1120-63  Comparison of Intracoronary Bolus Injection and Intracoronary Continuous Infusion Methods for Inducing Hyperemia

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Background: The method to induce coronary hyperemia with maximal and steady state is important to evaluate microvascular circulation by coronary flow reserve(CFR) and fraction flow reserve(FFR). We studied the method of inducing hyperemia with intracoronary(IC) adenosine bolus injection and continuous infusion.

Methods: CFR was evaluated in thirty-six coronary lesions(LAD 23, LCX 5, RCA 8) in 23 patients(male 18, mean 58±12; SA 2, UA 12, AMI 9) and FFR was evaluated in twenty lesions(LAD 13, LCX 6, RCA 1) in 10 patients(male 8, mean 60±11; SA 1, UA 7, AMI 2). To induce maximal coronary hyperemia, two methods were applied to same patient: Method A(Adenosine bolus injection (RCA 24µg, LCA 48µg) and Method B(Adenosine continuous infusion(240µg/min). CFR was defined as a ratio of hyperemic(hAPV) to baseline APV(hAPV). FFR was defined as a ratio of mean aortic pressure to mean coronary pressure of diastolic pressure during hyperemia.

Results: All patients were tolerable during maximal hyperemic period. During maximal hyperemia, hAPV, LVMI were not different between two methods. Transient AV block occurred in 2 patients with method A and in 2 same patients with method B. The duration of maintenance of hyperemia was mean 24±6.5±4 seconds in method A and all patient except 2 patients were maintained stable hyperemia with method B during continuous infusion of adenosa. CFR and hAPV were significantly higher by using method B than those of method A(0.4±0.2 vs 0.2±0.1, p<0.01; 52.5±23 vs. 45.7±19.9, p=0.01, respectively). FFR was significantly lower by using of method B than that of A(0.4±0.2 vs 0.3±0.1, p<0.01). CSL and hAPV were compared with paired t-test in two methods.

Conclusion: Compared with intracoronary adenosine bolus injection(method(24-48µg), intracoronary adenosine continuous infusion method(240µg/min) was more effective and stable for inducing maximal hyperemia.

1120-64  High Left Ventricular Mass Does Not Limit the Utility of Fractional Flow Reserve for the Physiologic Assessment of Lesion Severity


Background: Fractional Flow Reserve (FFR) has been shown to be a useful invasive physiologic index of coronary lesion severity. Increased left ventricular mass (LVMI) can impair microvascular reserve. However, whether increased LVM sufficiently impacts flow reserve to effect clinical FFR measurements is not known.

Methods: LVM was calculated from contrast left ventriculography in 84 patients using a modified Rackley method, which correlated well with LVM measured by cardiac MRI in 17 patients who had undergone both tests (r=0.80, p<0.001). The cohort was divided into normal LVMI to 62 angiographically matched lesions in vessels of patients with normal LVMI and 22 vessels of patients with normal LVM that had undergone both tests (r=0.80, p<0.001).

Results: LVM was 84±21 g/m² and 126±21 g/m² in the normal and high LVMI groups, respectively. There were no differences in age (59±58 yrs, p=ns), presence of diabetes (20% vs 27%, p=ns), hypertension (60% vs 73%, p=ns), dyslipidemia (56% vs 64%, p=ns) or angiographic LVEF (58% vs 62%, p=ns) between groups. Importantly, in lesions (26% vs 27%, p=ns), hypertension (60% vs 73%, p=ns), dyslipidemia (56% vs 64%, p=ns) or angiographic LVMI (58% vs 62%, p=ns) were not related to FFR in lesional vessels.

Conclusion: FFR of lesions in patients with high LVM is no different to FFR of angiographically similar lesions in patients with normal LVM. These findings suggest that increased LVM should not limit the utility of FFR as a physiologic index of lesion severity.

1120-65  Embol Protection Improves Thrombolysis in Myocardial Infarction Percutaneous Coronary Intervention as evidenced by TIMI flow Score and TIMI perfusion score

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Background: Use of emboli protection devices (EVD) during saphenous vein graft percutaneous coronary intervention (SVG-PCI) has been proven to reduce major adverse cardiac events (MACE) specifically the composite of myocardial infarction, urgent target vessel revascularization, and death. However, the impact of EVD on the microcirculation with TIMI myocardial perfusion score (TMP) has not been fully characterized. We sought to analyze TMI in both unprotected- and EVD- SVG-PCI and its impact on 30-day MACE.

