observed: there were no arrhythmias, no conduction disturbances and no ST-segment modifications. Cardiac enzymes remained unchanged. **Conclusion:** Gadolinium enhanced coronary angiography is safe and well tolerated. The mixture of Gadolinium with non-ionic contrast allowed us to obtain diagnostic angiograms of excellent quality in all cases. In patients at high-risk for renal failure, Gadolinium constitutes an interesting adjunct to contrast agents for coronary artery imaging.

1174-194 Nicorandil, a K_{ATP} Channel Opener, Facilitates the Recovery of Ventricular Contraction After Reperfusion Therapy in Acute Myocardial Infarction: Multicenter Registry in Japan

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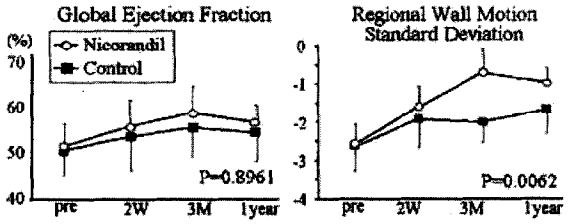
To clarify whether Nicorandil (N) given after acute myocardial infarction (AMI) affects subsequent changes in contractile function, we randomized 209 consecutive AMI patients hospitalized within 6 hours and gave them either an I.v. drip infusion of 6 mg/hour of N (n = 107) or normal saline (S) as control (n = 102) (double blind controlled NIMIS trial). No differences existed between the groups in terms of age and gender; severity of AMI was also the same as determined by Killip or Forrester classification and the left ventriculogram (LVG). One hour before the reperfusion therapy, i.v. infusion of N or S was started and LVG were recorded, as baseline data. Two weeks, 3 months and one year later, we repeated the same tests and compared the results with the baseline data.

Results: The incidence of ventricular arrhythmias (PVCs, VT) and global ejection fraction were not significantly changed between the groups. However, the regional wall motion determined by centerline method after reperfusion therapy was significantly greater in N than S group (Figure) and one year cardiac event fee rate was also smaller than in N than S group.

Conclusion: Results suggest that Nicorandil facilitates the recovery of left ventricular contractile force in AMI patients who underwent reperfusion therapy within 6 hours after the onset.



1174-195 Is Insulin Resistance Associated With One-Year Target Vessel Revascularization Rates Results From CREDO IRS?

Steven Marso, Ellen S. McErlean, Eric J. Topol, Steven R. Steinhubl, Mid America Heart Institute, Kansas City, MO

Insulin Resistance Syndrome (IRS) has been linked with increased neointimal proliferation and target vessel revascularization rates in animal models and small human studies. CREDO IRS sought to compare one-year target vessel revascularization rates among non-diabetic patients undergoing PCI stratified by Homeostasis Model Assessment (HOMA). CREDO is a prospective multi-center randomized controlled trial enrolling patients undergoing PCI. Patients were randomized to a standard therapy: loading dose of placebo and aspirin 325 mg 3-24 hours prior to PCI, 75 mg of clopidogrel within 1 hour of PCI, aspirin and clopidogrel 2-28 days, placebo and aspirin 29-365 days, or an aggressive regimen: a loading dose of clopidogrel 300 mg and aspirin 325 mg, 3-24 hours prior to PCI, 75 mg of clopidogrel within 1 hour of PCI, aspirin and clopidogrel 2-365 days. CREDO-IRS was a prospectively designed sub-study. Fasting levels of insulin and glucose where measured. Insulin resistance was determined by HOMA tertiles. The primary endpoint for CREDO-IRS was the need for 1-year target vessel revascularization. Other endpoints included the combined rate of death, MI or revascularization. There were 726 patients without a history of type 2 DM eligible for comparison within CREDO IRS. These patients were stratified, based on HOMA tertiles. The 28-day events are depicted in the table below. The one-year results will be available for presentation.

