



Article

Early and Long-Term Effects of Abdominal Fat Reduction Using Ultrasound and Radiofrequency Treatments

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Abstract: Background: Abdominal obesity, together with atherogenic dyslipidemia, increased blood pressure and impaired glucose tolerance, was included in the components of metabolic syndrome identifying patients at high risk of cardiovascular diseases. Subcutaneous adipose tissue is a buffer for dietary fatty acids (FAs). It was reported that the fatty acid composition of adipose tissue reflects the dietary intake of FAs in the previous 6 to 9 months. Therefore, we decided to evaluate the early and long-term metabolic effects of lipocavitation and/or thermolipolysis on abdominal fat reduction. Material and Methods: The study population comprised 60 women. Subjects were randomly allocated into one of three subgroups, 20 women per subgroup, and each subgroup received 10 treatments with ultrasound (U group), radiofrequency (RF group), or combined radiofrequency and ultrasound (RF/U group) for the abdominal region. Treatments were provided three times a week using the multifunctional device (Professional Beauty Equipment, HEBE, Warsaw, Poland). Each treatment to reduce adipose tissue, regardless of the method used, involved 20 min of massage with the dedicated applicator head on a rectangular 20 cm × 10 cm area of the abdominal region. Fatty acid composition and biochemical and anthropometric parameters were measured before the first, after 10 treatments and 6 months after the last treatment. Results and discussion: The series of 10 treatments to reduce abdominal adipose tissue using ultrasound, radiofrequency or both methods resulted in a cosmetic effect which was reflected in weight loss and BMI reduction. Reduced waist circumference was also found in patients who received radiofrequency or two types of intervention (RF + U) but not ultrasound treatments. The long-term cosmetic effect (lasting for at least 6 months) was achieved only with RF treatment and was reflected in reduced body weight, BMI and waist circumference. None of the treatments had a direct, short or long-term effect on the lipid profile, insulin resistance markers, inflammation markers, or blood pressure. Consequently, did not modify the risk of cardiovascular diseases.

Keywords: abdominal fat reduction; ultrasound treatment; radiofrequency treatment; fatty acids

1. Introduction

Abdominal obesity is a recognised, significant factor increasing the risk of cardiovascular diseases, both through the development of major classical risk factors and through other mechanisms, including dyslipidaemia or insulin resistance, eventually leading to

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