Coronary flow reserve impairment is not related to inflammation in syndrome X patients


Background: Previous data have shown reduced coronary flow reserve (CFR) in patients with cardiac syndrome X. Furthermore, recent data have shown increased markers of inflammation in these patients. No previous study, however, assessed whether inflammation was correlated to CFR in syndrome X patients.

Methods: We performed transchordopulmonary pulsed-wave echocardiographic color Doppler of left anterior descending coronary artery (LAD), using a 7 MHz probe (Sequoia, Siemens) in 27 patients with cardiac syndrome X (57±10 years, 9 males) and in 17 healthy subjects (50±7 years, 7 males). Peak diastolic LAD flow velocity was calculated at rest and at peak of intravenous adenosine administration (140 μg/kg/min in 90 sec) and CFR in the LAD was measured as the adenosine-induced velocity ratio. A blood sample was collected before adenosine test in all patients to measure C-reactive protein (CRP), using a high-sensitivity method.

Results: CFR was found to be lower (1.9±0.1 ± 3.6 ± 1.0, p<0.016) and CRP was higher (19.5±21 mg/l vs. 0.15 ± 1 mg/l, p<0.015) in syndrome X patients compared to controls. Among syndrome X patients, however, there was no difference in CFR between those with lower (<2) CRP (CFR 2.0 ± 0.5) and those with higher (>2) CRP (CFR 2.1 ± 0.6). Furthermore, no significant correlation was found between CFR and CRP levels both in syndrome X patients (r = -0.279, p=0.17) and in controls (r = -0.19, p=0.54). Conclusion: Our data confirm that CFR is impaired and serum CRP levels are increased in syndrome X patients. However, no relationship could be found between CFR and CRP, suggesting that inflammation is not primarily involved in impairing endothelium-independent vasodilatation in this group of patients.

Coronary flow reserve test in low dose and fast injection for the assessment of coronary flow reserve by transthoracic Doppler echocardiography


Coronary flow reserve (CFR) is an important index to assess the coronary function, the possibility of its determination by a simple and economic non-invasive method will make its utilization more frequent and practical. The aim of the study was 1) Estimate the value of sensibility (S), specificity (E), positive predictive power (PP), negative predictive power (NP) and ratio of positive versus negative test (NPV) of the adenosine test in low dose and fast injection (60 μg/kg/min) in mice for the detection of CFR. 2) Estimate the prevalence of coronary collateral effects for the Adenosine test with this modality of administration.

Methods: In 24 consecutive patients (10 males) aged mean 62±11 years the diastolic coronary flow velocity was continuously monitored by pulse Doppler at the middle–distal region of the left anterior descending artery (LAD) at rest and during the hyperemic phase induced by an intravenous fast injection of 6 mg adenosine in bolus and during the inflation of high dose of 6.84 mg/kg of diprydami- nole for 4 minutes (standard). The CR was calculated as the ratio between the maximal and the basal velocity. A value of CR ≥ 2 was considered normal.

Results: A clearly legible Doppler signal was obtained by adenosine in 22 patients, two patients refused the test of Adenosine and with a feasibility result of 91.6%. The average of Adenosine maximal diastolic velocity was 53.36 cm/sec and with diprydamole 58.24 cm/sec. The test had restricted CR in 6 patients, in 13 the test was normal and 1 patient revealed a dissociation with low CR after Adenosine and normal CFR with diprydamole (with normal contractile response).

Conclusion: The adenosine test in low dose and fast injection is a useful tool for assessment of coronary flow reserve has a high feasibility, a very good sensibility and negative predictive power with good specificity and positive predictive power. There were no serious complications. It is possible to screen a high number of patients with hyperemia and a small number of patients on whom does not perform.

Coronary flow velocity reserve by noninvasive means in heart transplanted subjects. Comparison with control subjects


Heart transplanted subjects can have modifications in the anatomical relations that make easy the detection of coronary stenosis at the end of DSE and CFR values correlated significantly (during DSE: 2-17±0.67, during adenosine test: 2.28±0.73, r 0.38, p<0.035).

Conclusion: Low CFR and elevated CFR evaluated non-invasively appear to be well reproducible parameters, unaffected by medications, also with different pharmacological stimuli; during DSE, concordance of wall motion evaluation and coronary flow measurements can improve diagnostic accuracy.

Coronary Flow Reserve Assessment: Comparison Between Adenosine and Dobutamine


Purpose: To compare coronary flow velocity reserve (CFVR) with control subjects.

Methods: We studied 11 patients (91% men, 56±18 years) who underwent a heart transplantation the previous years and were scheduled to perform a coronary angiography that showed no significant stenosis. Control subjects were 45 patients (60% men, 64±10 years) who were scheduled to perform a coronary angiography that showed no significant stenosis. An echo-contrast agent (SonoVue®) was administered for all patients. Doppler flow in LAD was recorded before coronary angiography. We used dipiridamole (0.84 mg/kg/min as 6 minutes) as vasodilator. CFVR was calculated as ratio of peak diastolic coronary flow velocities dipiridamole/basal. A CFVR ≥ 2 was considered normal.

Results: In both groups we detected LAD flow in 100% patients. However, in heart transplanted subjects, LAD was recorded more often in the 5th intercostal space compared to 2nd in control patients. In relation to CFRV, we did not observe significant differences between heart transplanted subjects and control subjects (1.95±0.68 vs. 1.98±0.48, p=ns). The rate of normal CFVR was also the same (54% vs. 49%, p=ns).

Conclusion: Rate of detection of LAD in heart transplanted subjects was similar to control subjects. There were not significant differences between groups in relation to CFVR.