SMALL DENSE LDL IS CLOSELY RELATED TO DIABETIC NEPHROPATHY IN WOMEN WITH TYPE 2 DIABETES MELLITUS

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Aims: Although the role of small dense LDL (sdLDL) in diabetic macro-vascular complications in type 2 diabetes mellitus has been well known, its role in micro-vascular complications has not been fully studied yet. We investigated the association between sdLDL and diabetic nephropathy in type 2 diabetic patients. Methods: Total 175 type 2 diabetic patients (96 men and 79 women) who have not taken lipid-lowering agents previously were consecutively enrolled in this study. sdLDL was measured by polyacrylamide tube gel electrophoresis, which fractionates LDL cholesterol into seven parts (LDL1 through 7) according to the size and the extent of charge. Using this system, we analyzed mean LDL particle size and the proportion of sdLDL (the percent of LDL3 through 7 over whole LDL). Diabetic nephropathy (DN) was defined as when albumin-creatinine ratio (ACR) ≥ 30 after excluding other causes of proteinuria. Results: Mean age and the duration of diabetes in study participants were 56 ± 14 years (mean ± SD) and 10.3 ± 8.3 years, respectively. In our study subjects, sdLDL showed significantly positive correlation with triglyceride, triglyceride-HDL cholesterol ratio and apolipoprotein B (Apo B). Subjects with DN had significantly smaller mean LDL size and larger proportion of sdLDL compared with those without DN in women (mean LDL size with DN 26.27 ± 0.72 nm vs. without DN 26.62 ± 0.63 nm, P=0.028; proportion of sdLDL with DN 23.08 ± 17.2% vs. without DN 14.93 ± 14.9%, P=0.04), but not in men. After adjusting other confounding risk factors of DN, sdLDL still remained to be the independent risk factors for DN in women (mean LDL size OR = 0.859, 95% CI: 0.777-0.950, P=0.003; proportion of sdLDL OR = 1.070, 95% CI: 1.025-1.115, P=0.002), but not in men. Conclusion: In this study, more atherogenic, sdLDL is closely related to diabetic nephropathy in type 2 diabetic female patients. To clarify the gender difference in association between sdLDL and diabetic nephropathy, further study will be needed.