

## Radiologic workup of a palpable breast mass

(MARCH 2009)

**TO THE EDITOR:** Thank you for the excellent review, “The radiologic workup of a palpable breast mass” in your March 2009 issue.<sup>1</sup>

The authors stated that magnetic resonance imaging (MRI) of the breast “does not currently have a role in the workup of a palpable abnormality.” This may be true in general, because breast MRI is more expensive than mammography plus or minus ultrasonography. However, breast surgeons are currently ordering preoperative MRI to evaluate biopsy-proven breast cancer to help them plan the surgery. This is because MRI provides superior three-dimensional spatial resolution and image quality as compared with ultrasonography or mammography.

My question is whether breast MRI might be useful in the prebiopsy diagnostic workup of breast masses in special cases. For example, some women have very sensitive breasts and refuse to undergo mammography, which requires compression of the breast. Another special case is when the palpable mass is located in a portion of the breast which is not amenable to mammography, such as in the axillary tail of the breast. In these cases, MRI might be helpful if the palpable mass is not definitively imaged with ultrasonography. Would the authors care to comment?

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**IN REPLY:** The authors thank Dr. Keller for his readership. (On a personal note, Dr. Chellman-Jeffers spent her childhood in the Los Angeles area near his practice.) Dr. Keller brings up several interesting points regarding breast MRI, a subject that fills entire subspecialty textbooks.

On the subject of a palpable abnormality, a breast MRI’s field of view encompasses

the entire breast, and although breast MRI is quite sensitive, it is known to have a lower specificity than other modalities.<sup>1</sup> This means that more findings—which may or may not be related to the actual palpable abnormality—will lead to more studies and more biopsies, with proportionately fewer cancers found.

As for regions of tissue coverage with mammography, the axillary tail is actually more consistently imaged with mammography and ultrasonography than with MRI because of the cardiac pulsation artifact in the plane of the heart, as well as the breast-coil image centering on the breast. MRI-guided biopsy in the axilla is also generally not possible. These limitations are typical for breast MRI equipment. The expense of breast MRI is indeed considerable, but cost is not the main reason for the preference of other modalities.

In contrast, targeted ultrasonography is exquisitely suited to specifically image a palpable abnormality. With its small field of view (4 cm and smaller), a very high percentage of palpable masses can be seen. It is also more personal and comfortable and can be patient-directed. You can ask the patient to physically show you what is being felt and then scan it in real time. Needle biopsy can then be performed, often during the same visit (at many facilities), using ultrasonography as a real-time guidance tool in any location within the breast, including the axilla.

In the algorithm implied by your question, the patient feels a lump and has a negative *diagnostic* mammogram (including specific, problem-directed views) and *targeted* ultrasonography, which, again, is more focused than MRI and more capable of imaging the axilla or areas out of the breast coil for this purpose. Then, based on clinical suspicion or patient anxiety, these two very good tests are disregarded or not believed. At this point, the patient should be seen by a specialist, usually a surgeon, for evaluation for palpation-guided biopsy. It is true that some palpable masses are not identified by mammography and ultrasonography. But it is also true that MRI does not find every cancer, and it can find

many more lesions that are not cancerous and that have a dubious relation to the original area of concern. This can easily turn into the proverbial wild-goose chase. No matter the outcome of the MRI, the patient still needs to be seen by a surgeon.

Our two major indications for breast MRI are currently in the preoperative extent-of-disease workup for known breast cancer and as an additional screening examination for high-risk patients (lifetime risk greater than 20%–25% by BRCAPRO, Gail, or other model method per the 2007 American Cancer Society guidelines<sup>2</sup>). We always require a comparative review of mammography in the completed interpretation of breast MRI and, as such, do not consider MRI a viable (or statistically proven) substitute for screening mammography for patients with sensitive breasts. Breast MRI is in fact more physically challenging for most patients than mammography, because the patient needs to remain motionless in a prone position in an enclosed space for an extended period of time (our protocol is 17 minutes). Gadolinium contrast must also be given, which requires renal function laboratory tests and intravenous access. The study must also be scheduled in all premenopausal patients in the postmenstrual phase of her cycle (around days 7–14) to avoid diffuse hormonally related enhancement and to minimize false-positive results.

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