Is BioelectricalImpedance Actually Useful for Nutritional Assessment in Patients on CAPD?

Editar:

We read with great interest the editorial by Schmidt and Dumler about bioelectrical impedance analysis (BIA) in continuous ambulatory peritoneal dialysis (CAPD) patients (1). These authors stated that BIA is a promising tool for nutritional assessment in peritoneal dialysis patients and may be especially useful for longitudinal follow-up within the same patients. In our experience, we also have found BIA useful for the long-term evaluation of nutritional status in patients on CAPD, provided that hydration is relatively normal throughout the follow-up period (2). In fact, BIA fatfree mass (FFM) is derived mainly from resistance using equations validated only in healthy subjects, in which changes in hydration are not accounted for (3). As a consequence, any rise in total body water (TBW) that may occur in patients on CAPD is regarded by BIA as an increase in FFM, rather than an increase of FFM hydration percentage (4).

In this presentation, we would like to emphasize the inaccuracy of BIA for the assessment of body mass in patients on CAPD if normohydration is not warranted.

PATIENTS AND

METHODS

We recently studied TBW, FFM, and fat mass (FM) in 24 patients with chronic renal failure before start ing CAPD and at regular intervals for the first 12 months, using BIA (BIA 109; Akern RJL) and anthropometry (2).

Among these patients, we identified 13 subjects (10 male, 3 female) in which, during the first month on CAPD, there was a rise in TBW of at least one litre (with no overt edema in most patients) and a subsequent decrease to basal values after 3 months.

RESUL

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The results ofBIA and anthropometry evaluation in these 13 patients are shown in Table 1.

The two methods showed a very good correlation in assessing FFM: $r = 0.95$; $p < 0.0001$. However, the standard deviation of the differences between the methods was 3.2, which means that FFM assessed by BIA could be 9.7 kg (mean +2 SD) above or 3.1 kg (mean -2 SD) below FFM assessed by anthropometry. The differences between FFM by BIA and FFM by anthropometry were plotted against the resistance. We observed an inverse correlation between the differences and the resistance ($r = -0.59$; $p < 0.001$) (Figure 1), which means that the difference between FFM assessed by BIA and by anthropometry increases with the increase of TBW.

CONCLUSIO

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These results clearly demonstrate that the assessment of body mass by BIA in patients on CAPD is influenced by hydration status, at least when this assessment is based on equations in which changes in hydration are not accounted for. Moreover, our data

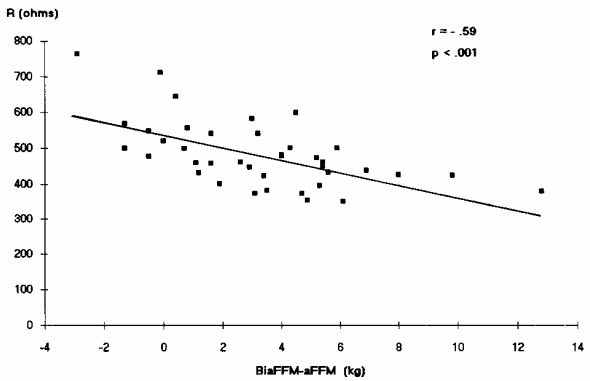

Figure 1—Correlation between R and difference in FFM by BIA and anthropometry.

suggest that the greater the deviation from a status of normohydration, the greater the inaccuracy of BIA. Therefore, BIA must be cautiously interpreted when applied to the evaluation of body mass in subjects, like patients on CAPD, who can present considerable changes in their hydration status. In our experience, since a method of direct measurement ofbody composition is still unavailable, a better assessment ofbody mass can be achieved through the proper use of anthropometry.

R. Bergia
M.E. Bellini
P. Dionisio
C. CornelIa
E. Stramignoni
P. Bajardi

Department of
Nephrology
Ospedale degli Infermi
Via Caraccio 20
13051 Biella, Italy

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