

Using VIBRANT and CADstream to Help Reveal a Patient's Lymph Node Status

Breast MRI continues to grow as a clinical imaging modality, particularly for women at high risk. In 2007, the American Cancer Society released new recommendations for the use of MRI for women at increased risk for breast cancer. The new recommendations include annual MRI screenings, in addition to mammography, for women who meet certain criteria.

In 2008, data from a small retrospective study suggest that the MRI-related kinetics of a breast tumor may reveal a patient's lymph node status without surgical sampling.¹

Christopher Loiselle, MD, of the University of Washington in Seattle, reported the findings at the American Society for Therapeutic Radiology and Oncology's annual meeting in October.

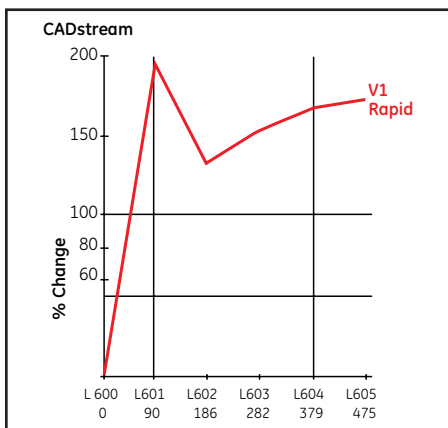
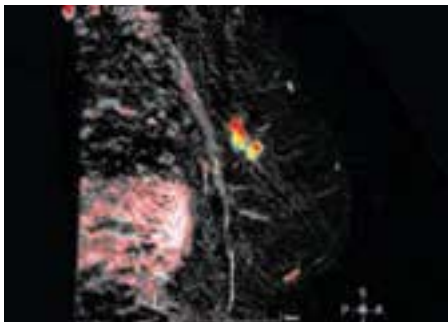
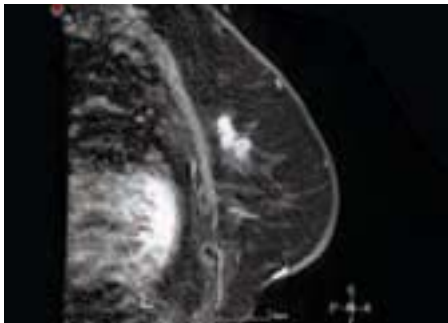
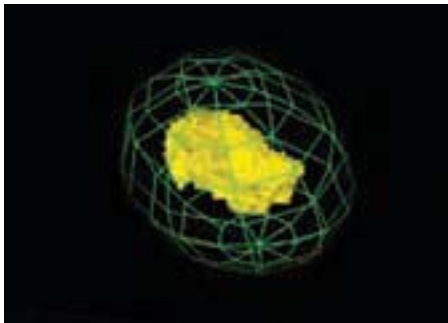
Patients with positive nodes had primary tumors with significantly greater initial peak enhancement and percent rapid enhancement on dynamic contrast-enhanced MRI compared with node-negative patients.

The findings have potentially major implications for patients undergoing neoadjuvant chemotherapy and for planning radiation therapy. The study suggests that tumor characteristics on an MRI scan may be the answer to the question of, is there another way to stage those lymph nodes?

Many oncologists and radiologists consider VIBRANT™ from GE Healthcare as their sequence of choice. VIBRANT produces high resolution bilateral, axial, or sagittal 3D data sets without compromising temporal or spatial resolution. The sequence yields the high resolution detail needed to delineate the lesion and CADstream™ analyzes the data in a comprehensive manner.

As clinical indications during breast MRI studies continue to expand, so does the amount of data produced for each exam. CADstream – the first CAD application designed exclusively for users of the GE Signa® MR Family – can facilitate more rapid interpretation of the MR study in a standardized and efficient manner. Analysis of data using CADstream allows for a fast, accurate diagnosis, volume calculations of the lesion, color map overlays, and corresponding uptake graphs to aid in characterization of the pathology. ■

All images courtesy of City X-ray



The following clinical case was submitted by Peter Kitchener, MD, and Barnabas Bakos of City X-ray, Sydney Australia.

VIBRANT™ examination and CADstream™ analysis on Signa® HDe 1.5T

Patient History

Patient presented with a palpable mass in the left upper/outer quadrant of the breast with skin thickening. Fullness of the left axilla was also noted. The patient had undergone a mammogram and ultrasound before the MRI examination where a mass was demonstrated. The lesion did have some calcifications as well as edema and there were no lymph nodes. MRI was performed to confirm the nature of the lesion.

MRI Technique

At City X-ray, the breast protocol consists of the following sequences: Axial and sagittal T1 and T2. The patient is positioned prone feet first and scanned using the HD Breast Array and the VIBRANT sequence. VIBRANT enables bilateral sagittal 3D imaging without compromising temporal or spatial resolution. Typically five dynamic phases post contrast are acquired. City X-ray then uses CADstream for the analysis of the post contrast data. CADstream creates Angiomaps, volumes and uptake curves providing a very comprehensive report.

MR Findings

The MRI demonstrated an irregular rounded mass that correlated well with the mass that was seen on the mammogram and ultrasound scan. The uptake curve depicted a rapid uptake and washout, typical of a malignant lesion. The VIBRANT sequence provides the high resolution detail needed to delineate the lesion while CADstream analyses the data in a comprehensive manner.

The lesion was very suspicious of malignancy with the likelihood of lymph node involvement.

Discussion

The Signa HDe 1.5T MR system, coupled with the breast coil and VIBRANT acquisition generates high-quality breast examinations. Analysis of the data using CADstream assists with fast accurate diagnosis with volume calculations of the lesion, color map overlays, and corresponding uptake graphs to aid in characterization of pathology.

References

- Loiselle CR, et al. Dynamic contrast enhanced MRI kinetics and invasive breast cancer: a potential prognostic marker for radiation therapy. *Int J Radiat Oncol Biol Phys* 2008; 72 (1 Suppl): S176. Abstract 2018.
(For more information, visit <http://www.medpagetoday.com/MeetingCoverage/ASTRO/11060>)