Original Study

Characteristics and Outcomes of BI-RADS 3 Lesions on Breast MRI

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Abstract

In a study of the imaging findings prompting a Breast Imaging Reporting and Data System (BI-RADS) 3 assessment and reports of their outcomes, we assessed 199 breast MRI lesions assigned a BI-RADS 3 assessment. Of these, 80 (40%) of 199 were non–mass enhancement, 61 (31%) of 199 were a single focus and 58 (29%) of 199 were masses; of the 131 lesions with appropriate follow-up, 4 (3%) were diagnosed as malignant within a 2-year follow-up period. Despite limited data on the use of BI-RADS 3 at breast MRI, there is a low malignancy rate of 3%.

Background: There are few data regarding the use and outcomes of Breast Imaging Reporting and Data System (BI-RADS) 3 assessment on breast magnetic resonance imaging (MRI). The aim of this study was to describe the imaging findings prompting a BI-RADS 3 assessment and to report their outcomes, including the timing of follow-up examinations. **Patients and Methods:** We performed a retrospective study evaluating 199 breast lesions in 186 patients who were assigned a BI-RADS 3 assessment on breast MRI over a 5-year period. Clinical and imaging features were recorded. For outcomes analysis, lesions were considered benign if they showed 2 years of MRI stability, if they were declared benign during follow-up, or if the patient underwent biopsy with benign pathology results. Clinical and imaging features of BI-RADS 3 lesions associated with malignancy were assessed by the Fisher exact test, with $P < .05$ considered significant. **Results:** Of the 199 breast MRI lesions assigned a BI-RADS 3 assessment, 80 (40%) of 199 were non–mass enhancement, 61 (31%) were a single focus, and 58 (29%) were masses. A total of 131 lesions (66%) were eligible for outcome analysis after excluding those lost to follow-up; 4 (3%) were diagnosed as malignant within the 2-year follow-up. Masses assigned a BI-RADS 3 assessment were more likely to be malignant during follow-up than non–mass enhancement or single focus ($P < .05$). **Conclusion:** Despite limited data on the use of BI-RADS 3 at breast MRI, there is a low malignancy rate of 3% at our institution. Additional studies are needed to further define the appropriate use of BI-RADS 3 on breast MRI.

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Introduction

Breast magnetic resonance imaging (MRI) is a powerful tool used in the diagnosis of breast cancer in specific populations of women, where it is used for screening women at high risk for breast cancer, assessing of extent of disease with a known cancer, and evaluating certain specific symptoms.[1] The American College of Radiology Breast Imaging Reporting and Data System (BI-RADS) provides a lexicon for breast MRI with final assessments that are linked to recommendations for care.[2] The BI-RADS 3 category was initially developed for mammographic lesions characterized as "probably benign," with an estimated cancer risk of < 2%.[3,4] The original intention of BI-RADS category 3 was to limit the number of biopsies performed with an ultimately benign outcome for findings that could not be initially characterized as definitively benign. The use of this category is less clear in MRI, and this is even more challenging given the relatively small amount of data available for validation and the higher risk status of patients undergoing breast MRI.

The 5th edition of the American College of Radiology BI-RADS atlas describes 2 MRI findings that qualify for a BI-RADS 3 assessment: a solitary enhancing focus separate from background

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without a high T2 correlate on a baseline examination, and a circumscribed mass on a baseline examination with benign characteristics. It is suggested that benign parenchymal enhancement (BPE) does not qualify for BI-RADS 3 follow-up. Radiologists are encouraged to characterize enhancement as benign BPE (BI-RADS 1) or suspicious non−mass enhancement (NME) (BI-RADS 4 or 5). If the findings are thought to be hormonal in nature (such as scanning premenopausal women outside of week 2 of the menstrual cycle, or postmenopausal women receiving hormone replacement therapy), the BI-RADS atlas suggests a BI-RADS 3 assessment with a short-term follow-up, with repeat examination during the optimal time of the menstrual cycle (week 2) or several weeks after stopping hormone replacement therapy.[2] Distinguishing benign from suspicious enhancement is a challenge and can lead to false-positive interpretations and unnecessary biopsies.[5-7]

These guidelines are useful given the variable interpretation of BI-RADS 3 between individuals and institutions.[8,9] Reevaluation of the use of BI-RADS 3 is important to determine if the initial score was appropriate and if specific imaging features could have prompted enough suspicion to warrant biopsy at an earlier time point.[10] The previously reported frequencies of BI-RADS 3 assessments on breast MRI ranged from 6% to 24%, with a cancer yield of 0.06% to 10%.[1,11-23] Although a 6-month, 12-month, and 24-month schedule of follow-up examinations is often recommended for stable, probably benign findings (unless interval changes prompt biopsy or a declaration of benignity, similar to mammography), actual MRI follow-up times can be variable.[24]

