Title

EXTENT OF PLAQUE FRACTURE EXPLAINS DISCREPANCY BETWEEN ANGIOGRAPHIC AND INTRAVASCULAR ULTRASOUND MEASUREMENTS AFTER PTCA

Authors

NAKAMURA, S
MAHON, DJ
MAHESWARAN, B
et al.

Publication Date

1994

762-6 **5:15**

Extent of Plaque Fracture Explains Discrepancy Between Angiographic and Intravascular Ultrasound Measurements After PTCA

Shigeru Nakamura, Donald J. Mahon, Bavani Maheswaran, Dan E. Gutfinger, Jonathan M. Tobis, University of California, Irvine

Previous studies have shown a poor correlation between angiographic and intravascular ultrasound (IVUS) measurements after PTCA. To understand the reasons for this observation, 91 lesions in 84 patients were studied by IVUS after successful balloon angioplasty. Plaque morphology on IVUS was classified as demonstrating superficial injury if there was either no fracture or only a small tear which did not extend to the media, versus a deep injury defined as the presence of a plaque fracture which reached the media. Measurements of minimum lumen diameter and lumen cross sectional area (CSA) were compared between angiography and IVUS. Forty-four lesions were classified as having superficial injury and 47 lesions demonstrated deep injury. There were no statistical differences in baseline characteristics of risk factors, vessel distribution, percent diameter stenosis, or lesion length. In the superficial injury group, there was a good correlation between angiography and IVUS for minimum lumen diameter ($r = .67$) and lumen CSA ($r = .69$), $p = 0.001$, but in the deep injury group there were poor correlations for minimum lumen diameter ($r = 0.23$) and lumen CSA ($r = 0.28$), p = ns. Angiographic appearance after successful PTCA showed dissection in 39%, hazy appearance in 23%, and a normal contour in 34%. Sixty-five percent of lesions with a normal or hazy angiographic appearance were in the superficial injury group, whereas 77% of patients with angiographic dissection were in the deep injury group ($p < 0.001$).

Conclusions: After successful PTCA, 48% of lesions demonstrate superficial injury by IVUS. In these lesions, there is a good correlation between angiography and IVUS measurements. There is a poor correlation between angiography and IVUS when there is deep injury due to a large plaque fracture. When the angiographic appearance shows a normal or hazy contour, there is a low probability of plaque fracture. When angiography reveals a dissection, there is a high probability that IVUS will demonstrate a large plaque fracture extending to the media.

TUESDAY PM