Association of Cholesterol Levels and Occurrence of Angiographically Detectable Endothelial Disruption during Coronary Angioplasty

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Summary

**Background:** Disruption of the atherosclerotic plaque is a common feature of both acute coronary syndromes and balloon dilatation of coronary artery stenoses.

**Hypothesis:** The study was undertaken to evaluate whether the known association of cholesterol levels and acute coronary syndromes also exists for the occurrence of angiographically detectable endothelial disruption (ED) following coronary angioplasty.

**Methods:** For this purpose, we examined 79 consecutive patients (men/women 58/21; mean age: 62 ± 11 years), with a noncalcified, de novo, significant stenosis in a single native coronary artery, undergoing elective coronary intervention because of stable effort angina. Coronary angioplasty was performed using regular balloon catheters, aiming for a balloon/artery ratio of 1, with stent implantation allowed only provisionally. Following balloon dilatation, patients were divided into two groups according to the presence or absence of angiographically detectable ED.

**Results:** Endothelial disruption occurred in 28 patients (35%). The two groups with and without ED were comparable with respect to clinical, angiographic, and procedural parameters. A history of hypercholesterolemia was significantly more frequent in patients with ED (93 vs. 2%; p < 0.001). Total and low-density lipoprotein (LDL) cholesterol levels were significantly higher in the group with ED (230.1 ± 46.5 vs. 204.4 ± 30.2 mg/dl, p < 0.05; and 150.6 ± 39.2 vs. 125.8 ± 26 mg/dl, p < 0.03, respectively). A cut-off value of LDL cholesterol ≥ 135 mg/dl identified patients at higher risk of developing ED.

**Conclusion:** High cholesterol levels appear to favor the occurrence of ED during coronary angioplasty. Aggressive lipid-lowering therapy and a more careful procedural approach may be warranted in patients with hypercholesterolemia undergoing coronary interventions in order to decrease the occurrence of ED and the associated clinical (acute ischemia) and procedural (stent implantation) consequences.

**Key words:** percutaneous coronary interventions, dissection, stent, hypercholesterolemia