Proposed Biopsy Performance Benchmarks for MRI Based on an Audit of a Large Academic Center

The Problem
- The high sensitivity of MRI makes it an extremely useful modality for evaluation of breast lesions.
- The American College of Radiology (ACR) has established practice guidelines for the performance of breast MRI requiring each facility to establish and maintain a medical outcomes audit program.
- Unlike the well-established benchmarks for screening and diagnostic mammography (MG), the audit requirements for breast MRI have not been fully delineated.
- BI-RADS is a system developed by radiologists for reporting breast imaging results which divides findings into 6 categories: 1 and 2 imply a benign finding, 3 is a probably benign finding that warrants short interval follow-up, 4 and 5 require biopsy and 6 implies a biopsy proven cancer.

Aim/Goal
To evaluate breast MRI biopsy performance using established MG benchmarks, from a single academic institution and to review whether these benchmarks could be applied to a breast MRI practice.

The Team
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The Interventions
- In order to gather current performance data, a retrospective review was performed looking at all breast MRIs performed at BIDMC between 10/1/2012 through 9/30/2013.
- All BI-RADS 4 or 5 studies and their associated core and/or surgical biopsy pathology results were reviewed and tabulated.
- Additionally, all BI-RADS 4 and 5 studies were reviewed based on screening and diagnostic indication.
- The following parameters were evaluated: abnormal interpretation rate, positive predictive value (PPV), cancer detection rate, percentage of minimal cancers and the number of axillary node negative cancers.

The Results/Progress to Date

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<tr>
<th>Table 1: Performance measures for breast MRI</th>
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<tbody>
<tr>
<td>BI-RADS 2/C</td>
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<tr>
<td>9.3%</td>
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<td>PPV1</td>
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<td>PPV2</td>
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<td>PPV3</td>
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64 BI-RADS 4 and 5 Patients

25 Screening
6/25, 24% Cancer
6/25, 24% Cancer

39 Diagnostic
13/39, 33% Cancer
13/39, 33% Cancer

Lessons Learned
All evaluated parameters surpassed the ACR desirable goals set forth for MG and the expected goals set by ACR in the recent BI-RADS 5 lexicon published in late 2014.

Cancer detection rate is higher with MRI as compared to the established ACR desirable goals for MG, given the higher sensitivity of MRI.

Cancer detection rate is higher when a patient is referred for a diagnostic MRI versus a screening MRI.

Auditing a breast MR practice is essential and established national MG benchmarks can be used to audit an MRI practice at least until MRI specific benchmarks are created.

Next Steps/What Should Happen Next
- Screening versus diagnostic indications will be audited separately.
- Performance measurements are currently being analyzed yearly.
- BIDMC will be one of the earliest sites to have a yearly audit program for breast MRI, which may be an ACR mandated requirement in the very near future.

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