MRI Reveals Missed Cancerous Breast Lesions

BY BRUCE K. DIXON
Chicago Bureau

CHICAGO—Magnetic resonance imaging done prior to treatment for breast cancer can reveal cancer missed by mammography and ultrasonography, yielding more accurate information about the extent of disease and potentially altering the management of patients, according to a study presented at the annual meeting of the Radiological Society of North America.

“Some way to help us make the right choice in the treatment plan and the impact of the treatment,” said Mary Good, M.D., of Northwestern University. “The MR is looking at the new blood vessels and angiogenesis, tumors, and it doesn’t show anything on MR that we’ve seen on mammography or ultrasound, typically we will bring the patient back for a repeat ultrasound and mammogram. If we see something, we’ll do a biopsy right then. But if we can’t find anything, we may do additional imaging—which happens in about 40% of our cases—and the MR is the finding we’re looking for, and we’re very impressed.”

“Early detection of local recurrence improves long-term survival, but postoperative mammographic and ultrasonographic evaluation often is limited in patients with dense, fibroglandular tissue and postsurgical or postradiation fibrosis,” said Dr. Good. “We also have to look at the clinical history and family history of the patient.”

Additional Lesions Found by MRI

<table>
<thead>
<tr>
<th>Lesion Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUCAL CARCINOMA</td>
<td>23</td>
</tr>
<tr>
<td>INVOLUCRAL Ductal</td>
<td>6</td>
</tr>
<tr>
<td>INVASIVE Ductal</td>
<td>6</td>
</tr>
<tr>
<td>INVASIVE CARCINOMA</td>
<td>5</td>
</tr>
</tbody>
</table>

Note: Based on MRI in 40 women. Source: Dr. Good

Older Women Have a Lot Of Faith in Mammography

ORLANDO — Older women with a family history of breast cancer place extraordinary faith in mammography over clinical breast exam for reassurance about their breast health, according to Karen Greco, R.N., Ph.D., lead investigator of a small, qualitative study on mammography decision making.

“Researchers have suggested, to a very large degree, that we’re not using mammography as intended,” Dr. Greco said. “The study included 16 women over age 65 years (average age 73) who were in- creased risk for breast cancer because of family history— at least one first-degree relative diagnosed with breast cancer. Most women were regular users of mammography because of family history. Dr. Greco said. ‘We’re going to do a biopsy right then. But if we can’ find anything, we may do additional imaging—which happens in about 40% of our cases—and the MR is the finding we’re looking for, and we’re very impressed.’

Carefully Communicate Location of Palpable Breast Lumps to Radiologists

BY SHERRY BOSCHERT
San Francisco Bureau

KAULU KONA, HAWAI—Inform the radiologist about the specific location of any palpable mass in a patient’s breast that prompted you to order a mammogram, Dr. R. James Brenner said at a meeting on medical negligence and risk management.

“Any vague descriptions, ‘a general fullness in the breast upper right quadrant’ and ‘more specific local palpable lump at 10 o’clock,’ said Dr. Brenner, chief of breast imaging at the University of California, San Francisco. If the radiologist doesn’t know there’s a palpable mass, the patient gets a screening mammogram. But mention a palpable mass, preferably with a specific area for interrogation to treatment for breast cancer, Mifflin said, and ideally produce a more positive long-term outcome, she said.

The researchers classified newly diagnosed breast cancers in 140 women (mean age 66.5 years), of which 53.5% were invasive ductal carcinoma (IDC) with extensive intraductal component (EIC). Additional lesions identified by MRI in 40 women included 26 in the same quadrant, 11 in a different quadrant, and 3 in the contralateral breast. Specifically, 23 of the lesions were identified as IDC with EIC, 6 as IDC, 6 as ductal carcinoma in situ, and 5 as invasive lobular carcinoma. Clinical management was changed in 31 of the 40 women: 20 underwent more extensive surgery, 9 underwent breast conservation therapy in response to mastectomy, and 3 were given additional neoadjuvant chemotherapy.

Although mammography and ultrasound are still the primary methods for breast cancer screening and diagnosis, the higher soft tissue contrast and gadolinium-enhanced images obtained by MRI improve the sensitivity of detection and allow more accurate evaluation of the cancer. Most breast cancers enhance rapidly after IV injection of contrast agents because of higher vascularity and the angiogenic factors that produce an increase in capillary permeability. The MR is looking at the new blood vessel growth, or angiogenesis, in tumors and it’s a functional test in that sense, so we see lesions that may not show up on mammograms, especially in dense breasts. And there are some tumors that grow in such a way that makes them more difficult to perceive on a mammogram,” she added.

“Patients underwent imaging in the prone position with the breasts gently immobilized within lateral compression plates. Contrast injection was made with IV administration of 0.1 mmol/kg gadodiamide followed by a 20-mL saline flush at the rate of 2.0 mL per second. MR images were acquired using a 1.5-T scanner with use of a dedicated breast coil,” the investigators said. “That’s becoming less of an issue as our magnets are getting faster and we don’t have to make as many compromises; so I would say that any person with a fairly modern technique, modern breast coil should be able to achieve satisfactory resolution both spatially and temporally,” she said.