Iterative reevaluation and potential modification of BI-RADS 3 usage in MRI is warranted, given the variability in practice and significant implications of costs, resource utilization, variable insurance coverage, and potential patient anxiety with follow-up recommendations. The aims of this study were 3-fold: to characterize and report findings assigned a BI-RADS 3 assessment on MRI at our academic institution, to evaluate patient follow-up intervals when assigned a BI-RADS 3 assessment on MRI, and to describe outcomes, including cancer detection rates, for lesions designated as BI-RADS 3 on MRI.

Patients and Methods

Study Population

This was a Health Insurance Portability and Accountability Act−compliant, institutional review board−approved retrospective study, for which the requirement of informed consent was waived.

At our institution, patients who undergo breast MRI examination receive a single overall BI-RADS assessment for both breasts. Cases were identified if they received a BI-RADS 3 on a screening or diagnostic MRI, determined to be the index examination for the finding prompting the BI-RADS 3 assessment, with subsequent consecutive follow-up MRIs identified for the same patient. A total of 243 MRIs out of 2946 performed during the study period of February 23, 2011, through June 29, 2016, were given a BI-RADS 3 designation (8.2%). Lesions recommended for short-term MRI follow-up after a benign MRI-guided biopsy were excluded from the study (87 lesions during the study period).

The MRIs included in the study were interpreted by one of 14 radiologists who exclusively or predominantly practice breast imaging, with a range of experience between 1 and 41 years. All radiologists with less than 20 years of experience had dedicated breast imaging fellowship training. The mean individual BI-RADS 3 assessment usage on MRI among these radiologists was 9.2% (standard deviation, 4.5%). The final study population consisted of 199 lesions in 186 patients given a new BI-RADS 3 designation, whereby subsequent BI-RADS 3 MRIs obtained during the follow-up period were grouped within the same lesion. Each BI-RADS 3 assessment was made on the basis of the judgment of the individual reading radiologist.

Table 1 Characteristics of 186 Patients With BI-RADS 3 Assessment on MRI

Characteristic	Value
Age (years) (range)	50.3 ± 0.8 (25-81)
High-risk patients	125 (67%)
Patients with history of breast cancer	64 (34%)
Study Indication	
Screening	141 (75%)
Clinical problem solving	27 (15%)
Extent of disease	18 (10%)

Abbreviations: BI-RADS = Breast Imaging Reporting and Data System; MRI = magnetic resonance imaging.

Outcomes Analysis

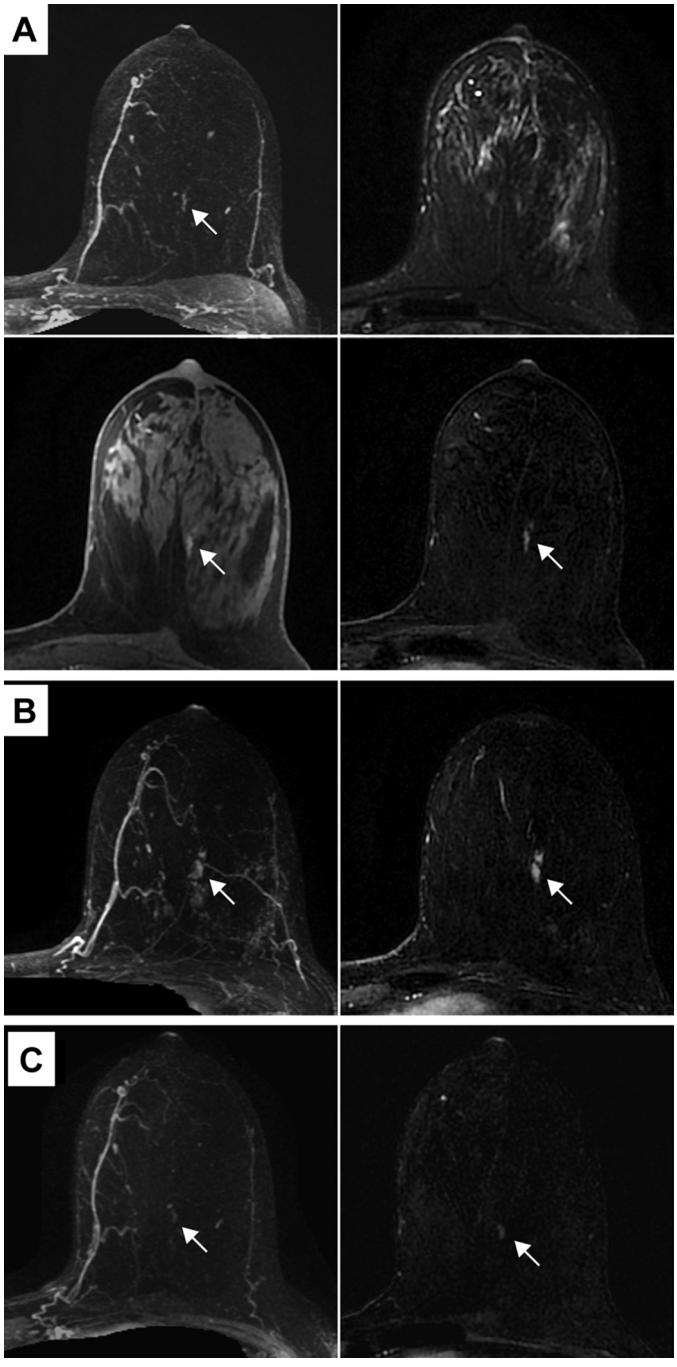
One hundred thirty-one of the 199 total lesions were included in the outcomes analysis. Criteria for inclusion in the outcome analysis included lesions that resolved on MRI (prompting a BI-RADS 1 assessment), lesions determined to be benign on MRI (prompting a BI-RADS 2 assessment), or lesions determined to be suspicious enough to warrant biopsy (BI-RADS 4 or 5 assessment), with subsequent biopsy performed, within a 2-year follow-up period.