28-Day Events - HOMA Tertiles

	<1.89	1.89-3.38	>3.38	P-value
N	242	242	242	
Death/MI/UTVR (%)	9.5	7.4	8.3	0.72
Death (all cause, %)	0.4	0.0	0.0	
Myocardial Infarction (%)	7.4	6.6	7.4	
QMI (%)	1.2	0.8	1.2	
NQM (%)	6.2	5.8	6.2	
Urgent TVR (%)	1.7	0.8	0.8	

1174-196 Temporal Trends of One-Year Reinfarction and Mortality Rates Following Primary Angioplasty in High-Risk Acute Myocardial Infarction Patients

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Background: The use of primary angioplasty as treatment for acute myocardial infarction (AMI) is well established and use has tripled over the last decade. Numerous therapeutic advances have been introduced. However, no data exists regarding trends in adverse events and long term outcomes for high risk AMI patients. Methods: Of the 3755 AMI patients who had PCI enrolled in the Primary Angioplasty in Myocardial Infarction (PAMI) studies from 1990-'99, 1867 were high risk: heart rate >100, anterior infarct, LBBB, systolic BP<100 and age over 70. The patients were grouped into 2 time periods: '90-'94 (n=607) and '95-'99 (n=1364). Comparisons of 1 year reinfarction (1 yr reMI) and death rates were made between the 2 periods. Reinfarction was defined as recurrent symptoms with any increase in creatine kinase MB fraction above its previous nadir. Multivariate regression analysis evaluating age >70, gender, EF, Killip class >1, systolic BP<100, prior MI, stent use, final stenosis, final dissection, 3 vessel disease, smoking status and year enrolled, was used to determine the strongest predictors of 1 yr reMI. Results: 1 yr reMI and mortality rates are shown in the table. Year prior to 1995(p<0.0001, OR 3.98) and three vessel disease (p<0.0029, OR 2.06), but not stent use, were independent predictors of 1 yr reMI. Conclusions: High risk AMI patients treated with PCI have had a 3 fold reduction in 1 yr reMI without change in mortality. This is likely attributable to improved secondary prevention strategies.

Reinfarction and Mortality Rates

	'90-'94	'95-'99	P value
Reinfarction	9.7%	2.8%	<0.0001
Mortality	6.9%	8.1%	0.12

POSTER SESSION

1175 Predictors of Restenosis

Tuesday, April 01, 2003, Noon-2:00 p.m.
McCormick Place, Hall A
Presentation Hour: Noon-1:00 p.m.

1175-178 Preinterventional Levels of C-Reactive Protein and Platelet Function in Patients With Stable Angina

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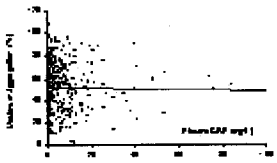
Background: Elevated plasma levels of C-reactive protein (CRP) are associated with an increased risk of cardiovascular events. Recently, it has been shown that this is also true for patients with acute coronary syndromes undergoing percutaneous coronary revascularization. In vitro studies have shown that CRP itself may influence platelet function.
Methods: Citrated blood samples from 305 consecutive patients with stable angina were obtained from the arterial sheath before coronary stenting. All patients had received aspirin and a loading dose (600 mg) of clopidogrel. CRP plasma levels were determined with a high sensitivity assay. Platelet aggregation in response to ADP, collagen and thrombine activating peptide (TRAP) was measured with lumi-aggregometry, surface expression of membrane receptors with flow-cytometry.
Results: Patients were divided in two groups: CRP > 5 mg/L (n=144) and CRP ≤ 5mg/L (n=161). Maximum aggregation (maximum increase of light transmission) in response to ADP (5 and 20 μM), collagen and TRAP did not differ between the two groups (P values 0.54, 0.90, 0.40 and 0.83 respectively). In addition, elevated CRP levels were not associ-

ated with enhanced surface expression of glycoprotein (GP) IIb/IIIa and P-selectin. In the figure, maximum aggregation (ADP 20μM) is plotted against CRP level.
Conclusions: In patients with stable angina and combined antiplatelet therapy plasma CRP levels do not appreciably correlate with platelet function.



1175-179 Preprocedural Levels of C-Reactive Protein, Postprocedural Creatin Phosphokinase MB Release, and Long-Term Prognosis Following Coronary Stenting: Results From the GENERATION Study

Michael N. Zairis, John A. Ambrose, Olga Papadaki, Paraskevi Psarogianni, Anastassios Lyras, Maria Thoma, Evangelos Tsanis, George Psaltiras, Constantine Fakiolas, Evangelos Pissimissis, Christopher Olympios, Stefanos Foussas, Tzanio Hospital, Piraeus, Greece, Saint Vincent Hospital, New York, NY

