

Abstract

Pharmacogenomics. 2008 Oct;9(10):1475-86.

Pharmacogenetics of apolipoprotein E gene during lipid-lowering therapy: lipid levels and prevention of coronary heart disease.

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OBJECTIVE: A non-optimal plasma concentration of lipids is among the major modifiable risk factors of atherosclerosis. Therefore, the prevention of cardiovascular disease by means of lipid-lowering therapy with statins and other agents is of great importance for patient groups where a lifestyle change, for example, diet modification, does not lead to adequately reduced lipid levels.

BACKGROUND: The response of low-density-lipoprotein cholesterol (LDL-C) levels to statin therapy is highly variable. This is partly attributed to hereditary variation in genes involved in pharmacokinetics, pharmacodynamics and lipid metabolism. The pharmacogenetics of lipid-lowering therapy have been investigated for more than 40 different genes. The gene for apolipoprotein E (APOE) has been the most frequently studied, particularly regarding the epsilon2/epsilon3/epsilon4 polymorphism.

FINDINGS: Those with the epsilon4 allele seem to have the poorest and those with the epsilon2 allele the strongest response to statins with regards to LDL-C levels. In addition, the epsilon2 carriers may reach the LDL-C treatment goals more frequently than epsilon4 carriers. Few studies have investigated the interaction of the APOE epsilon2/epsilon3/epsilon4 polymorphism and lipid-lowering therapy in relation to the course of coronary heart disease; the results are contradictory and so far inconclusive.

SUMMARY: This review summarizes the pharmacogenetic findings related to the influence of APOE gene variation on lipid responses and the prevention of coronary heart disease during lipid-lowering therapy.

PMID: 18855536

