

Lilian Wang, MD, Wendy DeMartini, MD, Sue Peacock, Constance Lehman, MD, PhD

Department of Radiology, University of Washington and Seattle Cancer Care Alliance

MRI DETECTED SUSPICIOUS FINDINGS: COMPARISON DETECTED OF KINETIC FEATURES MEASURED BY COMPUTER AIDED EVALUATION IN BENIGN AND MALIGNANT LESIONS

PURPOSE

Computer aided evaluation (CAE) programs for BREAST MRI provide detailed lesion kinetic information. The specific CAE measured parameters that best predict malignancy have not been established. We compared three distinct CAE kinetic features of suspicious BREAST MRI lesions to determine which could best predict benign or malignant outcomes.

METHOD AND MATERIALS

From 1538 MR examinations performed from 11/04-11/06, all incidental suspicious MR detected BREAST lesions with prospectively measured CAE kinetics (CADstream TM) and subsequent image guided biopsy were identified. Three specific CAE kinetic variables were recorded and compared for benign and malignant lesions: 1) initial phase peak enhancement (greatest % signal intensity increase on first post-contrast sequence), 2) delayed phase enhancement categorized by single type of kinetics comprising largest % of delayed enhancement (washout, plateau, or persistent), and 3) delayed phase enhancement categorized by "most suspicious" single type of lesion kinetics (any washout>any plateau>any persistent).

RESULTS

125 lesions (42 malignant, 83 benign) comprised the analysis set. There was no significant difference in initial peak enhancement ($p=0.28$) or delayed kinetics categorized by largest % enhancement type ($p=0.39$) between benign and malignant lesions. There was a significant difference in delayed kinetics of lesions categorized by most suspicious enhancement type ($p=0.005$). 45.7% of lesions with washout as most suspicious (any washout) were malignant compared to 20.0% with plateau as most suspicious (no washout) and 13.3% of lesions with entirely persistent enhancement.

CONCLUSION

Of CAE kinetic features analyzed, only delayed kinetics categorized by most suspicious type of enhancement were significantly different between benign and malignant lesions. This is in keeping with the ACR BI-RADS BREAST MRI Lexicon recommendation to report the "worst looking" kinetic curve. Any washout enhancement was associated with malignancy in nearly half of lesions. Entirely persistent enhancement was also associated with malignancy in 13.3% of cases.

CLINICAL RELEVANCE/APPLICATION

CAE assessed most suspicious delayed enhancement was different in benign and malignant lesions.