Myocardial fibrosis is present in a wide range of cardiac disorders. Its noninvasive detection presently relies on cardiac magnetic resonance (CMR), which may not be feasible in many patients. This work, building on prior work in phantoms and a small animal model, evaluated a non-contrast DECT technique for evaluation of myocardial fibrosis in a prospectively-enrolled cohort of patients with varying severity of diffuse and localized fibrosis. Good agreement was demonstrated between DECT-based estimates and CMR markers of fibrosis and extracellular expansion, supporting potential utility and further studies of this technique in patients with myocardial disease.

Recent findings have suggested that the number of calcified plaques (numCP), an indicator of plaque diffuseness, can add to global CAC in assessing cardiovascular risk. In this paper, a nomogram was created to convert raw numCP into age- and sex-adjusted percentiles using a large, multicenter patient cohort. Just as in CAC scores, females demonstrated a 10-year delayed yet similar pattern of calcified plaque development compared to males. As CAC percentiles are currently used clinically, numCP percentiles can be useful for putting into perspective the risk of CAD in patients compared to peers and assessing aggressiveness of CAD in sequential studies.

Many findings support the additive value of volumetric plaque analysis in patients clinical evaluation. Furthermore, radiomics is emerging as a new tool to potentially further increase the diagnostic capabilities of coronary CT angiography. With initiatives to decrease radiation exposure, new image reconstruction algorithms have been developed. However, it is unknown whether image reconstruction has any effect on quantitative coronary CT angiography parameters. Our results show that both volumetric and radiomic parameters have excellent reproducibility with regards to different image reconstructions. However, all radiomic variables were affected by preprocessing steps before the calculation of the parameters showing the need for standardization.

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