Conclusion: CFR in the contralateral artery increases after successful PTCA. This increase is more exaggerated in pts with more well developed collaterals.

1090-10 Clinical and Angiographic Predictors of New Total Occlusions in Patients Awaiting Coronary Angioplasty

C.C. de Cock, A.J. vd Berg, N. vd Nieuwenhuizen, J.G. Bronzwaer, C.A. Visser. *Free University Hospital, Amsterdam, The Netherlands*

Background: To study predictive indices to identify patients (pts) awaiting coronary angioplasty who progress to total occlusion, 84 consecutive (pts) who developed new total occlusion were compared with 158 pts with similar luminal diameter stenoses on quantative coronary angiography (CAAS). The time interval between the 2 angiograms was not significantly different (7 ± 0.8 weeks vs 7 ± 0.5 weeks).

Results:

	Total occlusion (n = 84)	No total occlusion (n = 158)	p
Age	57 ± 10	58 ± 9	ns
Men	68%	79%	0.01
Smoking	62%	59%	ns
Diabetes mellitus	15%	11%	ns
Angina class ≥III	32%	38%	ns
Complex lesion	61%	38%	0.005
Long ≥10 mm	37%	11%	0.005
Diameter Stenosis	64 ± 10	67 ± 9	ns
MLD	1.08 ± 0.31	1.07 ± 0.32	ns

MLD = minimal luminal diameter

Conclusion: Female pts with long complex lesions should be considerd at high risk for subsequent total occlusions and should therefore be candidates for early angioplasty.

1091 Coronary Collaterals

Tuesday, March 31, 1998, 9:00 a.m.–11:00 a.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 9:00 a.m.–10:00 a.m.

1091-11 Recruited Collateral Channels Are Not Responsible for Ischemic Preconditioning During Single Vessel Angioplasty

M.M. Mason, D.J. Patel, N.S. Jepson, S. Brant, V. Paul, C.D.J. Ilsley. *Harefield Hospital, Harefield, Middlesex, UK*

Background: Collateral channel recruitment during balloon occlusion varies between patients, but their timing and contribution to myocardial protection *in this setting are not well established. This study assessed the degree and* timing of recruitment of collaterals and their possible functional contribution during single vessel angioplasty in patients with normal LV function and no spontaneous collaterals.

Methods: Patients (n = 17) had four 90s balloon inflations performed. Collaterals were assessed by contralateral injection at 30, 60 and 90s into each inflation and graded using 'Rentrop' criteria, and by 0.014" doppler guide wire across the lesion.

Results: Collaterals were recruited in 12/17 patients (7 grade I, 3 grade II and 2 grade III). This was maximal by 30s of inflation (1) in 11 and by 60s in 1 patient, with no progressive recruitment during inflations (2)–(4). Only 4 patients had significant doppler flow during balloon occlusion (all 4 had recruitable collaterals - two grade I; one grade II, one grade III), though all patients had good antegrade flow pre- and post-inflation. Average (APV), integral (PVi) and maximum peak velocity (MPV) during inflations expressed as a percentage of their baseline value (%BF), were compared. No differences were observed during successive inflations-see table (mean (SD)), or comparing those with grade 0/I and grade II/III collaterals.

	30s inf (1)	90s inf (1)	90s inf (4)	p
APV	0.14 (0.13)	0.13 (0.17)	0.13 (0.13)	ns
PVi	0.13 (0.17)	0.11 (0.15)	0.12 (0.14)	ns
MPV	0.36 (0.24)	0.34 (0.23)	0.32 (0.19)	ns

Conclusions: Collateralisation varies between patients, but is maximal early in the first inflation. The low level of measurable Doppler flow, together with the lack of incremental recruitment of collaterals, suggests these channels do not make a major contribution to myocardial protection in this setting.

