The morphological evaluation or coronary plaques in non-ST elevation acute coronary syndrome by coronary CT angiography.

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Purpose

To evaluate morphological features of coronary plaques and identify signs of instability, compare plaque characteristics in symptom-related (SRA) and symptom-unrelated (SNA) coronary arteries.

Methods and Materials

70 patients (19 women, age=34-76) with non-ST elevation acute coronary syndrome (NSTE-ACS) underwent coronary CT-angiography (MSCT64; 100-120 ml contrast agent) within 24 hours after onset. We have evaluated 207 lesions of coronary arteries, 70 lesions were divided in group-SRA.

Results

We identified 42 soft, 27 mixed, 1 calcified plaques in SRA. Density of soft plaques was 35,90+/-13,5HU (2-77HU), mixed-42,77+/-22,4HU (11-100HU). Spotty calcification was determined in 37,14% of soft plaques in SRA. Positive remodeling was in 65,71% SRA. "Ring-like" enhancement was in 28,57% SRA. Rough contours (87,14%) and density<50HU (78,57%) were the most common signs of plaque instability. All signs of instability were detected only in 7,14% of patients in SRA. Two or more signs of instability were revealed in 92,85%. Detection rate of "ring-like" enhancement had significant differences in SRA and SNA, 28,57% and 4,37%, p=0,02. Positive remodeling, rough contour, spotty calcification and density of <50HU weren't different significantly in SRA and SNA (p>0,05), 65,71%, 52,55%; 87,14%, 62,04%; 37,14%, 27,00%; 78,57%, 49,63%.

Images for this section:

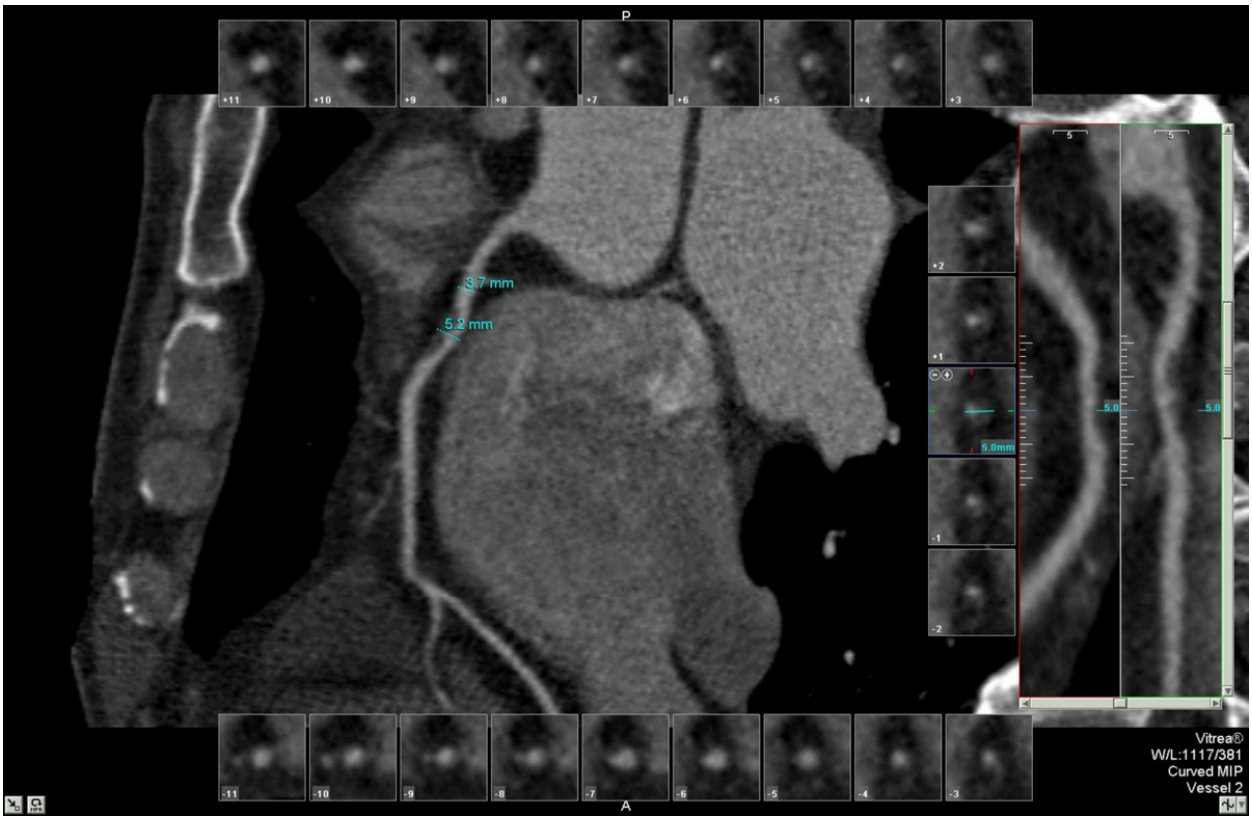

Fig. 1: Coronary CT. MPR-reconstruction of RCA. Positive remodeling.

