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As technical developments continue at an extraordinary pace throughout the field of medical imaging, researchers are constantly evaluating new systems to determine their benefits and, in some instances, their limitations. These assessments frequently result in studies such as “Kinetic Curves of Malignant Lesions Are Not Consistent Across MRI Systems: Need for Improved Standardization of Breast Dynamic Contrast-Enhanced MRI Acquisition,” published in the September 2009 issue of *AJR*. The study was authored by Sanaz A. Jansen, PhD and her colleagues at the University of Chicago. Jansen currently is a post-doctoral fellow in the Mouse Cancer Genetics Program at the National Cancer Institute in Bethesda, Md.

Jansen recently shared her inside view of the study, its goals, and results with WIO.

Q What was the impetus for this study?

Unlike X-ray mammography, standardization of clinical breast DCE-MRI acquisitions is not widespread at this time. This suggests there is a possibility that breast lesions may not appear consistently across imaging platforms. Such inconsistency could have the potential to reduce diagnostic accuracy of breast DCE-MRI. We wanted to determine the degree of variability in the kinetic presentation — that is, of contrast uptake and washout — of malignant and benign breast lesions acquired on three different systems.

Q How common is this imaging technology in hospitals and imaging facilities around the United States?

The three imaging systems (GE Genesis Signa, GE Signa Excite, Philips Achieva) we evaluated are quite commonly used across the United States. That being said, each institution often tailors its specific acquisition techniques and protocols, e.g., spatial and temporal resolution used.

Q Were there any results from your study that you found especially surprising?

We were surprised that the kinetic curves of malignant lesions did not appear consistently across the three systems. For example, on two systems, the majority of invasive cancers exhibited kinetic curves that had ‘rapid’ initial uptake, and a ‘washout’ type curve. On the third system, slightly less than half of invasive cancers followed this pattern. Although our study did find qualitative and quantitative differences in the kinetic presentation of breast lesions across these systems, it is important to note we did *not* find a large difference in diagnostic accuracy.

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Given the “several limitations” you cite in the study, what effect do you think your research will have on the rank-and-file radiologist and the field of women’s imaging?

This study points to the importance of developing improved standardization techniques for DCE-MRI of the breast. Radiologists and scientists interested in breast imaging are all interested in ensuring that patients are evaluated in a similar manner, regardless of what system is used or what institution they go to.

Do you plan on any follow-up studies and, if so, what do you hope to learn from them?

We are performing follow-up studies investigating the reason (e.g., differences in k-space sampling strategies, fat suppression techniques) for the observed inconsistency in kinetic patterns. In addition, we are developing phantoms that can be used to perform quantitative standardization of breast DCE-MRI acquisitions. Results from such studies could help to design and evaluate imaging protocols that yield robust kinetic evaluation of breast lesions across imaging systems and protocols.

What do you see as the long-term forecast for DCE-MRI within the field of radiology?

DCE-MRI of the breast has unparalleled sensitivity for breast cancer and provides exquisite images of disease extent and, because of this, I believe the future is bright. However, it is important to develop *quantitative* standardization and visualization techniques to ensure that patients are consistently evaluated and that diagnostic accuracy is maximized. ■