Association between survival in patients with primary invasive breast cancer and computer aided MRI.

Abstract:

To identify the potential of semi-quantitative enhancement-analysis in breast MRI to predict disease-related death in primary breast cancer patients. The present study was planned and conducted according to international recommendations. All patients referred for pretherapeutic staging of primary breast cancer during 24 consecutive months were included into the study collective. They were followed-up by our multidisciplinary breast center. For semi-quantitative MRI-analysis dedicated CAD-software (computer assisted diagnosis) was used. Association between enhancement parameters and disease-related survival was investigated using Cox proportional-hazards -regression (CR). A total of 115 patients were eligible for CR analysis. Median follow-up time was 52 months. In 15 patients, disease-related death occurred. CR analysis identified four enhancement parameters as independent and significant (P < 0.001) predictors of the endpoint. Coefficients were "Initial enhancement" (B = 0.0166), "Time to peak-enhancement" (B = 1.0573), "Tumor volume" (B = 0.0175), and proportion of "tumor volume" showing "slow initial enhancement" followed by a "persistent" curve-type (B = -0.0586). This study demonstrates the significant relationship between semi-quantitative enhancement analysis in breast MRI and
disease-related death of breast cancer patients. As results were extracted from a routine staging examination, MRI noninvasively provides not only diagnostic information but also outcome data at one step. Future studies should address the impact of these findings on patient management and therapeutic approach. J. Magn. Reson. Imaging 2013; 37:146-155. © 2012 Wiley Periodicals, Inc.