

Radiofrequency Echographic Multi Spectrometry (REMS) as alternative to bioelectrical impedance analysis (BIA) for the assessment of body composition in postmenopausal women

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Introduction

Accurate assessment of body composition is fundamental when monitoring the efficacy of medical nutrition and weight management plans as well as in pathological conditions ¹. In particular, weight changes commonly occur in women following the menopausal period, due to hormonal alterations and ovarian aging ². The aim of the present study is to determine the accuracy of the ultrasound-based technique, called Radiofrequency Echographic Multi Spectrometry (REMS) ^{3, 4, 5}, in comparison to conventional bioelectrical impedance analysis (BIA) for the assessment of body composition in postmenopausal women ⁶.

Materials and methods

A total of 131 women older than 60 years, underwent the body mass measurement by transabdominal REMS scan (Fig. 1) and BIA. Both body fat percentage (BFP) and basal metabolic rate (BMR) were measured in all subjects. The body composition module used the same data acquired during the REMS scan of lumbar vertebrae to calculate the BFP and the BMR. In particular, the body fat percentage value was based on a multiple regression model considering abdominal measurements of total thickness of soft tissues between skin and lumbar vertebrae, subcutaneous fat thickness and muscle thickness, which are then combined with patient characteristics (age, sex, height and weight).

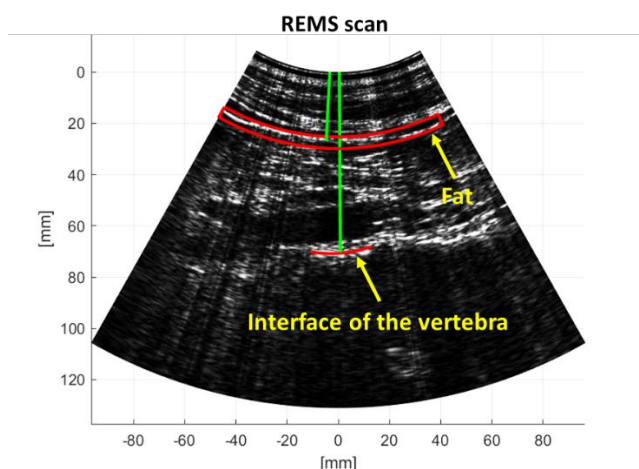


Fig 1: Transabdominal echographic acquisition with REMS.

Results and discussion

Anthropometric characteristics of the population are shown in Table 1.

Using BIA, the median BFP was 40.9% (interquartile range [IQR]: 37.0% to 45.3%), which was similar to the value of 42.2% (IQR: 37.3% to 47.1%) obtained by REMS, with $p = 0.6$. Analogously, the median BMR measured by BIA yielded 1323.0 kcal/day (IQR: 1265.5 to 1406.3 kcal/day), which was in the same range as 1315.0 kcal/day (IQR: 1261.0 to 1406.5 kcal/day) yielded by REMS, with $p=0.7$.

Table 1: Anthropometric features of the studied population.

Patients' characteristics	Mean $\pm$ SD
Age (years)	68.4 $\pm$ 5.6
Weight (kg)	65.2 $\pm$ 10.6
Height (cm)	155.9 $\pm$ 6.7
BMI (kg/m ²)	20.9 $\pm$ 3.3

Abbreviation: BMI, body mass index

Conclusion

REMS technology has demonstrated to substantially provide an accurate assessment of body composition, equally to conventional BIA. This method may be used interchangeably in the clinical routine.

References

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