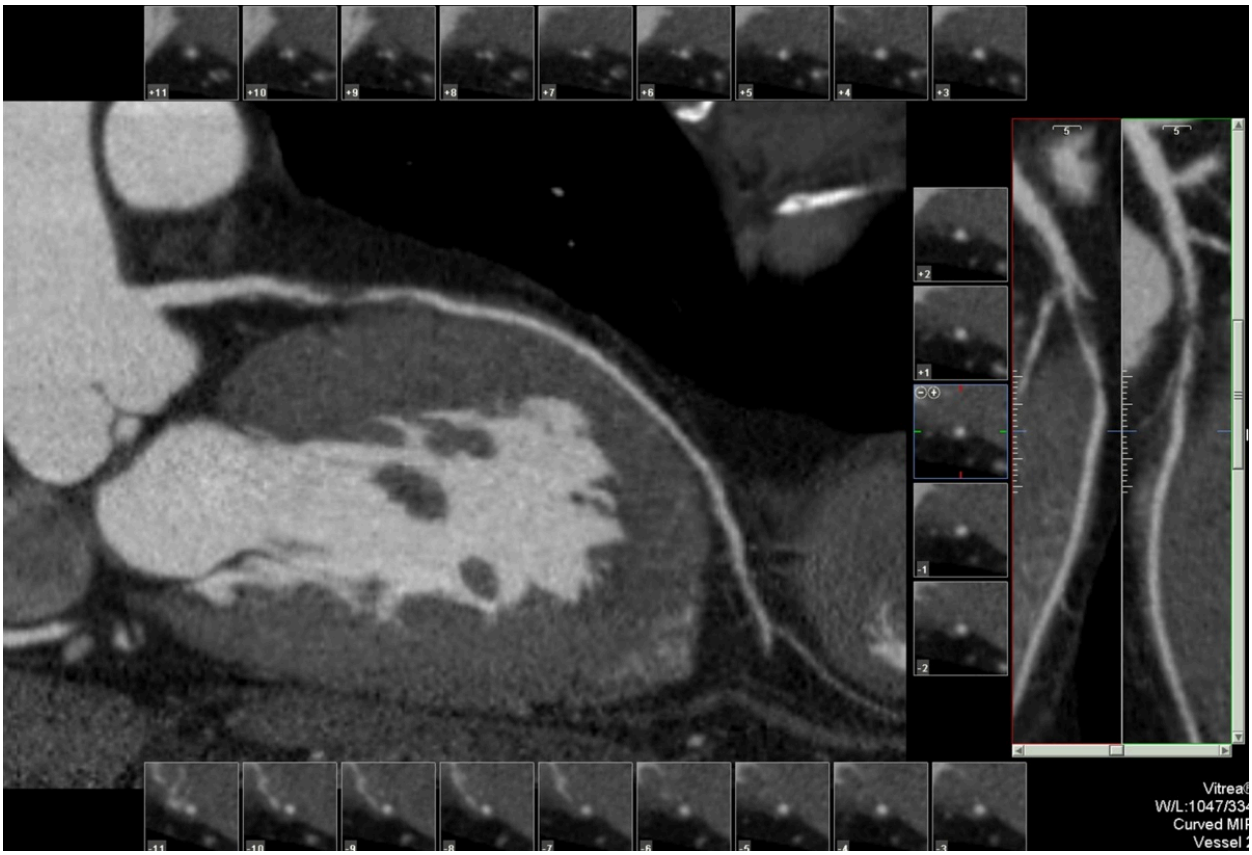

Fig. 2: Coronary CT. MPR-reconstruction. Rough contour of plaque.

