



Imaging

ULTRA HIGH FIELD MR CAROTID VESSEL WALL IMAGING: COMPARISON BETWEEN 7T AND 3T

ACC Moderated Poster Contributions

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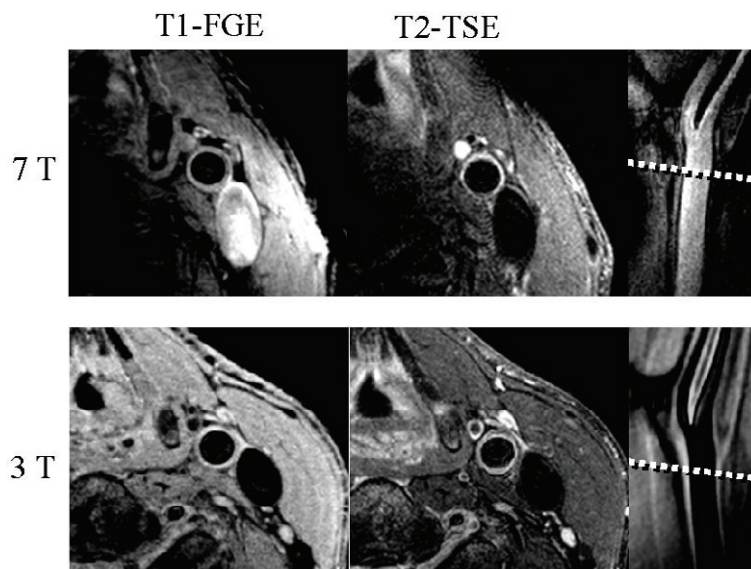
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Background: Magnetic Resonance Imaging (MRI) has been used for carotid artery vessel-wall imaging. However, clinical application is hampered by suboptimal signal-to-noise (SNR) and contrast-to-noise-ratio (CNR). Vessel-wall MRI is expected to benefit from higher-field MRI. Few data are available on the feasibility of 7T carotid MRI. The purpose of this study is to investigate the SNR and CNR of 7T carotid MRI as compared to 3T.

Methods: 10 volunteers (60% male, mean age=31±10 yrs) underwent repeated MRI-examinations of the left carotid artery at 7T and 3T (Philips). A T1-FGE sequence (imaging parameters 7T: echo time (TE): 13 ms, repetition time (TR): 3.7 ms, flip angle (a): 45°; for 3T: TE: 3.54 ms, TR: 12.41 ms, a: 45°); and a T2-TSE sequence (imaging parameters 7T: TE: 50 ms, TR: 2400 ms, TSE factor 5; for 3T: TE: 50 ms, TR: 2 heartbeats, a: 90°) were used. Blinded analysis of vessel wall area, SNR and CNR for the two separate MRI sequences was assessed using Vessel Mass software and compared between 7T and 3T examinations.

Results: At 7T, SNR and CNR are significantly higher as compared to 3T MR for both T1 and T2 sequences. The vessel wall area demonstrated good agreement (T1: ICC=0.93, T2: ICC=0.79) between 7T and 3T measurements.



Conclusions: 7T carotid vessel-wall MRI imaging improves SNR and CNR, as compared to 3T.