Sixty-eight of the 199 total lesions were excluded from the outcomes analysis because of loss to follow-up. This occurred if a lesion's final MRI BI-RADS assessment within a 2-year follow-up period remained a BI-RADS 3 and the patient did not return for subsequent MRI examinations, or if the lesion was recommended for biopsy (BI-RADS 4 or 5) and the biopsy was not performed. Sampled high-risk lesions were also required to have underwent surgical excision to determine if malignancy was found on surgical excision. A single biopsy-proven high-risk lesion demonstrating radial scar on pathology was lost to follow-up regarding surgical excision and was therefore excluded from the outcomes analysis.

Data Collection

Patient information was recorded, including patient age, personal history of breast cancer, or personal history of a high-risk lesion. The patient was determined to be at high risk for breast cancer by the ordering physicians, who utilized models assessing risk based on genetic predisposition, personal history of breast cancer or a high-risk lesion, family history of breast cancer, or history of chest irradiation. High-risk lesions included atypical ductal hyperplasia, atypical lobular hyperplasia, lobular carcinoma-in-situ, papilloma with atypia, or radial scar. MRI indication, including screening for

Figure 1 **BI-RADS 3 Lesion With Benign Biopsy Results on Follow-up. Fifty-year-old Woman Undergoing Baseline High-Risk Screening Breast MRI. (A) MRI of Left Breast including MIP (Top Left), T2 STIR (Top Right), T1 Fat-Saturated Postcontrast (Bottom Left), and T1 Postcontrast Subtraction (Bottom Right) Images Demonstrate Focal NME in Central Left Breast (Arrows), Thought to be Probably Benign. (B) Ten-month Follow-up MRI Shows Increased NME With Linear Distribution in Same Region on MIP (Left) and Postcontrast Subtraction (Right) Images, Prompting Biopsy that Yielded Benign Breast Tissue With Stromal Fibrosis. (C) Seven-month Postbiopsy Follow-up MRI Demonstrates Near-complete Resolution of Findings on MIP (Left) and Postcontrast Subtraction (Right) Images**



Abbreviations: BI-RADS = Breast Imaging Reporting and Data System; MIP = maximum-intensity projections; MRI = magnetic resonance imaging; NME = non—mass enhancement; STIR = short tau inversion recovery.

cancer, diagnostic problem solving, or determining extent of disease in the setting of known breast cancer, was recorded. Follow-up MRI data were recorded, including time to follow-up, BI-RADS assessments, and biopsy pathology if available.

