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Titel des Beitrags:
3D non-contrast-enhanced ECG-gated MR angiography of the lower extremities with dual-source radiofrequency transmission at 3.0 T: Intraindividual comparison with contrast-enhanced MR angiography in PAOD patients.

Abstract:
To compare prospectively image quality and diagnostic confidence of flow-sensitive 3D turbo spin echo (TSE)-based non-contrast-enhanced MR angiography (NE-MRA) at 3.0 T using dual-source radiofrequency (RF) transmission with contrast-enhanced MRA (CE-MRA) in patients with peripheral arterial occlusive disease (PAOD). After consent was obtained, 35 patients (mean age 69.1 ± 10.6 years) with PAOD stage II-IV underwent NE-MRA followed by CE-MRA. Signal-to-noise ratio and contrast-to-noise ratio were calculated. Subjective image quality was independently assessed by two radiologists and stenosis scoring was performed in 875 arterial segments. Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) for stenosis classification were calculated using CE-MRA as a reference method. Diagnostic agreement with CE-MRA was evaluated with Cohen's kappa statistics. NE-MRA provided high objective and subjective image quality at all levels of the arterial tree. Sensitivity and specificity for the detection of relevant stenosis was 91 % and 89 %, respectively; the NPV was 96 % and the PPV 78 %. There was good concordance between
CE-MRA and NE-MRA in stenosis scoring. 3D electrocardiography (ECG)-gated TSE NE-MRA with patient-adaptive dual-source RF transmission at 3.0 T is a promising alternative for PAOD patients with contraindications for gadolinium-based contrast agents. It offers high sensitivity and NPV values in the detection of clinically relevant arterial stenosis. o Flow-sensitive TSE NE-MRA is a promising technique for PAOD evaluation. o Diagnostic accuracy is comparable to contrast-enhanced MRA. o NE-MRA eliminates the risk of NSF in patients with renal insufficiency. o Costs arising from the use of contrast agents can be avoided.