Titel des Beitrags:
Ruptured versus stable plaques in human coronary arteries.

Abstract:
To derive a model for the identification of left anterior descending (LAD) coronary artery stenoses predisposed to plaque rupture and thrombosis. Coronary angiograms of 186 consecutive patients (original sample) with an anterior ST elevation myocardial infarction (STEMI) and a recanalized LAD were reconstructed in the three-dimensional space. Culprit lesions were compared with 293 stable LAD coronary stenoses on the same patients. A model for predicting stenoses with a high probability of thrombosis was derived and validated in 50 subsequent patients with STEMI, and 50 patients with stable lesions (validation sample). The majority of culprit lesions occurred between 20 and 40 mm from the LAD ostium, whereas the majority of stable lesions were found in a distance of more than 60 mm (P<0.001). Culprit lesions were statistically significantly longer than stable ones (23.2 ± 10.4 mm vs. 14.7 ± 7.2 mm; P<0.001). Bifurcations on culprit lesions were significantly more frequent (86.6%) compared with stable lesions (41.3%, P<0.001). Lesion angulation was significantly sharper in culprit lesions, which were symmetrical whereas stable lesions resided in the inner vessel wall in respect to the local vessel curvature. A simple additive tool was developed by using these parameters in a multiple regression model. The discriminating ability of the proposed index was high in both the original [area under the
receiver operating characteristic curve: 0.88 (95% confidence interval: 0.85-0.91)] and validation sample [area under the receiver operating characteristic curve: 0.69 (95% confidence interval: 0.59-0.78)]. Specific anatomic characteristics of LAD segments associated with STEMI can be identified on coronary angiograms and assist the risk stratification of coronary stenoses.