Comparison of the effects of low-dose rosuvastatin on plasma levels of cholesterol and oxidized low-density lipoprotein in 3 ultracentrifugally separated low-density lipoprotein subfractions.


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BACKGROUND: Plasma-oxidized (ox) low-density lipoprotein (LDL) is an atherogenic lipoprotein. The distribution of ox-LDL in plasma LDL subfractions and the effect of statins on this distribution have not been investigated in detail.

OBJECTIVE: We examined the distribution of cholesterol and ox-LDL in 3 ultracentrifugally separated plasma LDL subfractions and investigated the effects of a statin, rosuvastatin, on the levels of these lipoproteins.

MATERIALS AND METHODS: Thirty-one polygenic hypercholesterolemic subjects were included in this study. Levels of cholesterol and ox-LDL in 3 plasma LDL subfractions and plasma levels of remnant-like particle cholesterol, ox-LDL, and adiponectin were measured after 0, 3, 6, and 12 months of treatment with rosuvastatin. Sequential ultracentrifugation was performed to subfractionate plasma lipoproteins.

RESULTS: The mean daily dose of rosuvastatin over the 12 months of treatment was 2.9 ± 1.0 mg (mean ± standard deviation). The cholesterol subfraction distribution was 43 ± 10% as low-density LDL, 46 ± 8% as medium-density LDL, and 13 ± 5% as high-density LDL. Similarly, the distribution of ox-LDL was 31 ± 10% as low-density LDL, 48 ± 7% as medium-density LDL, and 22 ± 8% as high-density LDL. After 12 months of treatment with rosuvastatin, the level of cholesterol was significantly reduced in all 3 subfractions (P < .0001), as was the level of ox-LDL (P < .0001). Furthermore, the plasma cholesterol level in high-density lipoprotein2 increased significantly.

CONCLUSIONS: The distribution of ox-LDL in plasma LDL subfractions was more skewed toward the denser subfractions, compared with cholesterol. Rosuvastatin treatment significantly reduced plasma levels of cholesterol and ox-LDL in all LDL subfractions.

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