MRI Acquisition Protocol

Breast MRIs were performed on a 1.5 T GE Discovery using a 16-channel dedicated breast surface coil (Sentinelle by InVivo), a 3.0 T Siemens Trio using a 16-channel dedicated breast coil (Sentinelle by InVivo), or a 3.0 T Siemens Skyra using a 16-channel Siemens dedicated breast coil. A total of 152 lesions (76% of 199 total lesions) in 145 patients were scanned on a 1.5 T scanner, and 47 lesions (24% of 199 total lesions) in 41 patients were scanned on a 3.0 T scanner. Until 2016, the imaging protocol on all scanners included prone imaging with a 3-plane localizing sequence, an axial non−fat-suppressed T1-weighted sequence, an axial fat-suppressed T2-weighted sequence, and dynamic axial T1-weighted fat suppressed sequences before and 3 times after the intravenous administration of 0.1 mmol/kg of Multihance with subtraction images (Bracco Diagnostics, Monroe Township, NJ). An additional high-resolution delayed postcontrast T1-weighted fat-suppressed sequence was also obtained. Beginning in January 2016, high-risk screening MRIs included only 2 postcontrast sequences, while diagnostic examinations maintained the original protocol. Maximum-intensity projections were generated from the first postcontrast T1-weighted subtraction images. The T1-weighted fat-saturated pre- and postcontrast series were obtained with an in-plane resolution of 0.7×0.7 mm, with a slice thickness of 1 mm on the 3.0 T MRI units and a slice thickness of 2 mm on the 1.5 T unit.

Statistical Analysis

Summary statistics including time to follow-up MRIs, biopsy rates, and cancer detection rates were performed with Matlab software (Matlab, Natick, MA). Fisher exact probability tests were used to determine associations between cancer diagnosis and categorical variables of clinical characteristics due to small sample sizes, with $P < .05$ considered statistically significant.

Results

Patient Population

A total of 199 lesions in 186 patients were assigned a BI-RADS 3 assessment on breast MRI. The average patient age was 50.4 years (range, 25-81 years) at the time of the index MRI examination, defined as the first examination for which a specific imaging finding prompted a BI-RADS 3 assessment. All patients were female, and 132 patients were classified as being at high risk for breast cancer by clinical history. Seventy lesions were in 64 patients who had a current or prior diagnosis of breast cancer. Eighteen patients had a current diagnosis of breast cancer and were undergoing MRI to evaluate the extent of disease. The clinical indication for the index breast MRI examination was classified as for high-risk screening, clinical problem solving, or determining extent of disease for a known breast cancer. The majority of patients (141/186, 75.4%) obtained an MRI for screening because of increased risk for breast cancer (Table 1).

Imaging Characteristics

The most common MRI finding prompting a BI-RADS 3 assessment was NME (80/199, 40%), followed by a single focus (61/199, 31%) and a mass (58/199, 29%). There was no significant relationship between MRI indication and imaging finding by the Fisher exact test ($P = .75$).

Outcomes of BI-RADS 3 Lesions on MRI

Sixty-eight (34%) of 199 cases were lost to follow-up. One hundred thirty-one cases (66%) were either declared benign by MRI (115/131, 88%) or by sampling via biopsy (15/131, 12%) within a 2-year period after the index MRI examination. Of the 131 lesions included in the outcomes analysis, 4 (3%) of 131 were malignant. Examples of a sampled lesion with benign pathology, a sampled lesion with malignant pathology, and a lesion that resolved on follow-up MRI are shown in Figures 1, 2, and 3.

Analysis of Lesions

Of the 15 lesions that were sampled, 10 were benign (66%), 1 was a high-risk lesion (7%), and 4 were malignant (27%), yielding an overall cancer detection rate of 3% for lesions with follow-up (4/131). Three lesions (20% of the 15 sampled lesions) were sampled because of patient or clinician request, all of which demonstrated benign histology. Twelve lesions (80% of the 15 sampled lesions) were sampled on the basis of a change in the imaging appearance on follow-up imaging, including increased size or increased irregularity of a mass shape or margin. Of the 12 lesions that were sampled because of a change in imaging appearance, 4 demonstrated malignant histology, 1 demonstrated a high-risk histology, and 7 demonstrated benign histology.