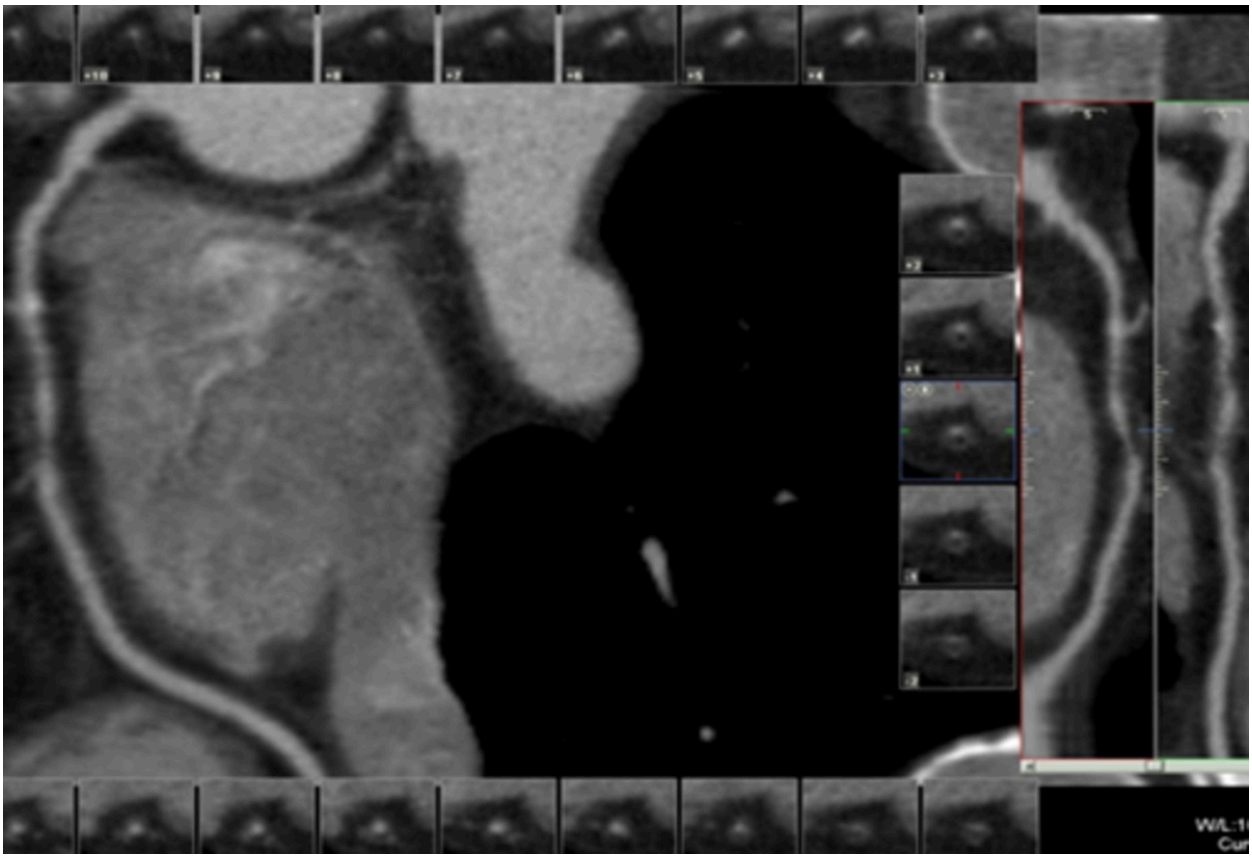

Fig. 3: Coronary CT. MPR-reconstruction. Soft plaque in RCA with "nupkin-ring" sign.