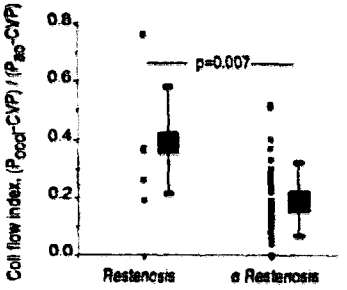
1091-12 Chronic Physical Exercise and the Quantitatively Assessed Human Coronary Collateral Circulation

C. Seiler, S. Senti, M. Fleisch, B. Meier. *University Hospital, Cardiology, Bern, Switzerland*

Background: There have been no studies in humans assessing the effect of chronic physical exercise on quantitative, directly determined measures of the coronary collateral circulation. This cross-sectional study tested the hypothesis that the degree of exercise (Ex) is directly related to an intracoronary (ic) flow velocity-based index for collateral flow ($Vi_{occl}/Vi_{e\text{-}occl}$)

Methods: In 84 patients (pts, age 57 ± 9 years, yrs) with a coronary artery stenosis to be dilated, a simple, structured interview for the determination of the level of chronic (≥1 yr) physical activity (score 1–4) during leisure time and during work hours was performed (J Chron Dis 1968; 18: 527-). The validated collateral flow index $Vi_{occl}/Vi_{e\text{-}occl}$ (Eur Heart J 1997; 18: 239), was determined using an ic 0.014" Doppler guidewire positioned distal to the stenosis to be dilated. $Vi_{occl}/Vi_{e\text{-}occl}$ was calculated as the flow velocity time integral distal to the stenosis during (Vi_{occl}, cm) divided by that obtained at the same location after ($Vi_{e\text{-}occl}$, cm) balloon occlusion (post-hyperemia).

Results:



Conclusions: 1) In humans, the degree of chronic physical activity during leisure time but not during work hours is directly associated with a quantitative index of coronary collateral flow to a vascular area in need (2) Corroboration of a causal relation among the two factors requires a longitudinal study, and a more refined, objective measure of physical activity (i.e. phsyical fitness).

1091-13 Asymmetrical Effects of Angiographically Assessed Collateral Flow on Vasodilator and Exercise Stress-Induced Ischemia

C. Lu, A. Distante, M. Marzilli, M. De Nes, Y. Wang, P. Marraccini, A. L'Abbate. *Institute of Clinical Physiology, CNR, Pisa, Italy*

Background: isolated, totally occluded coronary vessel subtending a non-infarcted, entirely collateral filling-dependent myocardial region provides a unique opportunity to assess the role of angiographically assessed coronary collateral circulation (ACC) in modulating myocardial vulnerability to pharmacological or physiologic stress testing.

Objective: To assess whether a high-grade ACC has similar protective role in induced collateral-dependent ischemia during coronary vasodilator and exercise stress tests.

Methods and Results: The ischemia in collateral-dependent myocardium was determined by analysis of dipyridamole echocardiography test (0.84 mg/kg over 10', DET) and bicycle exercise ECG test (EET) data from 53 infarction patients with isolated coronary occlusion, and no significant stenosis in other coronary arteries. ACC was scored from 0: absent to 3: complete and rapid filling of distal portion. There were 34 patients with high-grade collateral flow (score ≥2, Group I) and 19 patients with poor or absent collateral flow (score <2, Group II). During the stress tests, ischemia in the collateral-dependent myocardium was detected by DET in 91% patients in Group I and 74% in Group II (p = 0.09). EET could be completed in 32 patients of Group I and in all patients of Group II. EET was positive in 69% of Group I and in 68% of Group II patients (p = ns). Ischemia detected in Group I was higher by DET than by EET (91 vs 69%, p < 0.05) and did not differ in Group II patients (74 vs 68%, p = ns)

Conclusions: ACC has asymmetrical effects on induced ischemia depending on the employed stress. Collateral-dependent ischemia is more frequent during dipyridamole vasodilator stimulation than during physiologic exercise testing in patients with high-grade collateral flow.