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LETTER TO THE EDITOR

Total body water measurement in childhood

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Sir:

Assessment of body fluid volumes is essential in the day-to-day care for children, especially those admitted to the Intensive Care Unit or on dialysis [1]. Bioimpedance spectroscopy has been claimed to be a noninvasive technology able to reliably measure total body water.

In the article "Validating the use of bioimpedance spectroscopy for assessment of fluid status in children," Dasgupta et al. [2] evaluated the reliability in children of the Fresenius Medical Care Body Composition Monitor (BCM), a bioimpedance spectroscopy tool for the assessment of fluid status. They found that in healthy children, bioimpedance spectroscopy overestimates total body water by 0.6 L, when compared to the deuterium dilution technique. The authors present both the agreement between the two measurement techniques using a regression analysis (Fig. 1 from reference [2]) and the Bland-Altman plot (Supplementary Fig. S1 from reference [2]). The latter points out that the 95% limits of agreement between the two techniques ranged between −2.0 to +3.2 L. As a consequence, in a child with a total body water content of 20 L, BCM measurements of total body water may vary between 18.0 and 23.2 L. The authors found similar results also for overhydration measurements by BCM and urea kinetic modeling in children on hemodialysis. These data hardly support the statement by the authors that bioimpedance spectroscopy can be applied in children. The lack of sufficient accuracy for application in children is similar to that found in a recent study of BCM in children on chronic dialysis [3].

We can only conclude that the BCM is not currently applicable in children for body fluid assessment and that new efforts should be addressed to improve the precision of bioimpedance spectroscopy measurements in childhood.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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