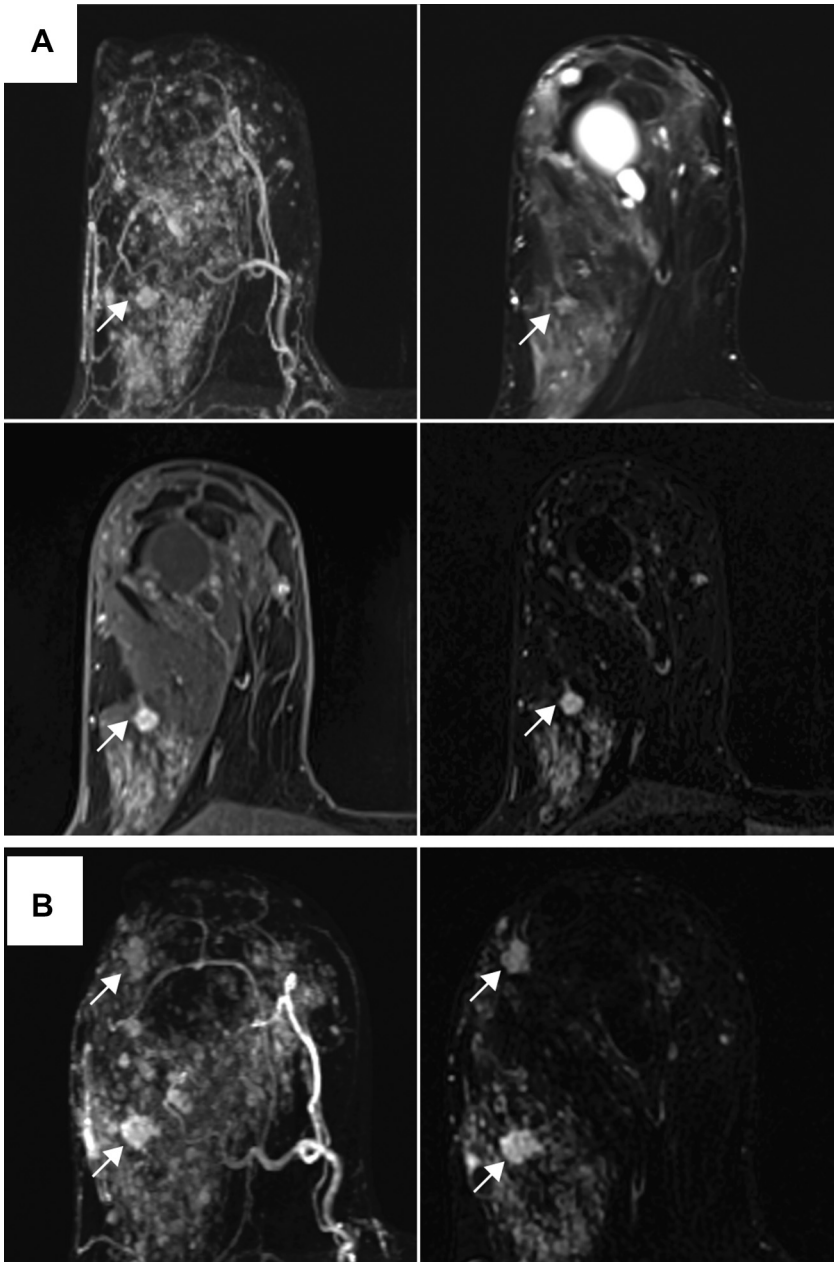
Characteristics of patients with malignant pathology results are listed in Table 2. The single high-risk lesion demonstrated lobular carcinoma-in-situ on biopsy pathology without upgrade on surgical excision. The positive predictive value 3 (PPV3) for cancer only was 27% (4/15). MRI findings of all sampled lesions included 8 NME (54%), 5 masses (33%), and 2 foci (13%). A total of 13% of sampled NME were malignant (1/8), 60% of sampled masses were malignant (3/5), and 0 of 2 sampled foci were malignant.

There was a significant association between MRI finding type and presence of final malignant pathology by Fisher exact test for the 131 lesions with follow-up ($P = .041$), where 75% of the malignant findings were masses (n = 3), 25% was NME (n = 1), and none was a focus. There was also a significant association between MRI indication and presence of final malignant pathology by Fisher exact test for lesions with follow-up ($P = .046$), where 50% of malignant lesions had an initial MRI indication of screening (n = 2), 50% had an indication of problem solving (n = 2), and none had an indication of evaluating for extent of disease. There was no significant relationship between patient high-risk status or history of breast cancer and final pathology result ($P > .05$). There was also no significant relationship between MRI finding, MRI indication, patient high-risk status, or patient history of breast cancer and decision to perform biopsy ($P > .05$).

