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Coronary flow reserve in hypertensive patients with hypercholesterolemia and without coronary heart disease.

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Abstract

BACKGROUND: Coronary flow reserve (CFR) may be reduced both in arterial hypertension and in hypercholesterolemia. The aim of the study was to assess an association between CFR and levels of plasma total cholesterol (TC) in untreated arterial hypertension.

METHODS: We studied 54 consecutive, untreated hypertensive outpatients free of coronary heart disease. Twenty of them had normal TC and 34 high TC (>/=200 mg/dL). Standard echocardiograms and transthoracic Doppler interrogation of the distal left anterior descending artery were obtained. Coronary diastolic peak velocities were measured both at rest and after low-dose dipyridamole. The CFR was calculated as dipyridamole/resting velocities ratio.

RESULTS: The two groups had similar age, body mass index, heart rate, and diastolic blood pressure (BP). Patients with high TC had higher systolic BP ($P < .05$), triglycerides ($P < .02$), LDL-cholesterol, and TC/HDL-cholesterol ratio (both $P < .0001$) than controls. Left ventricular (LV) mass index, relative wall thickness, and fractional shortening did not differ between the two groups. Coronary diastolic peak velocities were similar at rest but lower after dipyridamole in patients with high TC ($P < .02$). As a consequence, CFR was reduced ($P < .002$). In multiple linear regression analyses, adjusting for age, heart rate, systolic BP, smoking, and relative wall thickness, TC (beta = -0.338) or high LDL-cholesterol (beta = -0.301) (both $P < .001$) were predictors of lower CFR independently of the concomitant effect of potential confounders.

CONCLUSIONS: In hypertensive patients free of coronary artery disease, the degree of impairment in coronary vasodilator capacity is independently associated with plasma cholesterol and LDL-cholesterol.

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