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An Oxidized Low-Density Lipoprotein Receptor Gene Variant Is Inversely Associated with the Severity of Coronary Artery Disease

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Summary

Background: A lectin-like oxidized low-density lipoprotein (LDL) receptor-1 (LOX-1) is the major receptor of oxidized LDL in endothelial cells. The expression of LOX-1 was shown to be upregulated in atherosclerotic lesions. Recently, LOX-1 gene polymorphism (G501C) was reported to be associated with myocardial infarction (MI).

Hypothesis: Our study was undertaken to elucidate the association between this polymorphism and coronary artery disease (CAD).

Methods: We evaluated LOX-1 gene polymorphism using Invader assay in 586 patients undergoing coronary angiography.

Results: Study patients were categorized into three groups: normal/minimal stenosis (≤ 25%) (n = 128); mild stenosis (26–50%) (n = 39); and significant stenosis (> 50%) (n = 419). Of the 419 patients with significant stenosis, 163 had single-vessel, 165 had double-vessel, and 91 had triple-vessel disease. Myocardial infarction was present in 171 patients. The frequency of LOX-1 gene variants (C/C or C/G) was lower in patients with significant than in those with normal/minimal stenosis (36 vs. 49%, $p < 0.01$). The frequency of LOX-1 gene variants did not differ between patients with and without MI (34 vs. 37%). However, a stepwise decrease in the frequency of such variants was found depending on the severity of CAD: 49% in normal/minimal stenosis, 41% in mild stenosis, 39% in single-vessel, 35% in double-vessel, and 32% in triple-vessel disease. Multivariate analysis demonstrated LOX-1 gene variants to be inversely associated with the presence of significant stenosis (odds ratio = 0.61; 95% confidence interval = 0.41–0.92).

Conclusions: The LOX-1 gene variants at 501 were found to be inversely associated with the severity of CAD. This polymorphism may be modifying the severity of CAD.

Key words: lectin-like oxidized low-density lipoprotein receptor-1, coronary artery disease, genetics

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