Liver fibrosis and obesity associated with stroke in an elderly population: protected effect by pravastatin

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**Background and Aims:** Liver fibrosis, as part of the Metabolic dysfunction Associated Steatotic Liver Disease (MASLD) in subjects with obesity may increase cardiovascular risk. A recent meta-analysis demonstrated that statins could be beneficial in the MASLD population. Nevertheless, the effect of statins on cardiovascular disease in elderly subjects with obesity and liver fibrosis remains understudied.

**Method:** The PROspective Study of Pravastatin in the Elderly at Risk (PROSPER) database was used for this analysis. PROSPER evaluated the effect of pravastatin on major adverse cardiovascular events in an elderly population (>70 years). We divided the study group into three subgroups based on their body mass index (BMI): healthy (<25 kg/m\(^2\)), overweight (25–29.9 kg/m\(^2\)) and obese (≥30 kg/m\(^2\)). In each group we calculated for all participants the FIB4 score which reflects liver fibrosis using age-adjusted cutoffs: low risk of advanced fibrosis (FIB-4 < 2.0), intermediate risk (2.0 ≤ FIB-4 ≤ 2.66) and high risk (FIB-4 ≥ 2.67). Time-to-event data were analyzed using the Cox proportional hazards model for the placebo and pravastatin groups separately and adjusted for sex.

**Results:** In total 5244 subjects were included. Compared to the reference group with low FIB4 and healthy BMI, the hazard ratio for a (non) fatal stroke was significantly higher (HR 2.58 - 95%CI 1.14-5.84) in the highest risk group (high FIB4 score and obesity) on placebo. In the pravastatin groups, the differences disappeared, suggesting that pravastatin protects against (non) fatal stroke in elderly subjects with obesity and liver fibrosis. Pravastatin did not influence other cardiovascular endpoints in this elderly population when analyzed based on different BMI levels and different grades of liver fibrosis.

**Conclusion:** Elderly people with obesity and liver fibrosis have an increased risk of (non) fatal stroke when compared to a reference population and treatment with pravastatin has a protective effect.