Time to Follow-up

Patients remained in the BI-RADS 3 follow-up protocol either until the index lesion was found to be benign (BI-RADS 1 or 2) or it became suspicious enough to prompt biopsy (BI-RADS 4 or 5). Of the 127 benign lesions, 52 were declared benign by the end of the 6th month from the index examination (41%), 34 were declared

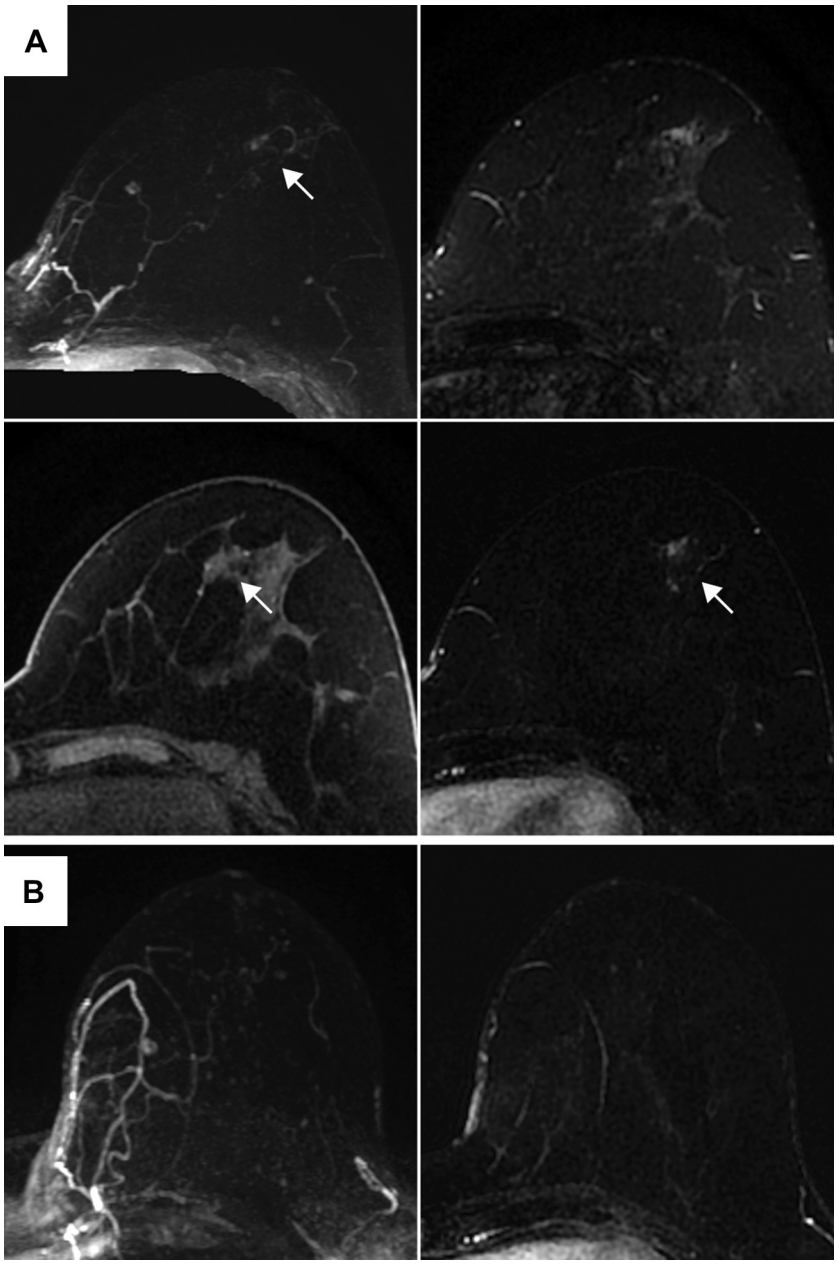
Figure 2 BI-RADS 3 Lesion With Malignant Biopsy Results on Follow-up. Forty-one-year-old Woman Undergoing Baseline High Risk Screening Breast MRI. (A) MRI of Right Breast including MIP (Top Left), T2 STIR (Top Right), T1 Fat-Saturated Postcontrast (Bottom Left), and T1 Postcontrast Subtraction (Bottom Right) Images Demonstrate Marked Background Parenchymal Enhancement and Solitary Circumscribed mass in Right Posterior Breast Thought to Likely be Benign (Arrow), With BI-RADS 3 Assessment Assigned. At 6-Month Follow-up MRI Examination, mass was Stable; However, (B) 12-Month Follow-up MRI Reveals Increased Size, Irregular Shape, and Spiculated Margins of Posterior Right Breast mass in Addition to Anterior Right Breast mass (Arrows), Prompting 2-Site Biopsy. More Anterior mass Demonstrated Moderately Differentiated Infiltrating Lobular Carcinoma and more Posterior mass Demonstrated Well-differentiated Infiltrating Ductal Carcinoma on Pathology



