Letters to the Editor

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Mammographic Surveillance after Breast Conservation Therapy

From

D. David Dershaw, MD
Carol H. Lee, MD, and
Elizabeth A. Morris, MD
Breast Imaging Service, Department
of Radiology, Memorial Sloan-
Kettering Cancer Center, Breast
and Imaging Center, 300 E 66th St,
7th Floor, New York, NY 10065
e-mail: dershawd@mskcc.org

Editor:

We read with interest the article by Dr Arasu and colleagues (1) in the August 2012 issue of *Radiology* advocating 6-month rather than annual mammography in women who have undergone breast conservation. The authors' comments on our observations would be appreciated.

Data in the study show that although mean tumor size was smaller at recurrence in those undergoing more frequent mammography, this did not reach statistical significance ($P = .15$) for invasive cancers; the same was true for a difference in nodal status ($P = .28$). There was considerable overlap in tumor size in both groups (mean $\pm$ standard deviation, 11.7 mm $\pm$ 7.4 in 6-month group and 15.3 mm $\pm$ 8.8 in 12-month group). The mean size of invasive recurrences was greater than 1 cm for both groups and only differed by 3.6 mm. The difference in size of tumor recurrence suggested by the authors when presented as less than or more than 1 cm rather than as true size may overstate the real significance in the difference between these two groups.

The authors have defined their two study groups as "compliant," those undergoing mammography in 6-month intervals (with intervals as short as 3 months), and "noncompliant," those undergoing mammography at up to

18-month intervals. Differences in patient behavior may indicate other differences in these two populations that have not been appreciated by the authors. In addition, the study is not strictly comparing 6- versus 12-month follow-up but includes intervals that range from 3 to 18 months. There is no doubt that a 15-month interval will have an effect on staging of recurrence.

Disclosures of Conflicts of Interest: D.D.D. No relevant conflicts of interest to disclose. C.H.L. No relevant conflicts of interest to disclose. E.A.M. No relevant conflicts of interest to disclose.

Reference

1. Arasu VA, Joe BN, Lvoff NM, et al. Benefit of semiannual ipsilateral mammographic surveillance following breast conservation therapy. *Radiology* 2012;264(2):371-377.

Response

From

Vignesh A. Arasu, MD,*
Bonnie N. Joe, MD, PhD,*
Natalya M. Lvoff, MD,†
Jessica W. T. Leung, MD,*
R. James Brenner, MD, JD,*§
Chris I. Flowers, MD,*
Dan H. Moore, PhD,|| and
Edward A. Sickles, MD*
Department of Radiology and Biomedical Imaging, University of California, San Francisco, 1600 Divisadero St, Room C250, Box 1667, San Francisco, CA 94115*
e-mail: bonnie.joe@ucsf.edu
California Advanced Imaging Medical Associates, Novato, Calif[‡]
Breast Health Center* and Research Institute,|| California Pacific Medical Center, San Francisco, Calif
Bay Imaging Consultants Alta Bates Summit Medical Center, Oakland, Calif[§]

Thank you for the opportunity to clarify our study (1). Recurrences had more

favorable prognosis in our compliant cohort with every 6-month follow-up. This was statistically significant on the basis of tumor stage, which is an important predictor of survival (2,3). A 1-cm cut point for invasive cancer size, although not the point of maximum statistical significance in our study, has clinical relevance because it separates stage T1b and smaller cancers from stage T1c and larger cancers. Prognosis is excellent for invasive cancers measuring 1 cm or smaller, with approximately 90% survival at 20 years (4).

As acknowledged, study cohorts defined according to patient compliance introduce potential selection bias. Because we found no meaningful differences in age and family history (major breast cancer risk factors) between cohorts, the magnitude of selection bias may not have been substantial.

Compliance with any mammography screening protocol is customarily measured in ranges of months rather than limiting study to a specific recommended month. The great majority of women in our 6-month and 1-year cohorts underwent follow-up within 2 months of the center intervals, with relatively few undergoing follow-up at 14–18-month intervals. It is unlikely that our outcomes are substantially skewed by women screened at far-from-center intervals.

This is the first study reporting outcomes data on a more frequent than annual screening interval in patients who had undergone lumpectomy. Although more elegantly controlled data would be preferable, and we strongly encourage others to report such data, our study provides suggestive evidence that women may benefit from semiannual rather than annual screening for the first 5 years after lumpectomy.

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Acceleration of ¹H MR Metabolic Imaging with Compressed Sensing

From

Peter B. Barker, DPhil,* and

Thomas M. Ernst, PhD†

Department of Radiology, Johns Hopkins University School of Medicine, 600 N Wolfe St, Park 367B, Baltimore, MD 21287*
e-mail: pbarker2@jhmi.edu

Department of Medicine, University of Hawaii, Honolulu, Hawaii†

Editor:

We read with interest the article by Geethanath and colleagues in the March 2012 issue of *Radiology* investigating whether compressed sensing could accelerate hydrogen 1 (¹H) magnetic resonance (MR) metabolic imaging in the clinic (1). The authors recognize that conventionally phase-encoded spectroscopic imaging studies often involve lengthy imaging times and propose the use of compressed sensing to reduce acquisition times by as much as 90%.

A surprising aspect of this study is that the authors chose to apply compressed sensing to a data set that was already severely undersampled. Because the original matrix size in the example in normal

brain (fig 3) was 16 × 16 (256 k-space points), undersampling k-space by a factor of 10 results in only approximately 26 k-space points from which to reconstruct the data. Inspection of the spectra in figure 2 shows an apparent increase in signal-to-noise ratio (SNR) with increasing acceleration factor. This is most likely due to the nonlinear nature of the compressed sensing reconstruction, which can “de-noise” spectra; the spectra are therefore misleading in that the variance of the large metabolite signals is most likely worse than the apparent spectral SNR would indicate, poorer than that of the original, fully sampled spectrum, and small signals will be missed altogether.

Although compressed sensing is a promising technique for imaging time reduction in MR spectroscopy, either for data sets with larger matrix sizes (2) or by using the relative sparsity in the time domain to encode additional spatial information (3), the application of compressed sensing with high acceleration factors to small (eg, 16 × 16) MR spectroscopy data sets does not appear likely to produce results that are robust enough for clinical use.

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Response

From

Sairam Geethanath, PhD,* and
Vikram D. Kodibagkar, PhD†

Imaging Physics and Engineering Group, Imperial College, London, England*