

ABSTRACT

Contrast-enhanced MR angiography utilizing parallel acquisition techniques in renal artery stenosis detection

Objective: The aim of our study was to assess the diagnostic value of contrast-enhanced MR angiography (MRA) utilizing parallel acquisition techniques in the detection of renal artery stenosis (RAS).

Material and Methods: 81 hypertensive subjects with suspected RAS were examined on a 1.5 T MR system with body array coil. Bolus tracking was used to monitor the arrival of contrast agent to the abdominal aorta. The MRA sequence parameters were as follows: TR 3.7 ms; TE 1.2 ms; flip angle 25°; acquisition time 18 s; voxel size 1.1 mm × 1.0 mm × 1.1 mm; centric k-space sampling; parallel acquisition techniques with acceleration factor of 2 (GRAPPA). Renal artery stenosis of 60% and more was considered hemodynamically significant. The results of MRA were compared to digital subtraction angiography serving as a standard of reference.

Results: Sensitivity, specificity, positive predictive value and negative predictive value of MRA in the detection of hemodynamically significant RAS were 91%, 96%, 94% and 94%, respectively. Prevalence of RAS was 41% in our study population.

Conclusion: Contrast-enhanced MRA with high spatial resolution offers sufficient sensitivity and specificity for screening of renal artery stenosis.