1076-194 **Diabetes Is an Independent Predictor of Increased Mortality Following Contemporary Percutaneous Coronary Intervention for Proximal Left Anterior Descending Artery Disease**

Ivan P. Casserly, Liam F. Casserly, Herbert D. Aronow, Joel Reginelli, Ravish Sachar, Cameron Exaire, Kent W. Dauterman, E. Murat Tuzcu, David J. Moliterno, Deepak L. Bhatt, Stephen G. Ellis, The Cleveland Clinic Foundation, Cleveland, OH, Boston University, Boston, MA

Background: In clinical practice, the presence of proximal left anterior descending artery disease (pLAD) may result in a bias toward surgical versus percutaneous revascularization. If diabetic and non-diabetic patients with pLAD disease had similar long-term mortality following percutaneous coronary intervention (PCI), it would suggest that diabetic status should not influence the mode of revascularization in these patients. We sought to compare the long-term mortality of diabetic (DM) versus non-diabetic (non-DM) patients undergoing contemporary PCI for pLAD stenosis.
Methods: We identified all patients without prior bypass surgery undergoing PCI for pLAD stenosis in the Cleveland Clinic PCI database between January 1997 and June 2002. Clinical, procedural clinical outcome data were collected prospectively.
Results: 1328 consecutive patients (382 DM, 946 Non-DM) were included in the analysis. Stents and GP IIb/IIIa inhibitors were used in 88% and 78% of cases respectively. Median follow-up was 2.55 years. Overall, there were 120 (9%) deaths, 46 (12%) in the DM and 74 (7.8%) in the non-DM group (log rank chi-square 4.9, p=0.027). Using a stepwise Cox proportional hazards model to adjust for clinical and procedural variables and concomitant medications, DM was an independent predictor of mortality (HR 1.51, 95% CI 1.01-2.26). Other selected independent predictors of mortality included chronic obstructive pulmonary disease, low ejection fraction, increasing age, renal insufficiency (Cr>2), and peripheral and cerebrovascular disease.
Conclusions: In this contemporary PCI registry study, DM was an independent predictor of increased mortality following PCI for pLAD lesions. Results from ongoing randomized trials should better define the optimal revascularization strategy for diabetics with pLAD disease.

POSTER SESSION

1077 Intravascular Physiologic Assessment

Monday, March 31, 2003, 9:00 a.m.-11:00 a.m.
McCormick Place, Hall A
Presentation Hour: 9:00 a.m.-10:00 a.m.

1077-173 **Long-Term Follow-Up After Deferral of Percutaneous Coronary Intervention of In-Stent Restenosis on the Basis of Coronary Pressure Measurement**

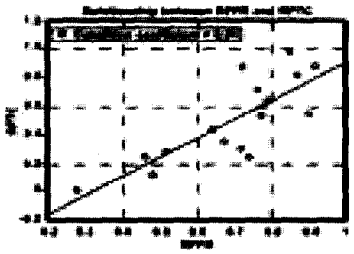
Koichi Tamita, Motoaki Ibuki, Atsushi Yamamuro, Tsutomu Takagi, Kazuaki Tanabe, Kunihiko Nagai, Tomoko Tani, Kenji Yamabe, Minako Katayama, Shigefumi Morioka, Takashi Akasaka, Kobe General Hospital, Kobe, Japan, Kawasaki Medical College, Kurashiki, Japan

Background: Deferral of percutaneous coronary intervention (PCI) on the basis of an myocardial fractional flow reserve (FFR) ≥0.75 is an safe and is associated with a very low coronary event rate in patients with de novo coronary artery stenosis. FFR has been demonstrated to be useful for determining the physiologic importance of a given coronary lesion. This study sought to determine the safety of deferral of PCI of angiographically significant but functionally nonsignificant in-stent restenosis, as assessed by FFR.
Methods: The study included eighty-six angiographically significant in-stent restenosis (≥50% diameter stenosis; %DS by visual assessment) in 86 consecutive patients who underwent coronary stenting (>6 months before the study) but in whom the PCI for in-stent restenosis was deferred on the basis of an FFR≥0.75. Patients with 2 or more stenosis in 1 coronary vessel, three-vessel coronary artery disease, or previous coronary artery bypass grafting (CABG) were excluded from this study. The FFR was calculated as the ratio of mean distal pressure divided by the proximal pressure during hyperemia. Follow-up clinical data were obtained by patient interview or by written correspondence.
Results: During a follow-up period of 25 ± 9 months (mean ± SD, range 6 to 42), one patients died of non-cardiac causes. Eighty patients remained free of any coronary events (myocardial infarction, unstable angina, CABG surgery, PCI) and their average Canadian Cardiovascular Society class is 0.1 ± 0.3 at follow-up. Coronary events occurred in five patients and was target-vessel related in three.
Conclusion : In patients with in-stent restenosis, deferral of the PCI on the basis of an FFR≥0.75 is safe and is associated with a very low coronary event rate, much lower than expected had PCI been performed in all patients with in-stent restenosis.

