

VAL 62 - Razón de Impedancias: novo parámetro para evaluación funcional a partir de Bioimpedancia eléctrica multifrecuencial.

Translation from Original Paper in Portuguese

OBJECTIVE: Bioelectrical Impedance Analysis (BIA) has been shown to be a simple and practical method of measuring body composition in population studies, provided that specific formulae for each population group are utilized. In clinical situations the body composition results obtained through BIA may therefore still be disputed, since the physical principles in which this method is based may not be valid under such circumstances. Another application of the method includes the assessment of Phase Angle in several clinical settings. This parameter can be obtained directly from the values of resistance and reactance without the use of equations. The Phase Angle indicates the status of "health" of the cell membrane, this therefore being a method of functional evaluation. In BIA instruments that register only impedance, this parameter cannot be determined. Instead, utilizing a multiple frequency instrument, it is possible to evaluate the difference of impedance values (RI) between the smaller and greater frequency Impedance values. The healthy cell membrane would be significantly greater than a value of 1, while diverse situations of illness would reflect a value approaching closer to 1.00.

SUBJECTS / METHODS: With the objective to evaluate the behavior of this parameter between sick and healthy people, we carried out a study in 105 volunteers, 52 being healthy people and 53 oncological patients in the process of chemotherapy. The test was carried out with a BIA multifrequency instrument (Bodystat Quadscan 4000) using frequencies of 5, 50, 100 and 200 kHz.

RESULTS: The mean values of RI among patients (RI = 1.22) and voluntary healthy (RI = 1,28) was shown to be significantly different ($p < 0.001$). When the patients receiving chemotherapy were analyzed alone, there were no statistical differences among the diverse types of tumors, being that the patient bearers of pulmonary and gynecological cancer tend to present smaller values.

CONCLUSION: As conclusion, the RI is an alternative for evaluation of the cell membrane, that can be of utilised as an indicator in clinical situations. Longitudinal studies in diverse clinical situations and intervention studies should be carried out to verify its performance.

NOTE: This study used the Impedance value at 5 kHz (highest value) divided by the Impedance value at 200 kHz (lowest value). The resulting ratio would always be > 1.00 . More recent studies now reverse the calculation: Imp at 200 kHz/Imp at 5 kHz yielding RI values < 1.00 .

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