RELATIONSHIP BETWEEN POSITIVE REMODELED LESIONS ON CTA AND THE PRESENCE OF VULNERABLE PLAQUE ON VH IVUS

ACC Poster Contributions
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Authors: Eleanore S. Kroner, Jr, Joella E. van Velzen, Mark J. Boogers, Hans-Marc Siebelink, Martin Schalij, Lucia Kroft, Albert de Roos, Ernst E. van der Wall, J Wouter Jukema, Johan H. Reiber, Joanne D. Schuijf, Jeroen J. Bax, Leiden University Medical Centre, Leiden, The Netherlands

Background  Computed tomography coronary angiography (CTA) allows for direct evaluation of the vessel wall, thereby enabling detection of positive remodeling (PR +), which is a marker of vulnerability. The purpose of this study was to assess the association between positive remodeling on CTA and vulnerable plaque characteristics on virtual histology intravascular ultrasound (VH IVUS).

Methods  45 patients (78% male, age 58 ±11yrs) underwent CTA followed by VH IVUS. On CTA, the remodeling index was determined for each lesion by a blinded observer using quantitative analysis. PR+ was defined based on remodeling index ≥1.00. Percentage necrotic core (NC) and presence of thin capped fibroatheroma (TCFA) were used as markers for plaque vulnerability on VH IVUS.

Results  99 atherosclerotic plaques were evaluated, of which 37 lesions (37%) were identified as having PR + on CTA. Higher levels of plaque vulnerability were identified in lesions with PR + as compared to lesions without positive remodeling. Percentage NC was significantly higher in lesions with PR + (16%) as compared to lesions without this characteristic (10%) (Figure 1a). Furthermore, significantly more TCFA’s were identified in the PR + lesions (43%) (Figure 1b).

Conclusion  PR + on CTA is associated with increased levels vulnerability on VH IVUS, including a higher percentage NC and a higher prevalence of TCFA. Evaluation of remodeling on CTA may provide a valuable marker for the assessment of plaque vulnerability.

Figure 1a

![Graph showing percentage of NC between PR- and PR+ lesions](image1a.png)

Figure 1b

![Graph showing percentage of TCFA between PR- and PR+ lesions](image1b.png)