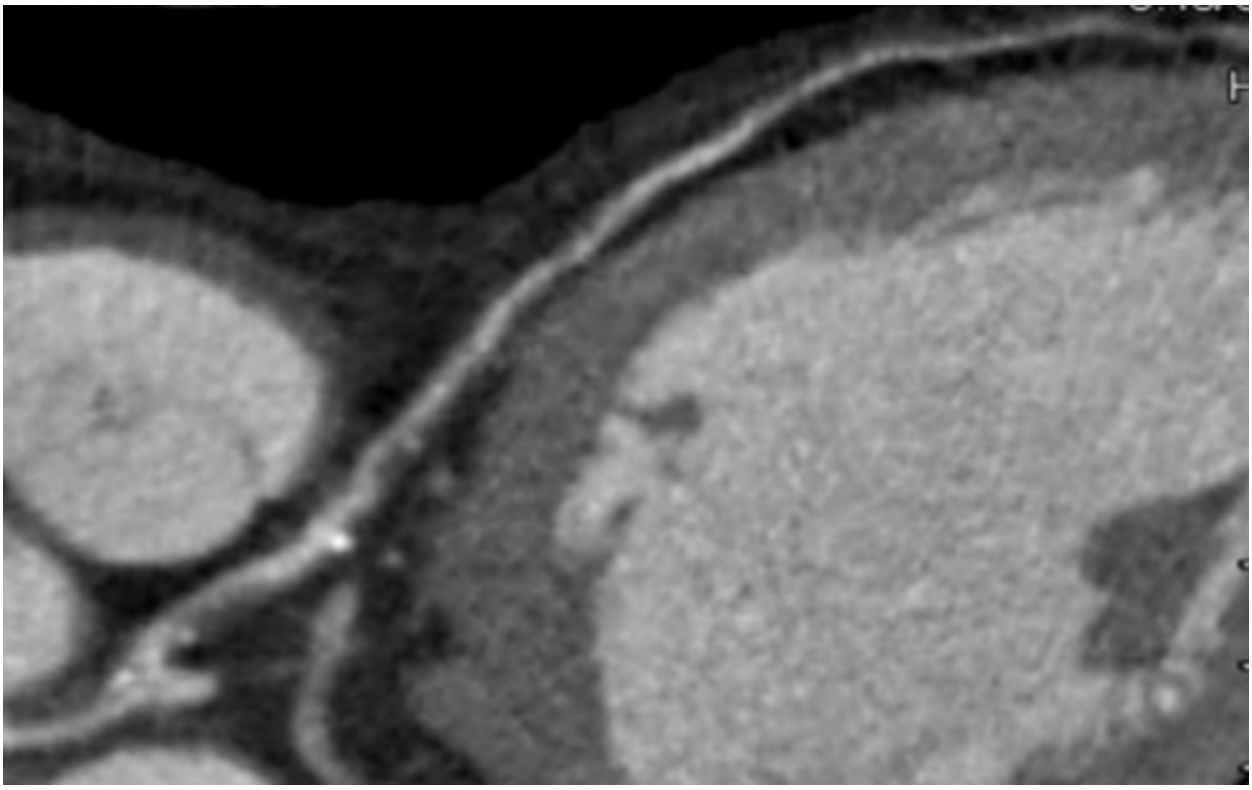

Fig. 4: Coronary CT. MPR-reconstruction. Soft plaque in LAD with spotty calcinates.

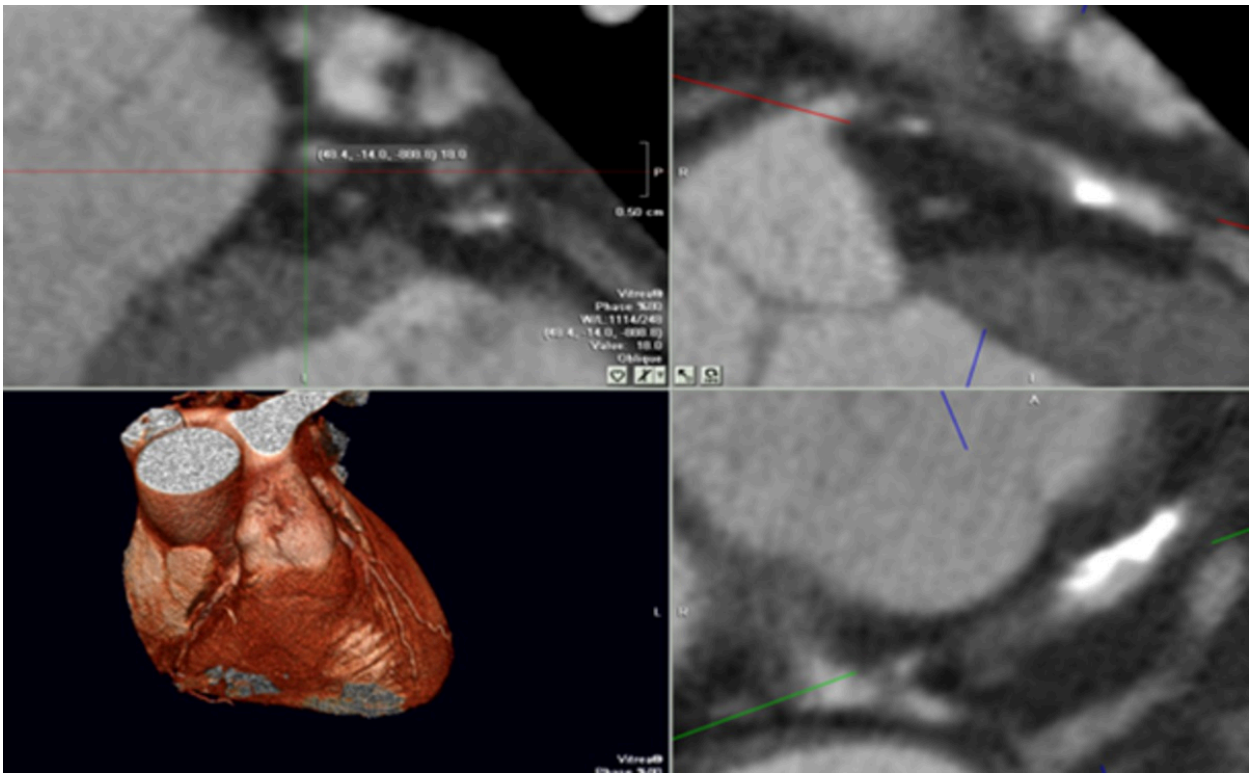

Fig. 5: Coronary CT. Oblique axis and ortogonal projection of plaque with low density area in coronary artery.

Conclusion

CT-angiography allows to determine signs of coronary plaque instability. The signs of instability are identified not only in SRA, but also in other coronary arteries at patients with NSTE-ACS.