Dokumenttyp: journal article

Autor(en) des Beitrags:
Shen, Jun; Baum, Thomas; Cordes, Christian; Ott, Beate; Skurk, Thomas; Kooijman, Hendrik; Rummeny, Ernst J; Hauner, Hans; Menze, Bjoern H; Karampinos, Dimitrios C

Titel des Beitrags:
Automatic segmentation of abdominal organs and adipose tissue compartments in water-fat MRI: Application to weight-loss in obesity.

Abstract:
To develop a fully automatic algorithm for abdominal organs and adipose tissue compartments segmentation and to assess organ and adipose tissue volume changes in longitudinal water-fat magnetic resonance imaging (MRI) data. Axial two-point Dixon images were acquired in 20 obese women (age range 24-65, BMI 34.9±3.8kg/m(2)) before and after a four-week calorie restriction. Abdominal organs, subcutaneous adipose tissue (SAT) compartments (abdominal, anterior, posterior), SAT regions along the feet-head direction and regional visceral adipose tissue (VAT) were assessed by a fully automatic algorithm using morphological operations and a multi-atlas-based segmentation method. The accuracy of organ segmentation represented by Dice coefficients ranged from 0.672±0.155 for the pancreas to 0.943±0.023 for the liver. Abdominal SAT changes were significantly greater in the posterior than the anterior SAT compartment (-11.4%±5.1% versus -9.5%±6.3%, p<0.001). The loss of VAT that was not located around any organ (-16.1%±8.9%) was significantly greater than the loss of VAT 5cm around liver, left and right kidney, spleen, and pancreas (p<0.05). The presented fully automatic algorithm showed good performance in abdominal adipose tissue and organ...
segmentation, and allowed the detection of SAT and VAT subcompartments changes during weight loss.

Zeitschriftentitel / Abkürzung:
Eur J Radiol

Jahr:
2016

Band:
85

Heft / Issue:
9

Seiten:
1613-21

Nachgewiesen in:
Web of Science

Sprache:
eng

Volltext / DOI:
http://doi.org/10.1016/j.ejrad.2016.06.006

Pubmed:

Print-ISSN:
0720-048X

TUM Einrichtung:
Institut für Radiologie; Klinik für Ernährungsmedizin

Occurences:
- Hochschulbibliographie > 2016 > Zentrale Einrichtungen und Institute > ZIEL - Institute for Food & Health
- Hochschulbibliographie > 2016 > Fakultäten > Medizin > Else Kröner-Fresenius-Zentrum für Ernährungsmedizin - Klinik für Ernährungsmedizin
- Einrichtungen > Forschungszentren > ZIEL - Institute for Food & Health > TUM Mitglieder > Prof. Hauner (Lehrstuhl für Ernährungsmedizin) > 2016

entries: