Lack of cardioprotective efficacy of allopurinol in coronary artery surgery

ABSTRACTS IN CARDIOLOGY

Does X equal endothelial dysfunction?

In people with angiographically normal coronary arteries, angina caused by myocardial ischaemia (syndrome X) is probably the result of microvascular dysfunction. The finger of suspicion has been pointed at the endothelium but without convincing evidence until now (abstract). Egashira and colleagues, however, have now shown that the response of coronary blood flow to acetylcholine (an endothelium-dependent vasodilator) in the coronary microcirculation of these patients is impaired. So is endothelial dysfunction the cause of the angina and the end of the story?

The physiological role of endothelium-dependent dilatation in the microcirculation is not well understood. Impairment of endothelial-dependent dilatation of the coronary microvasculature has been demonstrated in patients with hypercholesterolaemia, hypertension, and heart failure. It does not apparently cause chest pain in these patients. The implications of the current study by Egashira et al are either that coronary microvascular endothelial dysfunction is somehow more pronounced in microvascular angina or that some other factor must be abnormal for chest pain to develop.

The challenge to understand this syndrome remains. This new finding is important, but probably not alone equal to X.

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Evidence of impaired endothelium-dependent coronary vasodilatation in patients with angina pectoris and normal coronary angiograms

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Abstract

Background—A group of patients has been described who have chest pain resembling angina and positive exercise tests, but normal coronary angiograms and no coronary-artery spasm. This constellation of features has sometimes been called syndrome X or microvascular angina. We attempted to determine whether endothelium-dependent vasodilatation of the coronary vasculature was impaired in patients with this syndrome.

Methods—We infused the endothelium-dependent vasodilator acetylcholine and the endothelium-independent vasodilators papaverine and isosorbide dinitrate into the left coronary artery of nine patients and 10 control subjects. The diameter of the left anterior descending coronary artery was assessed by quantitative angiography, and changes in coronary blood flow were estimated with the use of an intracoronary Doppler catheter.

Results—Acetylcholine, given in doses of 1, 3, 10, and 30 μg per minute, increased coronary blood flow in a dose-dependent manner in both groups. However, the mean (±SD) acetylcholine-induced increases in coronary blood flow were significantly less (P < 0.001) in the patients (8±14, 37±57, 59±67, and 103±77 percent, respectively) than in the controls (62±52, 186±59, 341±128, and 345±78 percent, respectively). The changes in coronary blood flow in response to 2 mg of isosorbide dinitrate (236±56 percent vs. 280±56 percent) and 10 mg of papaverine (366±168 percent vs. 411±22 percent) did not differ significantly between the patients and controls. The administration of papaverine resulted in myocardial lactate production in the patients but not in the controls. The three lower doses of acetylcholine caused a similar degree of dilatation of the left anterior descending coronary artery in the two groups, and the highest dose caused a similar degree of constriction in the two groups. Isosorbide dinitrate and papaverine caused a similar degree of dilatation in both groups.

Conclusions—These findings suggest that endothelium-dependent dilatation of the resistance coronary arteries is defective in patients with anginal chest pain and normal coronary arteries, which may contribute to the altered regulation of myocardial perfusion in these patients. (N Engl J Med 1993;328:1659-64.)