

The Effects of Low-Calorie Diets on Abdominal Visceral Fat, Muscle Mass, and Dietary Quality in Obese Type 2 Diabetic Subjects (*Korean Diabetes J* 2009;33:526-36)

Won-Young Lee

Division of Endocrinology and Metabolism, Department of Internal Medicine, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, Seoul, Korea

The prevalence of type 2 diabetes mellitus (DM) is increasing rapidly, and it is expected that its prevalence in 2025 will be double its prevalence in 2000 [1]. Obesity and physical inactivity are important and correctable factors that influence type 2 DM. Over 80% of the type 2 DM patients in Western countries are overweight or obese. In Korea, data from the 1970s indicated that in the past, most Korean type 2 DM patients were not obese, but recent data show that about 70% of current Korean type 2 DM patients are overweight or obese [2,3]. Economic development, increased calorie intake and physical inactivity seem to be main drivers of this change in Korea.

According to the American Diabetes Association (ADA), North American Association for the Study of Obesity (NAASO), and American Society for Clinical Nutrition (ASCN), obese type 2 diabetic patients are advised to reduce their calorie intakes by 500 to 1,000 kcal/day, with a goal of meeting the minimal intake requirement of 1,000 to 1,200 kcal/day by following low calorie diets (LCD) [4]. Following these recommendations has been shown to reduce weight, reduce visceral fat and improve insulin sensitivity in obese DM patients in Western studies. However, data regarding the effects of calorie restriction in Korean subjects, who are generally not as obese as Western subjects, remains scarce.

In a recent randomized trial, Ahn et al. [5] evaluated CT data and insulin sensitivity to assess the effects of LCD and conventional DM diets on the weight, visceral fat area and thigh mus-

cle area among Korean type 2 DM women during a 12-week interval. One group received individualized education regarding LCD every two weeks from nutritionists, while the other group received one session of conventional group education, based on the dietary guide book published by the Korean Diabetes Association. Neither group had any changes of medication during the study period. Patients who received individualized education regarding LCD experienced greater weight loss, reductions in visceral adipose tissue, and improved insulin sensitivity than patients who received conventional group education after intervention. Furthermore, the individually-educated patients experienced no loss of muscle mass as indicated by CT. In that study, the investigators used uniaxial accelerometry (Lifecorder[®]; Suzuken Co., Ltd., Nagoya, Japan) which can measure total energy expenditure (TEE) and physical activity-related energy expenditure (PAEE), and they measured the quality of diets using the mean adequacy ratio (MAR) and index of quality (INQ) [6]. However, the study sample was small and confined to women only. Furthermore, in practical clinical contexts it is difficult to individually educate DM patients about LCD every two weeks. It is also unknown whether LCD results in sustained effects on adiposity and insulin sensitivity and if it does, how or why this effect persists. It would be also interesting to know the effect of LCD on adipokines and inflammatory markers in Korean subjects.

Lastly, I appreciate the devotion of study investigators who

Corresponding author: Won-Young Lee
Division of Endocrinology and Metabolism, Department of Internal Medicine, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, 108, Pyeong-dong, Jongno-gu, Seoul 110-746, Korea
E-mail: drlwy@hanmail.net

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undertook important trial and hope that they will undertake valuable research continually.

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