Background: Elevation of creatin kinase-MB (CK-MB) often occurs after coronary stenting (CS), but its role on long-term prognosis is controversial. We evaluated the predictors of CK-MB release and its relationship to long-term outcomes after successful CS in patients enrolled in the GENERATION study.
Methods: The GENERATION study was designed to evaluate, the impact of several serum markers (CRP, Lpa, homocystein and seropositivity for chlamydial infection) obtained upon admission on the long-term cardiovascular morbidity and mortality and the restenosis rate after coronary stenting. For the purpose of this study a total of 483 consecutive patients, treated for stable or unstable coronary syndromes, were recruited. Complete clinical follow-up was obtained from 465 (96.3%) pts for a period of 3-years.
Results: Of 451 patients with normal pre-intervention CK-MB levels, 39 (39/451 8.6%) had a peak post-intervention value >3x normal (without concomitant angina or new electrocardiographic abnormalities). The number of stents used (p=0.03), type B2 or C treated lesions (p=0.001) and baseline plasma CRP values (p<0.001) were the only significant predictors of CK-MB release. By univariate analysis 3-fold CK-MB release was significantly associated with increased risk for the composite endpoint of cardiac death, myocardial infarction and rehospitalization for unstable angina (H.R.=2.66, 95%CI=1.62-4.37, p<0.001) during the 3-years follow up. However, after adjustment for baseline plasma CRP values, post-procedural 3-fold CK-MB release did not predict the long-term composite endpoint (H.R=0.99 95%CI=0.53-1.85, p=0.91).
Conclusion: Elevations in CK-MB following successful CS may reflect the complexity or inflammatory status of the treated lesions. These factors may contribute to microembolization and subsequent silent myocardial necrosis. Therefore, an increased risk of long-term adverse clinical outcomes may be associated with these factors and not the CK-MB release per se.

1175-180 Time Relation of the Amount of Macrophages in the Plaque During the Chronic Phase of In-Stent Restenosis

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Background - Inflammation plays an important role in the acute phase of in-stent restenosis. But in the chronic phase, after approximately 30 days, the neointimal plaque consist mainly of vascular smooth muscle cells. In a previous study, we found that this neointima still contains small clusters of macrophages. In this study we investigated the relation between the amount of macrophages in the in-stent restenotic plaque and the time after the placement of the stent. Methods - Biopsies from human coronary in-stent restenotic lesions were obtained with a pullback atherectomy catheter and immediately frozen in liquid nitrogen (n=19). The time between the placement of the stent and the biopsy varied from 69 till 465 days. The biopsies were immunostained for smooth muscle cells, macrophages and ACE, and a semi-quantitative score was applied: 0 for no macrophages, 1 for a few or clusters of cells, 2 for <10% of cells positive, 3 for 10-50% of cells positive and 4 for >50% of the cells positive. Results - As shown in the figure, an inverse correlation was found between the amount of macrophages and the time between the biopsy and the stent placement (p=0.013). The macrophages were mostly ACE-positive. Therefore, the amount of ACE also decreases during time (p= 0.011). Conclusion - During the chronic phase of in-stent restenosis, the amount of macrophages in the neointima decreases, as well as the amount of ACE. This indicates that inflammatory cells play a role in the process of chronic in-stent restenosis, especially in the first phase.

1175-181 Do Good Collaterals Increase the Risk of Reocclusion After Recanalization of a Chronic Coronary Occlusion?

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Background. The presence of a well developed collateral circulation in chronic coronary occlusions (TCO) is considered a potential determinant of reocclusion. The present study directly assessed collateral circulation at the time of recanalization by i.c. Doppler and pressure recordings in order to relate it to the risk of reocclusion.
Methods. In 98 consecutive patients a TCO (duration >2 weeks) was recanalized with stenting. Before PTCA average peak velocity distal to the occlusion (APV_D), distal coronary pressure (P_D) and aortic pressure (P_{Ao}) were measured, and a collateral resistance index ($R_{Coll}=(P_{Ao}-P_D)/APV_D$) was calculated. Collateral function was assessed before the first balloon inflation. At the end of the procedure, the coronary flow velocity reserve (CFVR=hyperemic APV/baseline APV) was measured after i.c. adenosine (20-40μg) in the recanalized artery.
Results. During follow-up of 6 months 14 reocclusions (16%) occurred. In patients with reocclusion the minimum lumen diameter (MLD) was lower. There was no difference in parameters of collateral function, or microvascular function as evidenced by a similar CFVR (see Table). The angiographic result remained the best predictor of reocclusion in the subgroup analysis of patients with recent and long-term occlusions, and with and without regional ventricular dysfunction.
Conclusion. The risk of reocclusion after recanalization of a TCO was determined by a low MLD, but not by the quality of collateral function or microvascular function.

