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Future of cardiac computed tomography

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Abstract

Coronary computed tomography angiography (CCTA) has become an integral tool in the noninvasive diagnostic workup of patients with suspected CAD in both elective and emergency settings. Today, it represents a mature technique providing accurate, non-invasive morphological assessment of the coronary arteries and atherosclerotic plaque burden. Iterative reconstruction algorithms, low kV imaging, and single-heart beat acquisitions hold promise to further reduce dose requirements and improve the safety and robustness of the technique in several circumstances including imaging of heavily calcified vessels, patients with morbid obesity or irregular heart rates, and assessment in the emergency setting. However, it has become clear over recent years that cardiac radiologists need to take further steps towards the development and integration of functional imaging with morphological CCTA assessment to truly provide a comprehensive evaluation of the heart. CT myocardial perfusion imaging (CTMPI), including both dynamic and static dual-energy approaches, has demonstrated the ability to further assess and quantify myocardial ischemia with simultaneous CCTA.

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