

Use of bioelectrical impedance analysis to assess liver steatosis.

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Source

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Abstract

BACKGROUND:

The shortage of donor livers has led to increased utilization of steatotic marginal livers. Bioelectrical impedance analysis (BIA) uses the principles of electric current flows through tissue, with less resistance offered if the water content is high and the opposite in the presence of fat. Our hypothesis was that liver steatosis would result in an increased resistance to current flow, and correlate with the degree of liver steatosis.

METHODS:

Before studying cadaveric donor livers for transplantation, this study was performed in patients undergoing liver resection. A total of 37 patients undergoing liver resection for cancer were analysed with BIA, using a handheld, specially calibrated **Maltron** BIA analyser (BioScan 915) with modified tetrapolar electrodes. These electrodes were applied to the liver surface and resistance was recorded. To validate the results of BIA, a liver biopsy was performed. Histopathology was graded quantitatively as no steatosis, mild, moderate, or severe steatosis according the percentage of fat as well as qualitatively by type of fat (micro and macrovesicular).

RESULTS:

Bioelectric resistance showed a correlation with macrovesicular steatosis ($P = .03$).

CONCLUSION:

BIA is a simple, noninvasive technique and its use should be explored in donor livers to assess steatosis

Body composition by bioelectrical impedance analysis in renal transplant recipients

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Abstract

Bioelectrical impedance analysis was introduced more than a decade ago to measure body composition and nutritional status. There are presently limited data on the nutritional status and body composition measured with bioelectrical impedance analysis in renal transplant recipients, especially among the Asian population. The normal values for these data in renal transplant recipients remain unknown.

Methods

All renal transplant recipients with stable graft function who attended the outpatient renal transplant clinic in June 2003 were recruited for this cross-sectional study. Demographic and clinical data were obtained from participating patients and their outpatient clinic notes. Body composition and bioelectrical impedance data were obtained using the Metron BioScan® 916 v3 analyzer.

Results

Out of a total of 168 renal transplant recipients, 110 participated in this study of body composition and bioelectrical impedance for comparison with data from a previous study of 419 normal healthy volunteer controls. When compared to the healthy Malaysians, renal transplant recipients showed similar body composition in terms of body mass index, body cell mass, muscle bulk, percentage of body fat, percentage of fat free mass, and percentage of total body water. However, renal transplant recipients have more extracellular water, a lower phase angle, and a lower reactant.

Conclusion

Malaysians who have undergone renal transplantation have similar body composition to the healthy Malaysians when measurements are obtained using bioelectrical impedance analysis.