To evaluate phase-sensitive inversion-recovery (PSIR) imaging at 1.5 T in a mouse model of permanent coronary artery ligation as a potentially rapid and robust alternative for the accurate assessment of myocardial infarction (MI) by cardiac magnetic resonance imaging (MRI). PSIR late gadolinium enhancement (LGE) imaging was compared to conventional 2D segmented inversion-recovery imaging for the assessment of murine MI. PSIR images provided comparable contrast and kinetics of intravenously injected gadopentetate dimeglumine (Gd-DTPA). At the mid-ventricular level there was good agreement between conventional IR and PSIR for infarct size assessment. After intravenous injection a limited time window of ~6 minutes is available for delayed enhancement imaging in mice. Whole-heart infarct imaging with 1 mm thick slices was only possible in this restricted time frame when the PSIR method is applied, avoiding the need for repetitively adapting the correct inversion time. Infarct size determined by PSIR MRI demonstrated good agreement with postmortem histology. Infarct size determined by PSIR LGE MRI inversely correlates with left-ventricular function on day 7 after MI. The PSIR technique provides stable and consistent contrast
between hyperenhanced and remote myocardium independent of the selected inversion time (TI) and proved to be a robust, fast, and accurate tool for the assessment of MI in mice. J. Magn. Reson. Imaging 2012; 36:1372-1382. © 2012 Wiley Periodicals, Inc.