Relationships between Weight Changes and Metabolic Syndrome Components according to Body Mass Index in Adults with Metabolic Syndrome

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This study examined whether severity of metabolic risk factor is associated with the magnitude of weight changes in individuals of metabolic syndrome (MetS). Middle aged (≥40 years) men (n=145) and women (n=234) with MetS who were tested for physical examinations at least twice in local community health center, separated by at least 30 days (averaged 124 days), were participated in the analyses. They were divided into two groups based on body mass index (BMI) of <25 or ≥25 kg/m². The changes of body physique variables (weight, waist circumference, BMI) were related to some of biochemical components of MetS. However, the relationships were only obvious in the group of BMI <25 kg/m², but not in ≥25 in both man and woman. The relationships among variables were different between man and woman. Data suggest that any beneficial effects by changes of physique in individuals with MetS may be predicted differently based on the initial status of BMI of the population. In addition, the interpretation should be differently conducted for man and woman.

Key Words: metabolic syndrome, adults, weight changes, body mass index
Introduction

Metabolic syndrome (MetS) is interrelated with risk factors for cardiovascular disease, diabetes, and mortality (Ford, 2005), and has been received attention by public health community and professionals in recent years. The most well recognized metabolic risk factors are atherogenic dyslipidemia, elevated blood pressure, and elevated blood glucose level. For individuals with MetS, the primary goal of clinical management is to reduce the recognized risk factors. In addition, the emphasis is directed toward reducing the modifiable risk factors through lifestyle changes such as diet and exercise. The change of lifestyle is mainly targeting weight loss and management to treat excess body weight or obesity.

Reduction of body weight achieved by lifestyle change is the first priority in individuals with abdominal obesity and MetS (Klein et al., 2004). Research data suggest that excess body weight is associated with dyslipidemia, hypertension and hyperglycemia and a reduction of body weight may result in decrease of severity of these conditions (Aucott et al. 2005; Bamba and Rader 2007; Bray and Bellanger 2006; Davy and Hall 2004; Hanson et al., 2002; National Institutes of Health 2002; Petersen and McGuire 2005). It has been proposed that weight loss of about 7-10% from baseline total body weight during a period of 6-12 months will reduce the severity of most of the risk factors (NIH, 1998).

However, up to date, it has not been elucidated that benefits of weight changes can be adopted to most individuals with MetS. In other words, it is less clear who can have a greater benefit by changing body weight and that it can be seen in all persons with MetS. Evangelou et al., (2010) reported that the components of the MetS presented at baseline positively correlated with the percentage of the weight loss, indicating the beneficial effects of weight loss for those of MetS. However, their subjects were prescribed a low-fat diet and therapeutic drugs and their body mass index (BMI) was greater than 25 kg/m². From a clinical standpoint, it would be helpful to know whether body weight status in those of MetS can be a indicator for prediction in decline of metabolic risk factors.

Thus, this study was designed to identify whether any changes of MetS components are associated with the magnitude of weight changes in individuals with MetS. And the analyses were conducted by a comparison