Methods: From August 2001 to December 2002, 305 patients had a SVG-PCI suitable for EVD; 247 (81%) had an angiogram appropriate for TMP evaluation. Of those, 49 (20%) had an EPD deployed during the coronary intervention. Both groups were similar regarding most demographic features, but use of GP IIb/IIIa inhibitors was more frequent in the EPD group (87% vs 74%; P=0.007).

Results: TMP 3 score was obtained in 87% of the EPD group vs 56% of the unprotected SVG-PCI (P<0.01) (Table 1). MACE was 4.2% in the EPD group vs. 8.1% in the unprotected SVG-PCI group (P=0.04). Unprotected SVG-PCI patients with TMP scores lower than 3 had a trend towards increased total post-procedural CK (177 UL vs 133 UL P=0.07), and CK-MB (21 ng/mL vs 6 ng/mL P=0.07).

Conclusions: EVD SVG-PCI improves TMP score when compared to unprotected SVG-PCI. This finding was associated with a decrease in post-procedural MACE.

1120-66  Early Saphenous Vein Graft Failure: A Predictor of Poor Outcomes After Percutaneous Coronary Intervention


Background: While most saphenous vein grafts (SVGs) remain patent for approximately ten years, up to 15-20% of SVGs become occluded within the first year of implantation. The results following percutaneous coronary intervention (PCI) of early compared to late graft failure are not well known.

Methods: We identified 100 pts (121 lesions) with early (<1yr) SVG failure and 200 pts (289 lesions) with late (>1yr) SVG failure that underwent PCI. Pts were matched for hypercholesterolemia and diabetes. Data on procedure, post-procedure coronary angiography, and 1-year follow-up were analyzed. Angiographic measurements included reference size, final minimum lumen diameter (MLD), lesion length, and final diameter stenosis (DS).

Results: Early and late failure graft age was 6.0 ± 2.9 months and 105.4 ± 50.8 months respectively. The early group had smaller references (2.78 ± 0.81 vs 3.30 ± 0.76 mm, p<0.01). smaller final MLD (2.33 ± 0.96 vs 2.91 ± 0.85, p<0.01), and larger final DS (16.6 ± 24% vs 11.6 ± 18.1%, p=0.03). Procedural success was 96% in both groups; only 1 pt in each group had an in-hospital QMI, and 13.4% of early and 13.5% of late pts had a Non-Q MI (CKMB>5xNL). Stent use was not related to one-year target vessel revascularization (TVR) 29.8% in the stent group and 32.1% in the no stent group. However, the early SVG failure group had a significantly higher rate of TVR at one-year (38.6% vs 26.6%, P=0.04). On multivariate analysis early TVR is a predictor of poor outcomes after PCI of SVGs.

Conclusion: Despite a high rate of procedural success, early TVR is higher in SVGs with early failure. Further investigation with novel interventional devices or techniques is necessary in this high risk population to eventually improve long term outcomes.

POSTER SESSION

1121  In-Stent Restenosis

Tuesday, March 09, 2004, 9:00 a.m.-11:00 a.m.  Morial Convention Center, Hall G
Presentation Hour: 9:00 a.m.-10:00 a.m.

1121-47  Bone Marrow and Neural Crest Derived Cells Contribute to In-Stent Restenosis

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Objective: In-stent restenosis (ISR), a significant number of intimal mesenchymal cells remain unidentified. Also, there is ongoing controversy on the origin of neointimal cells. Therefore, the objective of the present study was to assess cellularity, cell type and origin of neointimal cells.
**Methods:** arterial clot samples were obtained from 10 patients who had undergone elective coronary angioplasty. Plasma samples were obtained from the left atrium at the time of angioplasty and stored at -80°C until analysis. The mean age of the patients was 58 ± 11 years, and the mean body mass index was 26 ± 4 kg/m². The study was approved by the local ethics committee, and all patients provided written informed consent.

**Results:** Plasma levels of CRP and IL-6 were measured in 216 patients who underwent elective coronary angioplasty. CRP levels were significantly higher in patients with angiographic restenosis compared to those without (4.8 ± 3.1 vs. 2.5 ± 1.5 mg/L, P < 0.001). IL-6 levels were also increased in patients with angiographic restenosis (3.1 ± 2.4 vs. 1.3 ± 1.6 ng/mL, P < 0.001). The correlation between CRP and IL-6 levels was significant (r = 0.57, P < 0.01). Consistently, there were a few cells found in ISR which were stained for IL-6 and CRP. Our data suggest that residual inflammatory response is present in some patients with angiographic restenosis.

**Conclusions:** Pre-procedural plasma levels of CRP and IL-6 are predictors of angiographic restenosis after elective coronary angioplasty. The presence of these inflammatory markers may be useful for risk stratification and the selection of patients who may benefit from anti-inflammatory strategies.