Abbreviations: BI-RADS = Breast Imaging Reporting and Data System; MIP = maximum-intensity projections; MRI = magnetic resonance imaging; STIR = short tau inversion recovery.

benign between the 7th month to the end of the 12th month (27%), 28 were declared benign between the 13th month to before the start of the 24th month (22%), and 13 were declared benign 24 months or later if the patient was late for follow-up (10%). Of the 131 lesions with follow-up, 98 were on the BI-RADS 3 follow-up protocol for 1 examination (75%), 28 were on the path for 2 examinations (21%), 4 were on follow-up protocol for 3 examinations (3%), and only 1 was on the follow-up protocol for 4

Figure 3 **BI-RADS 3 Lesion that Resolved on Follow-up Imaging. Fifty-four-year-old Woman Undergoing High-Risk Screening Breast MRI. (A) MRI of Left Breast including MIP (Top Left), T2 STIR (Top Right), T1 Fat-Saturated Postcontrast (Bottom Left), and T1 Postcontrast Subtraction (Bottom Right) Images Demonstrate Subtle Focal NME in Upper Outer Quadrant (Arrows), Thought to be Probably Benign. (B) Six-month Follow-up MRI Demonstrated Resolution of NME, Prompting BI-RADS 2 Assessment**



Abbreviations: BI-RADS = Breast Imaging Reporting and Data System; MIP = maximum-intensity projections ; MRI = magnetic resonance imaging; NME = non—mass enhancement.

examinations (1%). The average time from the index examination to the first MRI follow-up examination was 8.6 months (± 0.6-month standard error), to the second follow-up was 17.7 months (± 1.5 months), to the third follow-up 32.9 months (± 5.8 months), and to the fourth follow-up was 35.7 months for the single case requiring 4 follow-up examinations.

Of the 15 patients who underwent biopsy, the decision to biopsy was made by the end of the 6th month from the index examination in 4 cases (27%), between the 7th to the end of the 12th month in 9 cases (60%), and between the 13th to the 24th month in 2 cases (13%). There was no significant relationship between number of follow-up examinations before biopsy and presence of malignancy ($P > .05$).

Table 2 Patient, MRI, and Pathology Characteristics of Sampled Malignant Lesions

Age (Years)	MRI Indication	Patient Risk Factors	Lesion Type	Follow-up Before Biopsy	Time to Biopsy (Months)	Pathology	LN Status[a]
41	Screening	Prior ADH	Mass	2	12	IDC and DCIS, grade 1	+
41	Screening	Prior ADH	Mass	2	12	ILC and LCIS, grade 2	+
74	Problem solving	Prior DCIS, family history	NME	1	6	IMC, grade 2	+
43	Problem solving	Family history	Mass	1	4	IMC, grade 2	–

ADH = atypical ductal hyperplasia; DCIS = ductal carcinoma-in-situ; IDC = invasive ductal carcinoma; ILC = invasive lobular carcinoma; IMC = invasive mammary carcinoma; LCIS = lobular carcinoma-in-situ; LN = lymph nodes at sentinel node biopsy; MRI = magnetic resonance imaging; NME = non–mass enhancement.
[a]Positive or negative for cancer.

Discussion

While there are robust data to support specific criteria for a BI-RADS 3 assessment at mammography and breast ultrasound, data supporting the use of BI-RADS 3 for breast MRI are limited.[2] This study aimed to describe the imaging findings prompting a BI-RADS 3 assessment, describe follow-up compliance, and report the outcomes. A total of 243 (8.2%) of 2946 MRIs performed during the 64-month study period were assigned BI-RADS 3. Of the included 131 lesions with eligible outcomes data, the subsequent cancer detection rate was 3%, which is similar to other studies.[11-21] In our study, masses were given an initial BI-RADS 3 assessment in 29% of cases, and single focus was given a BI-RADS 3 assessment in 31% of cases, which is also similar to previously published data. NME was given a BI-RADS 3 assessment in 40% of our cases, which is higher than the cases for which Chikarmane et al[11] recommended follow-up for NME (18.3%). However, it is not typical to recommend follow-up for moderate or marked BPE at our institution, while this was the reason for follow-up in 20.9% of cases in the work by Chikarmane et al. This separate category of moderate or marked BPE, which was not specified as a separate finding in our work, may account for the differences. Further, this highlights the uncertainty in differentiating between NME and BPE.

