

عنوان مقاله:

A Method for Body Fat Composition Analysis in Abdominal Magnetic Resonance Images Via Self-Organizing Map Neural Network

محل انتشار:

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نویسندگان:

Fateme Moghbeli - *PhD Student in Medical Informatics, Department of Health Information Management, School of Health Management and Information Sciences, Iran University of Medical Sciences, Tehran- Iran*

Mostafa Langarizadeh - *Iran University of Medical Sciences*

Ali Younesi - *Assistant Professor of Neuroscience, Faculty of advanced technologies in medicine, Tehran University of Medical Sciences*

Amir Reza Radmard - *Assistant Professor, Department of Radiology, Shariati Hospital, Tehran University of Medical Sciences*

خلاصه مقاله:

Introduction: The present study aimed to suggest an unsupervised method for the segmentation of visceral adipose tissue (VAT) and subcutaneous adipose tissue (SAT) in axial magnetic resonance (MR) images of the abdomen. **Materials and Methods:** A self-organizing map (SOM) neural network was designed to segment the adipose tissue from other tissues in the MR images. The segmentation of SAT and VAT was accomplished using a new level set method called distance regularized level set evolution (DRLSE). To evaluate the suggested method, the whole-body abdominal MRI was performed on 23 subjects, and three slices were selected for each case. **Results:** The results of the automatic segmentation were compared with those of the manual segmentation and previous artificial intelligent methods. According to the results, there was a significant correlation between the automatic and manual segmentation results of VAT and SAT. **Conclusion:** As the findings indicated, the suggested method improved detection of body fat. In this study, a fully automated abdominal adipose tissue segmentation algorithm was suggested, which used the SOM neural network and DRLSE level set algorithm. The proposed methodology was concluded to be accurate and robust with a significant advantage over the manual and previous segmentation methods in terms of speed and accuracy.

کلمات کلیدی:

Image Processing, Magnetic Resonance, Neural Network, Segmentation, Visceral Fat

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