1077-174 **Pulse Transmission Coefficient in the Evaluation of the Severity of Renal Artery Stenosis**

Rajesh Subramanian, Christopher J. White, Kenneth Rosenfield, Riyaz Bashir, Yaron Almagor, David Meerkin, Evgeny Shalman, Ochsner Clinic Foundation, New Orleans, LA, St. Elizabeth's Medical Center, Boston, MA

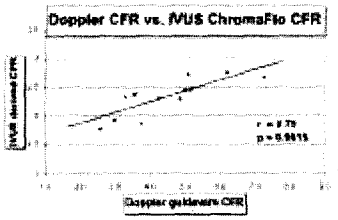
Background: Assessment of coronary stenosis under conditions of rest and hyperemia can assist clinical decision-making. Coronary pulse transmission coefficient (PTC) is a non-geometric measure of lesion severity. It is obtained by analyzing the coronary arterial pressure waveform and has been shown to correlate with coronary fractional flow reserve (FFR). PTC unlike FFR can be evaluated under basal conditions without inducing hyperemia. The development and correlation of a similar parameter in the evaluation of renal artery stenosis (RAS) may be clinically useful.
Methods: 15 patients with angiographically moderate RAS (visually estimated 50-90% diameter stenosis) were studied. Intra arterial pressure measurements were made proximal and distal to the lesion before and after the administration of Papaverine using a pressure wire. The renal fractional flow reserve (RFFR) was calculated as the ratio of mean pressures distal and proximal to the stenosis in the renal artery at maximum hyperemia. The RPTC was calculated by analyzing the renal pressure waveform at baseline using Smartflow systems (Florence Medical).
Results: A significant correlation was observed between RPTC and RFFR (r=0.81) (figure).
Conclusion: These data suggests a strong correlation between RPTC and RFFR similar to the correlation between PTC and FFR in the coronary circulation. The ability to acquire this parameter without the administration of a vasodilator (hyperemia) makes it an ideal physiologic parameter for clinical use.



1077-175 **Intravascular Ultrasound-Derived Coronary Flow Reserve**

Michael R. Wahl, Stuart T. Higano, Amir Lerman, Mayo Foundation, Rochester, MN

Background: Intravascular ultrasound (IVUS) can accurately display coronary anatomy but has limited ability for assessing coronary physiology. Decorrelation imaging is a non-Doppler method that displays semi-quantitative velocities on the IVUS image (ChromaFlo®). The feasibility of predicting coronary flow reserve (CFR) with ChromaFlo® was studied.
Methods: Thirteen patients without significant epicardial coronary artery stenoses were studied with IVUS and Doppler guidewire at baseline and following a 30 to 60 microgram intracoronary bolus of adenosine. Peak flow color intensity was averaged over the area of the artery. A ChromaFlo® CFR was calculated as the ratio of this peak flow during hyperemia and at rest. Doppler CFR was calculated as the ratio of hyperemic and resting average peak velocity.
Results: There was an excellent correlation between ChromaFlo® CFR and Doppler CFR (r=0.79, p=0.0015; see figure).
Conclusion: In patients undergoing IVUS assessment of coronary anatomy, measurement of CFR by ChromaFlo® is feasibile and correlates with Doppler CFR. ChromaFlo® CFR may be useful for assessement of the coronary microcirculation during IVUS.



1077-176 **Systemic and Local Determinant Factors of Coronary Artery Compliance: An In Vivo Intravascular Ultrasound Study**

Toshihiko Nishioka, Osamu Sasaki, Takashi Akima, Shuichi Katsushika, Bonpei Takase, Akira Kurita, Fumitaka Ohsuzu, Nobuo Yoshimoto, Saitama Medical Center, Kawagoe, Japan, Self-Defense Forces Central Hospital, Tokyo, Japan

Backgrounds: The purpose of this study was to identify the systemic and local determinant factors of coronary compliance in de novo coronary artery lesions using intravascular ultrasound imaging.
Methods: Two hundred and twenty coronary segments of de novo coronary artery lesions were imaged by intravascular ultrasound (30 or 40MHz) and intracoronary pressure was simultaneously recorded. Systolic and diastolic vessel areas (VA, mm^2) within external elastic membrane, lumen areas (LA, mm^2) within intimal leading edge, maximum and minimum plaque thickness, and arc of calcium were measured and plaque area (PA) was calculated as VA-LA at each coronary segment. Systolic and diastolic lumen diameters (LD) were calculated with an assumption that the cross section was circular, and coronary compliance; {(LA change / diastolic LA) / (SBP-DBP)}x10^3 and stiffness index β; {ln (SBP/DBP)} / (LD change/diastolic LD) were calculated, where SBP and