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Update on myocardial perfusion imaging by CT

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Cardiac perfusion is along with imaging of coronary artery
stenosis an important tool in assessing the degree of coronary
artery disease (CAD) and decision-making regarding further
treatment. SPECT, lately PET, echocardiography and cardiac
magnetic resonance imaging are clinically established tech-
niques to evaluate myocardial perfusion and viability with a
high diagnostic accuracy and relatively few unwanted side-
effects. However, none of these modalities can simultaneously
and reliably assess the extent and morphology of CAD, fea-
tures which also have implications for patient management. In
contrast, cardiac CT has emerged over the last years as a reli-
able tool to visualize coronary atherosclerotic plaque and
stenosis, nearly unaffected by heart rate and carrying a rela-
tively low radiation exposure; however, without allowing an
adequate assessment of myocardial perfusion. Given the great
promise of a combined cardiac CT examination to assess mor-
phology and function, much research has recently been
focused on the assessment of CT myocardial perfusion imag-
ing. The presentation will review recent developments in car-
diac CT with respect to myocardial perfusion imaging, especial-
ly the two main techniques, first-pass and dynamic CT acquisi-
tions. Technical principles as well as available scientific evi-
dence and future directions will be presented.