ABSTRACTS - Angiography & Interventional Cardiology

1175-179

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

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Background: Elevation of creatine 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 492 consecutive patients, treated for stable or unstable coronary syndromes, were recruited. Complete clinical follow-up was obtained from 465 (93.6%) pts for a period of 3-5 years.

Results: Of 492 patients with normal pre-intervention CK-MB levels, 39 (39/451; 6.6%) had a peak post-intervention value >3x normal (without coincident 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=0.01) 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 (HR=2.96, 95%CI=1.62-5.45, p=0.0003).

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.

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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 consists 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 for clusters of cells, 2 for 10-50% of the 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.

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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 (COC) is considered a potential determinant of reocclusion. We 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 96 consecutive patients a TCO (duration >2 weeks) was recanalized with the recanalization technique (PTCA) and stenting. Before PTCA average peak velocity distal to the occlusion (APVo), distal coronary pressure (Pc) and arterial pressure (Pa) were measured, and a collateral resistance index (RCR = Pa-Pc/APVo) 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 (20-40ug) in the recanalized artery.

Results - During follow-up of 6 months 14 recurrences (16%) occurred. In patients with reclosure the minimum lumen diameter (MLD) was lower. There was no difference in parameters of stent 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 the MLD, but not by the quality of collateral function or microvascular function.

1175-175

Enhanced Suppression of Inflammation After Coronary Stenting (ESI): A Randomized Clinical Trial Comparing Abciximab and Eptifibatide

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Background - Inflammation after coronary stenting portends adverse outcomes. Abciximab (ABX) and eptifibatide (E) are reported to affect inflammation after coronary intervention, but no randomized trial has compared their efficacy. We compared the effect of A or 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 h and 18-24 h. C-reactive protein (CRP), interleukin-6 (IL-6, pg/ml) and interleukin-1 receptor antagonist (IL-1Ra, pg/ml) were measured by ELSA. Changes in each marker after treatment with A or E were analyzed by repeated measure analysis of variance. Logistic 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 at 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 lack of efficacy against the other was not seen. Enhanced suppression of inflammation after stenting is a potential therapeutic target.

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Preprocedural C-Hepatocyte 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 Stariadis, Denis Vitalis, Stavros Manousakis, Demetres J. Petropoulos, Evangelos Tsitsas, Evangelos Petsas, Christopher Olympia, Doris Cokkinou, Stefanos Foussas, Tzamo 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 or preprocedural CRP levels on the risk of in-stent restenosis (ISR) after successful coronary stenting (CS) has not been clarified. METHODS - The GENERATION study was designed to evaluate, the impact or several serum markers estimaed upon admission (CRP, Lpa, homocystein and seropositivity for chlamydial infection) on the long-term prognosis or ISR rate at 1 year. For the purpose of this study, a total of 463 consecutive patients who underwent successful CS due to stable or unstable coronary syndromes were recruited. Complete clinical follow-up was obtained from 465 (93.6%) pts in a period of 3-5 years. Results - By year, 121 patients (121/465 26.1%) developed recurrence of symptoms. ISR was observed in 106 (106/309; 35%) pts. The distribution of restenosis among the patients is presented in the table. There was no statistically increased risk of ISR after treatment with A or E. A uniform lack of efficacy against the other was not seen.

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