Effect of High-intensity Statins on Cognitive Function in Patients with Type 2 Diabetes

Kittichai Samaithongcharoen1
Natthakan Tangkittikasem2

1Division of General Medicine, Department of Medicine, Faculty of Medicine, Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand, 2Division of Endocrinology, Department of Medicine, Faculty of Medicine, Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand

Background: Statin use has been reported to be a potential risk of cognitive impairment and too low plasma LDL level is associated with worse cognitive performance.

Objective: We assessed the effect of high-intensity statin treatment and low plasma LDL level on cognition.

Methods: Type 2 diabetic (DM) patients who had no atherosclerosis cardiovascular disease and were taking simvastatin up to 20 mg/day were randomized to continue using the same dosage of simvastatin (low-intensity statin group; LS) for 12 weeks or change to atorvastatin 40 mg/day for 6 weeks. If tolerable, atorvastatin will be increased to 80 mg/day for 6 weeks (high-intensity statin group; HS). Montreal Cognitive Assessment (MoCA) test and Trail Making Test part B (TMT) were assessed at baseline, 6 weeks, and 12 weeks.

Results: Of the 120 patients recruited, 114 completed the study (2 lost to follow-up and 4 intolerate high-intensity statin treatment). Mean age was 59±9 years with 72.6% female. Mean baseline plasma LDL level on simvastatin was 70.7±14 mg/dl. There were no significant differences in mean age and plasma LDL level at baseline between the LS (n=59) and the HS groups (n=61). Mean plasma LDL levels at 12 weeks were significantly lower in the HS group than the LS group; LDL 73.5± 20mg/dl vs 57.5 ± 26mg/dl; p=0<0.01. Mean MoCA score in the LS group was 21.0, 22.7, and 23.6 at baseline, 6 weeks and 12 weeks, respectively. Whereas, mean MoCA score in the HS group was 21.0, 22.8, and 24.0, respectively. TMT results (n=87) were 152.2 seconds, 121.0 seconds, and 112.4 seconds at baseline, 6 weeks, and 12 weeks, respectively in the LS group. Meanwhile, they were 145.7 seconds, 118.3 seconds, and 106.4 seconds, respectively in the HS group. No significant differences were noted in MoCA score and TMT between the two groups of all 3 phases, including patients with plasma LDL<40 mg/dl.

Conclusion: Increasing statin potency from low to moderate-intensity to high-intensity statins results in significant lowering of plasma LDL level without causing cognitive decline in patients with Type 2 diabetes.

Keywords: High-Intensity Statins, Cognitive Function, Type 2 Diabetes