Searching for the stone of wisdom

Sir,
It is good that renewed attention of the dialysis world is being drawn to the control of extracellular volume as a vital part of adequate dialysis. The idea is gaining ground that ‘if we only knew our patients’ dry weight, we could treat them better’. Bioimpedance is the most logical approach to this problem and the authors of ‘Can technology solve the clinical problems of dry weight?’ [1] are to be congratulated on their thoughtful review.

However, without denying the usefulness of this technique, it may be erroneous to conclude ‘Now that we can estimate dry weight, the problem of volume control is solved’, for two reasons. First, as the authors remark in their discussion, ‘currently used short dialysis sessions may cause hypotension long before dry weight is reached’. In other words, they make it impossible to reach the desired goal. But when it can be reached, time-end careful ‘probing for dry weight’ [2] is still required before a steady state is established.

The second consideration is that even if dry weight is reached during each session, interdialytic weight gain of 2–3 kg three times a week means that average volume excess will remain at least 1 l [3], high enough to sustain hypertension. Indeed, it is not surprising that normal blood pressure is often not reached unless better salt restriction is implemented. In addition, the effect of such unphysiological ‘harmonica’ changes of the extra- and intravascular compartments on the cardiovascular system has never been investigated.

In conclusion, expecting that technology will solve this clinical problem resembles the search for the stone of wisdom during the middle ages. Technology will be very helpful, but is not essential. Clinical judgement, however, is and the dialysis team will always have to spend time (a scarce commodity) to counsel and convince the patient.

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Vorden
Evert J. Dorhout Mees
The Netherlands
Email: m.dorhoutmees@tref.nl


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Reply

Sir,
Dr Dorhout Mees makes an important point relating to our recent review in respect of the clinical application of bioimpedance to determine dry weight in patients receiving haemodialysis. Haemodialysis fails to achieve full rehabilitation and the quality of life of dialysis patients remains suboptimal [1,2]. Dialysis patients have a high incidence of left ventricular hypertrophy, caused in part by hypertension. Excess extracellular fluid or hypervolaemia being a contributory factor [3], resolution leads to improved cardiac outcomes [4].

The ability to control hypervolaemia in patients is a function of its recognition, coupled with strategies to remove excess fluid and the control of fluid intake. Identification of hypervolaemia, particularly in patients who have ‘latent’ overhydration or in whom there are no physical signs indicating fluid overload, is difficult. Bioimpedance is a diagnostic tool. It cannot be used in isolation and must be used with other measures, such as patient education to control sodium intake and treatment duration. The intake of sodium has long been a key element of dietary restriction for patients. The majority of patients do not add salt to their food, but many, if not most, are unaware of the hidden salt content of processed food. Historically, long 8–10 h treatment sessions were used. This approach provided good control of the blood pressure and continues to be used in some centres; however, the majority of patients are treated for <12 h weekly. An important driving force for such an approach is that it is a cost effective method of utilizing existing infrastructure in an era of financial constraint and it is favoured by patients. It may be unwise to conclude that it is impossible to reach the desired goal of dry weight with short dialysis schedules. Measures to reduce interdialytic weight gain by salt restriction, the alignment of dialysis fluid sodium and the gradual reduction in estimated dry weight over time as monitored by BIA could be useful in some patients. Clinical trials to investigate such an approach are currently under way.

It is true that clinical judgement is essential, but can any form of clinical examination establish the dry weight of the patient? Measures such as jugular venous pressure measurement, cardiac and pulmonary examination or the search for peripheral oedema are helpful in identification of fluid overload. These measures, however, lack the ability to detect the relatively small degree of extracellular fluid overhydration that may be present or provide a value of the patient’s dry weight.

The availability and clinical application of technology such as bioimpedance is a step in the right direction to ensure that the long-term pathophysiological consequences of intermittent treatment remain controlled. Such control will inevitably result in improved hypertensive control, reduction in cardiac mortality and an improved quality of life.

It is our view that the use of technology is an essential element of improving clinical practice, but concur with