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Titel des Beitrags: Selective coronary artery plaque visualization and differentiation by contrast-enhanced inversion prepared MRI.

Abstract: AIMS: We sought to evaluate the utility of contrast-enhanced coronary magnetic resonance imaging (CE-MRI) for selective visualization and non-invasive differentiation of atherosclerotic coronary plaque in humans. METHODS AND RESULTS: Nine patients with coronary artery disease (CAD) as confirmed by X-ray angiography and multidetector computed tomography (MDCT) were studied by T1-weighted black blood inversion recovery coronary MRI before (N-IR) and after administration of Gd-DTPA (CE-IR). Plaques were categorized as calcified, non-calcified, and mixed based on their Hounsfield number derived from MDCT. With MDCT, a total of 29 plaques were identified, including calcified (n=6), non-calcified (n=6), and mixed calcified/non-calcified (n=17). On N-IR MRI, 26 plaques (90%) were dark, whereas three plaques (two non-calcified and one mixed) appeared bright. On CE-MRI, 13/29 (45%) plaques, 11 of which were mixed, one non-calcified, and one calcified showed contrast uptake. All others remained dark. CONCLUSION: In this preliminary study, we demonstrate the potential utility of CE-IR MRI for selective plaque visualization and differentiation of plaque types. The observed contrast uptake may be associated with endothelial dysfunction, neovascularization, inflammation, and/or fibrosis.