MRI has found a home at the University of Chicago’s breast imaging section, not only for pretreatment assessment but also to detect cancer recurrence post treatment and to screen high-risk women. “Early detection of local recurrence improves long-term survival, but postoperative mammographic and ultrasonographic evaluation often is limited in patients with dense, fibroglandular tissue and postsurgical or postradiation fibrosis,” the authors wrote, noting that recurrent tumor exhibits early enhancement.

“MR is a sensitive modality for detection of early recurrent tumor, and breast cancer recurrence must be differentiated from acute and subacute postradiation changes. Most recurrent tumor, unlike unrecognized residual tumor, usually presents at least 2 years following breast conservation treatment. Normal parenchymal enhancement usually is diminished in breast irradiation. Recurrent tumor may therefore be readily visible in the postirradiation breast,” they said.

False-positive findings are not a problem with high-resolution MRI and correct procedures. Dr. Newstead said. “When we find something on MRI that isn’t there on mammography or ultrasound, typically we’ll bring the patient back for a repeat ultrasound and mammogram. If we see something, we’ll do a biopsy right then.”

“Early detection of local recurrence improves long-term survival, but postoperative mammographic and ultrasonographic evaluation often is limited in patients with dense, fibroglandular tissue and postsurgical or postradiation fibrosis,” the authors wrote, noting that recurrent tumor exhibits early enhancement.

“MR is a sensitive modality for detection of early recurrent tumor, and breast cancer recurrence must be differentiated from acute and subacute postradiation changes. Most recurrent tumor, unlike unrecognized residual tumor, usually presents at least 2 years following breast conservation treatment. Normal parenchymal enhancement usually is diminished in breast irradiation. Recurrent tumor may therefore be readily visible in the postirradiation breast,” they said.

False-positive findings are not a problem with high-resolution MRI and correct procedures. Dr. Newstead said. “When we find something on MRI that isn’t there on mammography or ultrasound, typically we’ll bring the patient back for a repeat ultrasound and mammogram. If we see something, we’ll do a biopsy right then.”

“Early detection of local recurrence improves long-term survival, but postoperative mammographic and ultrasonographic evaluation often is limited in patients with dense, fibroglandular tissue and postsurgical or postradiation fibrosis,” the authors wrote, noting that recurrent tumor exhibits early enhancement.

“MR is a sensitive modality for detection of early recurrent tumor, and breast cancer recurrence must be differentiated from acute and subacute postradiation changes. Most recurrent tumor, unlike unrecognized residual tumor, usually presents at least 2 years following breast conservation treatment. Normal parenchymal enhancement usually is diminished in breast irradiation. Recurrent tumor may therefore be readily visible in the postirradiation breast,” they said.

False-positive findings are not a problem with high-resolution MRI and correct procedures. Dr. Newstead said. “When we find something on MRI that isn’t there on mammography or ultrasound, typically we’ll bring the patient back for a repeat ultrasound and mammogram. If we see something, we’ll do a biopsy right then.”

“The MR is looking at the new blood vessel growth, or angiogenesis, in tumors and it’s a functional test in that sense, so we see lesions that may not show up on mammograms, especially in dense breasts. And there are some tumors that grow in such a way that makes them more difficult to perceive on a mammogram,” she added.

“Patients underwent imaging in the prone position with the breasts gently immobilized within lateral compression plates. Contrast injection was made with IV administration of 0.1 mmol/kg gadodiamide followed by a 20-mL saline flush at the rate of 2.0 mL per second. MR images were acquired using a 1.5-T scanner with use of a dedicated breast coil,” the investigators said. “That’s becoming less of an issue as our magnets are getting faster and we don’t have to make as many compromises; so I would say that any person with a fairly modern technique, modern breast coil should be able to achieve satisfactory resolution both spatially and temporally,” she said.

MRI has found a home at the University of Chicago’s breast imaging section, not only for pretreatment assessment but also to detect cancer recurrence post treatment and to screen high-risk women. “Early detection of local recurrence improves long-term survival, but postoperative mammographic and ultrasonographic evaluation often is limited in patients with dense, fibroglandular tissue and postsurgical or postradiation fibrosis,” the authors wrote, noting that recurrent tumor exhibits early enhancement.

“MR is a sensitive modality for detection of early recurrent tumor, and breast cancer recurrence must be differentiated from acute and subacute postradiation changes. Most recurrent tumor, unlike unrecognized residual tumor, usually presents at least 2 years following breast conservation treatment. Normal parenchymal enhancement usually is diminished in breast irradiation. Recurrent tumor may therefore be readily visible in the postirradiation breast,” they said.

False-positive findings are not a problem with high-resolution MRI and correct procedures. Dr. Newstead said. “When we find something on MRI that isn’t there on mammography or ultrasound, typically we’ll bring the patient back for a repeat ultrasound and mammogram. If we see something, we’ll do a biopsy right then.”

“Early detection of local recurrence improves long-term survival, but postoperative mammographic and ultrasonographic evaluation often is limited in patients with dense, fibroglandular tissue and postsurgical or postradiation fibrosis,” the authors wrote, noting that recurrent tumor exhibits early enhancement.

“MR is a sensitive modality for detection of early recurrent tumor, and breast cancer recurrence must be differentiated from acute and subacute postradiation changes. Most recurrent tumor, unlike unrecognized residual tumor, usually presents at least 2 years following breast conservation treatment. Normal parenchymal enhancement usually is diminished in breast irradiation. Recurrent tumor may therefore be readily visible in the postirradiation breast,” they said.