LETTER TO THE EDITOR

Long-term multidisciplinary therapy decreases predictors and prevalence of metabolic syndrome in obese adolescents

Metabolic syndrome is a constellation of interrelated risk factors of metabolic origin, termed metabolic risk factors, which appear to directly promote the development of atherosclerotic cardiovascular disease (ACSD) [1]. The diagnosis of metabolic syndrome may represent an important challenge for physicians and healthcare workers, and requires immediate strategies aimed at reducing the level of individual metabolic traits [2]. The aims of this study were threefold: first, to determine the prevalence of metabolic syndrome; second, to assess the effect of a long-term (12 month) intervention with multidisciplinary therapy on the ability to predict metabolic syndrome in obese adolescents; and third, to compare short-term (6 month) with long-term therapy. Fifty-one post-puberty obese adolescents were recruited, including 24 boys (BMI 36.19±2.64 wt/ht²) and 27 girls (BMI 34.34±2.89 wt/ht²). Body composition was measured by plethysmography using the BOD POD® Body Composition Tracking System (version 1.69; Life Measurement Instruments, Concord, CA) and visceral fat was analyzed by ultrasound. Metabolic syndrome was determined according to the World Heath Organization (WHO) criteria [3]. Patients were assigned to a weight loss programme consisting of multidisciplinary therapy, including nutritional intervention, exercise, and both psychological and clinical assessments. The Kolmogorov–Smirnov test was used to assess all variables for normality of distribution, and repeated measures were compared by ANOVA followed by a Scheffe’s post hoc test (P<0.05). At the beginning of treatment 31% of the obese adolescents presented metabolic syndrome, whereas only 8% did so after intervention. Indeed, in boys body mass index (BMI 36.19±2.64 to 30.82±5.92 wt/ht²), visceral fat (4.14±1.01 to 2.91±1.01 cm) and the homeostasis model assessment of insulin resistance (HOMA-IR; 3.77±2.07 to 0.75±1.51), and in girls glucose (92.09±5.85 to 86.00±5.92 mg/dl), showed statistically significant reductions following long-term therapy. The major findings of this study are that the long-term therapy promotes beneficial changes in metabolic parameters. However, short-term therapy was sufficient to promote a significant reduction in body fat (38.63±6.19 to 34.21±7.88%) and both visceral (4.14±1.01 to 3.12±1.58 cm) and subcutaneous fat (3.04±0.64 to 2.62±0.86 cm) in boys; there was a further improvement in these parameters following long-term therapy. The results for the short-term intervention are similar to findings reported by Chen et al. [4]. Such studies highlight the importance of preventing and controlling other chronic diseases by undertaking both short-term and long-term strategies for achieving weight loss. In a recent study by Balagopal et al. [5], a decrease in weight gain and an improvement of inflammatory markers was seen in obese youths who participated in a three-month exercise programme. Furthermore, in another study developed by our research group a decrease in the prevalence of nonalcoholic fatty liver disease (NAFLD) in obese adolescents subjected to a similar intervention for weight control was demonstrated [6]. This kind of multidisciplinary treatment can be effective in improving metabolic and hormonal profiles, as well as in controlling the obesity and related co-morbidities in adolescents [7]. Our results showing a decrease in HOMA-IR, visceral adiposity and other parameters analyzed in this study support the importance of
implementing such a strategy to prevent obesity, and will contribute to the future reduction of cases of metabolic syndrome, including those involving hypertension. Nemet et al. [8] demonstrated that both short and long-term intervention with a combined dietary/behavioural/physical activity programme promoted beneficial effects among obese children. These results highlight the importance of multidisciplinary programmes for the treatment of childhood obesity and for promoting long-term beneficial health effects. Finally, these aspects reinforce the importance of an early multidisciplinary intervention in metabolic syndrome for improving lifestyle modifications. In summary, our study clearly demonstrates a “dose-response” effect of multidisciplinary therapy when comparing short and long-term interventions. Long-term therapy was effective in reducing the prevalence and decreasing some predictors of metabolic syndrome in obese adolescents.

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References


Letter to the Editor

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