All of the cancers diagnosed in our cohort were sampled within 12 months from the initial examination, confirming the appropriateness of short term follow-up. Additionally, 114 (90%) of 127 benign lesions initially assigned a BI-RADS 3 were declared benign before the 24-month follow-up examination, which is similar to previous reports. This highlights the importance of early MRI reassessment to appropriately spare a prolonged follow-up period, given the significant expense of the MRI technique.

All cancers diagnosed during the follow-up period were in patients with known risk factors. This was also seen in previous studies and suggests that a BI-RADS 3 assessment be used with caution in this population. Further, none of the cancers diagnosed during the follow-up period had an initial MRI indication of evaluating for extent of disease in the setting of a known breast cancer. This may be the result of a lower threshold to biopsy suspicious findings rather than assigning a BI-RADS 3 assessment recommending follow-up in situations that may affect surgical management.

Of the 4 lesions ultimately diagnosed as cancer during the follow-up period, 3 were masses and 1 was non–mass enhancement. All BI-RADS 3 foci in our population were benign. This is a slightly different distribution than the previous study by Chikarmane et al,[11] which found that only 2 (18%) of 11 malignancies were masses, 4 (36%) of 11 were non–mass enhancement, 4 (36%) of 11 were foci, and 1 (9%) of 11 was architectural distortion. Because the sample sizes of malignant BI-RADS 3 findings in both studies were small, this suggests that further studies are needed to determine whether the type of finding itself confers a risk of malignancy.

While the Breast Cancer Surveillance Consortium has well-established benchmarks for performance metrics in screening mammography, determining such benchmarks for MRI is an area of active research.[25] Despite a small sample size, our reported PPV3 of 27% (4/15 lesions) is within the 20% to 50% PPV3 BI-RADS benchmark for suspicious lesions sampled after detection on screening MRI.[26] Recent institutional studies have also reported a wide range of PPV3 values when stratified by screening and diagnostic indications.[27,28] The PPV3 for lesions initially assessed as BI-RADS 3 on MRI that subsequently changed imaging appearance enough to warrant biopsy (upgrade to BI-RADS 4 or 5) is still not well established and warrants future research.

Our study has several limitations. Given that this was a retrospective study, there was a lack of standardized interpretive criteria used in a prospective manner to guide the interpreting radiologists' usage of the BI-RADS 3 assessment on MRI. Because only 8% of MRI examinations during the study period were assigned a BI-RADS 3 assessment, there was also a small sample size of BI-RADS 3 lesions. While the sample size is a challenge, this may also reflect an appropriately low utilization rate of this BI-RADS 3 assessment on MRI. Additionally, 68 (34%) of 199 of patients were lost to follow-up, and although this is similar to previous reports of compliance for MRI follow-up of BI-RADS 3 lesions, this could impose a possible selection bias.[13,15,24] This could possibly reflect the impact of insurance coverage and the consistent lack of payment for this costly advanced short-interval imaging study. Some of the MRIs included in our study were also performed before the publication of the 5th edition of BI-RADS, which expanded the MRI BI-RADS lexicon, and may have affected practice patterns of BI-RADS 3 use.[2]

This study suggests future directions of work. It is of interest that only women at increased risk for cancer were diagnosed with breast cancer after being assigned a BI-RADS 3 assessment. This may allow more tailored and personalized recommendations for breast MRI follow-up based on clinical history. Additionally, our study reveals that all cancers were diagnosed by the 12-month follow-up

interval. This suggests that further research may be warranted regarding the optimal timing of follow-up examinations for certain patients with MRI-only findings.

Conclusion

Breast lesions assigned a BI-RADS 3 assessment on breast MRI have a low malignancy rate of 3% at our institution, similar to that designated for mammographic findings. Among BI-RADS 3 lesions that ultimately proved to be malignant, all were in patients with known risk factors, all were detected within 12 months of the initial examination, and 3 (75%) of 4 were masses. Our findings suggest that the BI-RADS 3 assessment category is successful when applied to breast MRI despite limited data on this topic, and our study provides direction for future research on the appropriate usage of BI-RADS 3 on MRI.

Clinical Practice Points

- While the use of BI-RADS 3 assessment is well described for mammographic and ultrasound breast imaging findings, use of this category is less clear in MRI because there are few studies for validation.
- This study adds to the literature to describe current uses of BI-RADS 3 assessment on breast MRI and validates its current use with outcomes data.
- With a low malignancy rate of 3% at our institution, this study confirms that current usage of BI-RADS 3 on breast MRI is appropriate.

Disclosure

The authors have stated that they have no conflict of interest.

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