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CLINICAL STUDY

Effect of modified fasting therapy on body weight, fat and muscle mass, and blood chemistry in patients with obesity

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Abstract

OBJECTIVE: The aim of this study was to investigate the effects and safety of modified fasting therapy using fermented medicinal herbs and exercise on body weight, fat and muscle mass, and blood chemistry in obese subjects.

METHODS: Twenty-six patients participated in a 14-day fast, during which they ingested a supplement made from fermented medicinal herbs and carbohydrates (intake: 400-600 kcal/d). The schedule included 7 prefasting relief days and 14 days of stepwise reintroduction of food. The patients also took part in an exercise program that incorporated Qigong, weight training, and walking exercises. The efficacy of treatments was observed by assessing body fat mass and muscle mass, and alanine aminotransferase (ALT), aspartate aminotransferase (AST), cholesterol, and triglycerides in each study period. Specific symptoms or side effects were reported.

RESULTS: Body weight and body fat mass both decreased significantly by (5.16 ± 0.95) and (3.89 ± 0.79) kg (both $P < 0.05$), while muscle mass decreased by an average of (0.26 ± 0.22) kg, without statistical significance. ALT levels were significantly decreased ($P < 0.05$), while AST levels decreased without statistical significance ($P = 0.052$). The levels of total cholesterol and triglycerides were also significantly decreased (both $P < 0.05$). There were few adverse events except for mild dizziness, which did not affect everyday living.

CONCLUSION: These results suggest that modified fasting therapy using fermented medicinal herbs and exercise could be effective and safe on obese patients.

Key words: Obesity; Fasting; Houttuynia Cordata; Saururus Chinensis; Exercise; Blood chemical analysis; Medicine, Korean traditional

INTRODUCTION

Obesity is generally defined as excess body fat, and is caused by complex interactions between the environment, genetic predisposition and personal behavior.[1] World Health Organization (WHO) estimates showed that in 2005, approximately 1.6 billion people worldwide were overweight, and at least 400 million adults were obese.[2,3] A greater body weight (BW) is associated with increased incidence of a number of conditions, including diabetes mellitus, cardiovascular disease, non-alcoholic fatty liver disease and an increased risk of disability. Evidence suggests that even a moderate amount of weight loss can be beneficial in terms of reducing levels of some negative risk factors, such as blood pressure.[1] The initial goal of weight loss therapy

for overweight patients is a reduction in BW and maintaining a lower BW over the long term. Effective weight control involves multiple techniques and strategies including dietary therapy, physical activity, behavior therapy, pharmacotherapy, and surgery.[4] Many studies of dietary and behavioral treatments, however, have shown that maintenance of weight loss is difficult.[1]

Among a variety of dietary treatments, very-low-calorie diet (VLCD) is an effective therapeutic method to efficiently reduce BW over a relatively short period of time. The VLCD is defined as intake of 400-800 kcal/d, and it focuses on minimizing protein loss.[5] However, low compliance rates due to side-effects such as hunger and short durability for weight loss, are major limitations of VLCD. Many experts recommend VLCD combined with exercise or behavioral treatments as an effective method for the management of obesity to maintain weight loss.[6-8] Recently, a new type of VLCD that includes fermented medicinal herbs and carbohydrates, which is based on fasting therapy of traditional Korean medicine, has attracted growing popularity in Korea as an effective method for the treatment of obesity. This modified fasting therapy (MFT) reduces stress because it satisfies basic energy demands of the essential organs (such as the brain and the heart) with carbohydrates, prevents overeating by preventing hunger, and helps maintain active bowel movements through enzymes and probiotics.[9,10] Despite the perceived advantages of MFT using fermented medicinal herbs, few clinical reports have examined this treatment.[11,12]

We describe the preliminary experience of the Obesity Clinic at Kyung Hee University Korean Medical Hospital in selected cases treated with MFT using fermented medicinal herbs combined with exercise therapy. The aim of this retrospective study was to investigate the effects of MFT on BW, body fat mass (BFM) and muscle mass (MM), and blood chemistry, and to observe the safety of MFT in obese patients.

PARTICIPANTS AND METHODS

Patient eligibility

Thirty inpatients with obesity [body mass index (BMI) ≥25 kg/m^2] were treated with MFT between March 2009 and February 2012 at the Obesity Clinic of Kyung Hee University Korean Medicine Hospital. All patients met the following criteria for inclusion: (a) completed at least 7 days of prefasting, 14 days of fasting, and 14 days of refeeding; (b) were measured at least four times in the following ways: BW, BFM and MM before prefasting (BP), before fasting (BF), after fasting (AF), and after refeeding (AR); (c) had blood chemistry measurements taken at least twice BF and AR. We excluded the following patients: one patient with fewer than 7 days of fasting, one patient with fewer than four body measurements of BW, BFM and MM, and two patients with fewer than two blood chemistry measurements. In addition, patients who had experienced any of the following: weight changes greater than 3 kg within 2 months, received any treatment for obesity in the previous 6 months, were or might be pregnant or who had given birth during the previous 6 months, were also excluded. Finally, 26 inpatients aged between 18 and 55 years were included in our analysis. There were no patients with severe cardiovascular diseases or malignant tumors that needed aggressive treatment. The entire procedure, effects and possible side effects of MFT and any accompanying treatments were explained in detail to the included patients, and written informed consent was obtained from all patients before treatment began. The protocol for the research project was approved by the Institutional Review Board of Kyung Hee University Hospital and conforms to the provisions of the Declaration of Helsinki in 1995.

Treatment

The patients agreed to participate in a 14-day fast with a supplement made from fermented medicinal herbs and carbohydrates (intake: 400-600 kcal/d) following 7 prefasting relief days, which were then followed by 14 days of stepwise reintroduction of food. Patients were hospitalized during the 14 day fasting period and received intensive care and special monitoring by specialized practitioners. Vital signs, general condition, specific symptoms and adverse events were checked every 6 h. The fasting patients also participated in an exercise program including Qigong, weight training and walking exercises for at least 1 h every day during the entire period of MFT.

During the prefasting days, participants consumed less than half of their usual food intake and ate a low-salt diet mainly composed of brown rice, vegetables and fruits. Meat, caffeine, soda and processed food as well as drinking alcohol and smoking were prohibited during prefasting days. On the last day of prefasting, only three meals of porridge or a thin gruel of rice and some fruit were permitted along with antacid and laxative medications before retiring to bed.

During the MFT fasting period, patients were allowed unlimited intake of mineral water, and limited intake of 200-300 mL of the Signature supplement made of fermented extracts of Houttuynia cordata Thunb and Saururus chinensis Baill and probiotics twice a day (Duolac^{TM}7, Cellbiotech Co., Ltd., Gyunggi-do, Korea). The Signature supplement represents a heat value of 61 kcal per 30 mL. During the fasting period, all medications for other diseases, such as hypertension, dyslipidemia and depression, were discontinued, except those for thyroid diseases, which were prescribed under consultation with a Korean medicine doctor.

Only porridge or gruel was permitted on the first day of the refeeding period. On the second day, participants were allowed additional vegetables and fruits, and then brown rice and meat were gradually added