Breast Magnetic Resonance Imaging: A Retrospective Review of Extramammary Incidental Findings in 545 Patients

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Objectives:

Breast Magnetic Resonance Imaging (MRI) studies were analysed to assess the prevalence and nature of extramammary findings across two district general hospitals (DGHs) in comparison with previously stated figures from larger university hospitals (See Table 1).

Materials and Methods:

Departmental picture archiving and communication system and Radiology Information systems identified patients undergoing breast MRI. 1.5 T MRI units were used for standardized contrast (symptomatic) and unenhanced (implant) protocol.

Results

MRI reports of 545 patients were identified between January 2013 and July 2015. 542/545 (99%) were female. 37/545 (6.8%) patients had incidental findings and all were female. The median age was 56.5 years (37–82). 26/37 (70%) patients had no history of cancer, 6/37 (16%) had previous breast cancer, 1/37 (3%) had a history of Hodgkin’s lymphoma, 4/37 (11%) were undergoing active breast cancer treatment.

Benign extramammary findings were most common (35/37; 95%). The liver was the site most reported with simple cysts (28/37; 76%) and haemangiomas (2/37; 5%). Two thyroid incidentalomas were found (2/37; 5%). One proceeded to hemithyroidectomy. Both were confirmed as benign multinodular goitre. One splenic cyst was found. One lobulated anterior mediastinal cyst and a high T2 weighted signal along the exit foraminae of the lower thoracic region was not followed up with recommended further CT and MR imaging investigations respectively.

Malignant extramammary findings were found in 2 patients (2/37; 5%). 2 metastatic breast cancer recurrences were diagnosed with sternal and pulmonary metastases respectively.

Table 1. Comparing prior literature figures of incidental findings in accordance of significance and past history of breast cancer

<table>
<thead>
<tr>
<th>Author, Year, Place</th>
<th>Type of establishment</th>
<th>Number of patients reviewed</th>
<th>History of breast cancer (%)</th>
<th>Incidental findings which altered primary diagnosis or treatment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cameron et al., 2016, United Kingdom</td>
<td>District General Hospitals</td>
<td>545</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td>Alduk et al., 2015, Croatia</td>
<td>University Hospital</td>
<td>500</td>
<td>21.4</td>
<td>24.8</td>
</tr>
<tr>
<td>Moschetta et al., 2014, Italy</td>
<td>University Hospital</td>
<td>308</td>
<td>17</td>
<td>36</td>
</tr>
<tr>
<td>Iodice et al., 2013, Italy</td>
<td>University Hospital</td>
<td>828</td>
<td>34</td>
<td>14</td>
</tr>
<tr>
<td>Rinaldi et al., 2011, Italy</td>
<td>University Hospital</td>
<td>1535</td>
<td>17.6</td>
<td>20.4</td>
</tr>
<tr>
<td>Morakrabati et al., 2003, Germany</td>
<td>University Hospital</td>
<td>1013</td>
<td>9</td>
<td>81</td>
</tr>
</tbody>
</table>

Conclusion

Incidental findings are comparatively lower across two DGHs than previously published figures from larger university hospitals. The majority of incidental findings are benign. Malignant findings are rare and are observed in patients with previous breast cancer. The findings of the study are likely to reflect MR findings in a symptomatic population with a lower proportion of patients with a past medical history of breast cancer.

Figure 1. Axial T2W image through the liver as part of breast imaging sequence which shows high signal lesions (arrows), confirmed to be cysts on follow up ultrasound

Figure 2. Coronal T2W image breast including a left sided complex high signal mass left thyroid, arrow, in field of view, follicular adenoma at surgery

Reference