent on clinical subjective estimate until recently. New bedside non-invasive tools have been developed with the aim of providing more objective information on volume status and guiding physicians in the quest for DW. Among them, bioimpedance (BIA) appears to be very promising in the achievement of this goal. Resistance (R) and capacitance of tissue are the two basic properties in BIA. However, although impedance is an electrical property of tissues that can be directly used in body composition analysis, it is commonly embedded in predictive equations that are derived by correlation with criterion measures of body compartments.
Methods: Very recently, a test aimed at assessing DW in complicated hemodialysis (HD) patients has been developed, the "RE.sistance S.tabilization T.est" (RE.S.T.) (Basile et al, J Nephrol DOI 10.1007/s40620-014-0159-8). It is based on the following four items:
1. one or more daily and/or alternate day HD sessions lasting 6 hours with ultrafiltration (UF) rate ≤ 0.5 kg/hour are planned;
2. BIA measurements are determined injecting 800 μA at 50 kHz alternating sinusoidal current with a standard tetrapolar technique (BIA 101 Impedance Analyzer; Akern, Florence, Italy). Resistance (R) is recorded at the start of the treatment (R0) and every 15 min (Rt) during HD until the end of the 6-hour session;
3. DW is defined as the weight achieved after flattening of the R0/Rt slope (R0 is R at time 0 and Rt is R at a given time t during the HD session), i.e. at the time point at which three consecutive R0/Rt ratios show in-between changes equal to or less than ± 1% despite ongoing UF, indicating no further ±decline in extracellular volume;
4. if at the end of the 6-hour HD session R stabilization is not attained, a new 6-hour HD treatment with UF rate ≤ 0.5 kg/h is planned until a BIA DW (according to the item 3) is obtained.



Results: A study group has been created (RE.S.T./Collaborative Study Initiative) with the aim of verifying if BIA-based DW control is truly superior to current volume management in complicated HD patients. The table shows the very brilliant results obtained in the first 4 patients, transferred from other dialysis centers, undergoing the RE.S.T. protocol: clinical outcomes were improved, by reducing the DW by 8.4 ± SD 3.06 kg (a decrease in the body weight of 9.52 ± 1.83%).
Conclusions: Clinical methods are fundamental in probing the DW. They must be supported by strict BIA protocols. Two are the main advantages of RE.S.T.: it uses directly R, with no need for predictive equations; it does not depend on comparison with healthy subjects but uses patients as their own control to define DW as stabilization of the R0/Rt slope. RE.S.T. appears to be a (the) brilliant solution in solving the old problem of DW in HD patients.

FP528 Table 1:

patient	clinical complications	DW (Clinical methods) before RE.S.T. protocol (kg)	DW after RE.S.T. protocol (kg) / number of dialysis sessions needed	% decrease in body weight after RE.S.T. protocol	Clinical outcomes / number of anti-hypertensive drugs before/after RE.S.T. protocol
male, 60-year-old	severe hypertension	64.5	59.5 / 6	7.75	normotension 5/0
female, 70-year-old	hypertension; severe orthopnea; hemodynamic instability	78.2	71.5 / 5	8.56	normotension; no dyspnoea 3/0
female, 55-year-old	severe hypertension; dyspnoea; asthenia	117.0	105.5 / 5	9.82	normotension; no dyspnoea 5/2
male, 55-year-old	dyspnoea; asthenia	87.0	76.6 / 3	11.95	normotension; no dyspnoea 0/0