The Impact of Glucose Control on Carotid Arterial Wall Thickness in Asymptomatic Subjects for Cardiovascular Disease

Objective: We evaluated the impact of diabetes mellitus (DM) and DM control status on each layers of carotid artery in asymptomatic population. Methods: This is an observational cohort study consisted of 1,479 patients. The carotid images were sent to the Korea Research Institute of Standards and Science for core laboratory analysis using specialized software which can measure intima and media thickness respectively. Results: DM patients (n=634, 42.9%) were likely to be older, higher prevalence of male, hypertension and dyslipidemia, and higher creatinine level than non-DM patients (n=845, 57.1%). There was no significant demographic difference according to DM control status in DM patients. DM patients showed higher carotid intima-media thickness (CIMT, 0.70 ± 0.15 mm vs. 0.66 ± 0.16 mm, p<0.001) and media thickness (CMT, 0.41 ± 0.12 mm vs. 0.36 ± 0.12 mm, p<0.001) than non-DM patients, whereas intima thickness (CIT) showed no significant difference (0.29 ± 0.07 mm vs. 0.30 ± 0.06 mm, p=0.067) between 2 groups. Well controlled DM patients (HbA1C<7.0%, n=232, 47.4%) showed higher CIT (0.30 ± 0.08 mm vs. 0.27 ± 0.06 mm, p=0.003) than poorly controlled DM (HbA1C ≥ 7.0%, n=257, 52.6%). Old age and LDL-cholesterol were the independent factors for CIMT, CIT and CMT in total asymptomatic adults as well as DM patients. DM control status was not significant independent factor for CIMT. Conclusions: The increased CIMT in DM patients was mainly due to the increased CMT. DM control status did not impact on carotid arterial wall thickness in this study. Lipid control rather than glucose control may be the most important factor to decrease atherosclerosis progression in subclinical adults.