	Reocclusion	No reocclusion	p-value
R_{Coll} [mmHg*cm^{-1}*s^{-1}]	7.9±4.8	7.5±5.5	0.83
CFVR	1.92±0.62	1.98±0.58	0.72
MLD [mm]	1.91±0.37	2.27±0.51	0.015

1175-182 Enhanced Suppression of Inflammation After Coronary Stenting (ESIS): A Randomized Clinical Trial Comparing Abciximab and Eptifibatide

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Background: Inflammation after coronary stenting portends adverse outcomes. Abciximab (A) and eptifibatide (E) are reported to alter inflammation after coronary intervention but no randomized trial has compared their efficacy. We compared the effect of A and E on inflammation after stenting.
Methods: Patients undergoing coronary stenting were randomized to treatment with A (n=24) or E (n=26). Blood samples were obtained before stenting, and after 10 min, 1 hr and 18-24 hr. C-reactive protein (CRP, μg/ml), interleukin-6 (IL-6, pg/ml) and interleukin-1 receptor antagonist (IL-1Ra, pg/ml) were measured by ELISA. Changes in each marker after treatment with A or E were analyzed by repeated measure analysis of variance. Logarithmic transformation was performed to limit effects of inter-individual variability.
Results: Of the 50 patients enrolled, 86% had acute coronary syndromes. The groups (A and E) had similar clinical features, and baseline values of CRP, IL-6, and IL-1Ra. CRP, IL-6 and IL-1Ra increased after stenting despite administration of A or E (see table) and comparable increases were seen after each treatment. After logarithmic transformation, greater suppression in IL-1Ra but not CRP or IL-6 was seen after E compared with A (p=0.03).
Conclusions: In this randomized trial, inflammation after coronary stenting persists despite treatment with A or E. A uniform benefit of one agent over the other was not seen. Enhanced suppression of inflammation after stenting is a potential therapeutic target.

	Before Stenting	10 minutes	1 hour	18-24 hours	p-value for trend
CRP (A)	10±19	8.9±18	10±18	13±15	<0.0001
CRP (E)	8.2±14	8.9±13	10±14	12±15	<0.0001
IL-6 (A)	5.9±7.4	6.9±6.3	10±12	23±30	<0.0001
IL-6 (E)	6.7±14	7.8±15	12±21	22±23	<0.0001
IL-1Ra (A)	548±324	603±310	760±403	672±284	0.0003
IL-1Ra (E)	648±498	688±588	711±590	683±505	0.0003

1175-183 Preprocedural C-Reactive Protein Levels Are Not Associated With Restenosis After Successful Coronary Stenting: Results From the GENERATION Study

Michael N. Zairis, John A. Ambrose, Olga Papadaki, Alexander Stefanidis, Denis Vitalis, Stavros Manousakis, Demetrios Petropoulos, Evangelos Tsanis, Evangelos Pissimissis, Christopher Olympios, Denis Cokkinos, Stefanos Foussas, Tzanio Hospital, Piraeus, Greece, Saint Vincent Medical Centers, Manhattan, New York, NY

BACKGROUND High plasma C-reactive protein (CRP) levels, has been associated with adverse prognosis in pts with coronary artery disease. However, the impact of preprocedural CRP levels on the rate of in-stent restenosis (ISR) after succesful coronary stenting (CS) has not been clarified. METHODS The GENERATION study was designed to evaluate, the impact of several serum markets estimated upon admittance (CRP, Lpa, homocystein and seropositivity for chlamydial infection) on the long-term prognosis and ISR rate after CS. For the purpose of this study a total of 483 consecutive patients who underwent successful CS due to stable or unstable coronary syndromes were recruited. Complete clinical follow up was obtained from 465 (96.3%) pts in a period of 3-years.
Results: By 1-year, 121 patients (121/465 24.1%) developed recurrence of symptoms. During this 1-year time period, 309 (309/465 66.5%) patients underwent angiographic restudy, including 114 (114/121 94.2%) symptomatic and 195 (195/344 55.1%) asymptomatic. Pts were classified into four groups according to the quartiles of CRP values. ISR was observed in 108 (108/309 35%) pts. The distribution of restenosis among the quartiles of CRP is presented in the table. There was no statistically increased risk of ISR with increasing of CRP quartiles (P=0.89)