1175-24 Regression of Nonculprit Yellow Plaques After the Onset of Acute Myocardial Infarction

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Backgrounds: In the patients with acute myocardial infarction (MI), multiple vulnerable yellow plaques are reported to be widely distributed in the whole coronary arteries. We investigated whether non-culprit yellow plaques are stabilized after the onset of MI by serially observing the color of plaques and existence of thrombus on the plaques.

Methods: Enrolled were 54 consecutive patients with acute MI. We observed infracted artery by angioscopy immediately after reperfusion and at 1 and 6 months follow-ups. Color of plaques was graded as 0 (white), 1 (slight yellow), 2 (yellow), or 3 (intense yellow), and the number (N) and maximum color grade of non-culprit plaques (MC) and prevalence of thrombus (TH) were evaluated. Plaque score (PS) was defined as MC x N. Results: At the acute phase, MC (2.9 ± 1.6, 0%) decreased only insignificantly, and TH (21%, 0%) decreased significantly during the follow-ups. Conclusions: Regression of yellow plaques and decrease in the prevalence of thrombus was observed in the non-culprit coronary arteries in the patients with acute MI during 6 months follow-ups. Non-culprit vulnerable plaques were shown to be stabilized under the usual medical treatment.

1175-25 Average Neointimal Tissue Proliferation After Stenting Cannot Be Predicted From Clinical or Angiographic Variables: An Intravascular Ultrasound Study

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Purpose: Assessment of neo intimal tissue growth after stent implantation is necessary to determine effects of procedural, stent design or drug improvements. We tried to determine whether neo intimal tissue proliferation (Neo-IP), assessed by intravascular ultrasound (IVUS) could be predicted from clinical or angiographic variables.

Methods: 180 patients submitted to stent implantation had systematic 6 month angiographic and IVUS control. IVUS images were recorded during an automatic constant speed pullback. Neo-IP was assessed using a computer-assisted system (Indec) as the difference between the stent and the lumen areas over an average of 500 measurements along the stent length. Angiographic minimal lumen diameter (MLD), late loss and restenosis were measured by quantitative coronary angiography.

Results: 178 patients had complete follow-up: At 6 months, 37/178 (21%) patients had symptoms or demonstrable ischemia. Angiographic restenosis was observed in 41/178 (23%), MLD was 1.70 ± 0.56 mm, late loss was 0.75 ± 0.51 mm and Neo-IP was 3.83 ± 1.78 mm². There was no correlation between Neo-IP, symptoms, restenosis, MLD or late loss. Only the lesion length correlated significantly with Neo-IP (r = 0.65, p < 0.001).

Conclusions: In the design of clinical studies, IVUS endpoint must be considered since coronary angiography cannot surrogate it for the in vivo assessment of neo intimal growth after stent implantation.

1175-26 Compensatory Remodeling in Early Coronary Artery Disease - A Volumetric IVUS Analysis


Background: Previous studies of vascular remodeling examined mainly remodeling patterns in significantly stenosed vessels. In vitro studies suggest preservation of luminal area in early atherosclerotic disease. However, in vivo data examining the remodeling pattern in early coronary artery disease is lacking. The aim of this study was to examine the relationship between plaque volume, luminal volume and total vessel area in coronary arteries with mild angiographic stenosis.

Methods: IVUS was performed in 30 patients in a coronary artery not subjected to prior intervention and free of significant angiographic stenosis (>50% diameter stenosis). Plaque, lumen and vessel area were measured at 1-mm increments and respective volumes were determined by a semiautomated method.

Results: Despite mild angiographic disease, there was substantial plaque burden in all vessels (mean plaque volume 227.99±55.93 mm³). There was a strong correlation between plaque volume and external elastic membrane (EEM) volume (Fig.), indicating adequate compensatory vessel enlargement. In contrast, there was no correlation between percent stenosis and lumen volume (R² = 0.11, P > NS), suggesting that vascular remodeling completely compensates for the plaque accumulation in early atherosclerosis.

Conclusion: Volumetric ultrasound assessment of mildly diseased coronary arteries indicates that compensatory vessel enlargement occurs early in the atherosclerotic process. Our data suggest that enlargement of the EEM area completely compensates for plaque accumulation early in the disease process.

1195MP-24 Use of a Sonospectrographic Digital Electronic Stethoscope to Evaluate Changes in Acoustic Signature of Coronary Flow Before and After Percutaneous Coronary Intervention (PCI)


Background: The identification of coronary stenoses by a simple, noninvasive method remains an elusive goal. Turbulent blood flow caused by coronary narrowing produces acoustic signals in the 300-1800 Hz audio band. These sounds are occasionally audible with the standard stethoscope (Dooie's murmur). We attempted to locate signals below the audible threshold using a sonospectrographic digital stethoscope (Sonologica Model 100) to identify sounds associated with coronary stenoses (microbruits).

Methods: Digital, high-frequency recordings were obtained from nine preocclusive locations. These data were processed, filtered and parsed to frame the diastolic time interval for time-frequency detection of likely coronary microbruits. An algorithm using signal detection studies was used to evaluate the spectral characteristics of diastolic sounds to derive a flow microbruit score (FMS). This method was applied before and after PCI in thirteen patients with 20 coronary lesions.

Results: There was a strong trend toward reduction in FMS following PCI at the precor- dinate site nearest to the target lesion. Compared to pre-intervention readings, 16 (80%) decreased, 2 (10%) increased, 1 (5%) was unchanged, and 1 (5%) was indeterminant. Initial modeling indicates that this reduction is statistically significant (difference of means, p < 0.003).

Conclusions: Using a sonospectrographic digital stethoscope to identify probable coronary microbruits, we demonstrated a significant change in a derived flow microbruit score following PCI. A larger trial is planned to validate these findings and to relate the FMS to stenosis severity by coronary angiography. If this method can accurately and reproducibly identify the presence and severity of coronary stenosis noninvasively, it would be a valuable tool for both screening patients and for assessing the efficacy and durability of PCI.

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1195MP-122 Failure of PTFE-Covered Stents to Lower Restenosis Rate in Aorto-Ostial Lesions

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The efficacy of PTFE-covered stents in ostial aorto-ostial (AC) lesions has not been evaluated. The aim of this study was to evaluate the outcome of patients (pts) in which PTFE-covered stents were implanted in ostial AC lesions. Methods. In this study 25 con- secutive pts were included (mean age: 63.3 ± 9.2 years). Ostial AC lesions were located:...