

Publication

Intrascanner and interscanner variability of magnetization transfer-sensitized balanced steady-state free precession imaging

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Recently, a new and fast three-dimensional imaging technique for magnetization transfer ratio (MTR) imaging has been proposed based on a balanced steady-state free precession protocol with modified radiofrequency pulses. In this study, optimal balanced steady-state free precession MTR protocol parameters were derived for maximum stability and reproducibility. Variability between scans was assessed within white and gray matter for nine healthy volunteers using two different 1.5 T clinical systems at six different sites. Intrascanner and interscanner MTR measurements were well reproducible (coefficient of variation: c(v) < 0.012 and c(v) < 0.015, respectively) and results indicate a high stability across sites (c(v) < 0.017) for optimal flip angle settings. This study demonstrates that balanced steady-state free precession MTR not only benefits from short acquisition time and high signal-to-noise ratio but also offers excellent reproducibility and low variability, and it is thus proposed for clinical MTR scans at individual sites as well as for multicenter studies.

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