Radiographic Imaging and Clinical Course of Granular Cell Tumors of the Breast
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Introduction
First described by Abrikossoff in 1926, granular cell tumors (GCT) are a very rare tumor of neural origin, with only around 6% being located in the breast. GCTs of the breast are usually benign with a 1-2% malignancy rate in all locations. In the breast, GCTs are most commonly seen in premenopausal black women. Current treatment recommendations are wide surgical excision upon diagnosis. This is due to the unknown clinical course and radiographic similarities to invasive mammary carcinoma.

Methods
Retrospective chart review of all patients with GCT of the breast from 2005-2015 by pathologic diagnosis
Histology of GCT was confirmed with immune-histochemical staining for S100 protein
Size and tumor margin status was collected
Margins defined as: negative (>1mm), close (≤1 mm), positive (tumor present)
Malignancy was determined using the Fanburg-Smith criteria
Radiographic imaging was reviewed by a breast radiologist
Recurrence was identified using screening mammography or clinical follow up

Results

<table>
<thead>
<tr>
<th>Age</th>
<th>Sex</th>
<th>Mammographic Features</th>
<th>Ultrasound Features</th>
<th>BI-RADS</th>
<th>Tumor size</th>
<th>Margins</th>
<th>Clinical follow up (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Female</td>
<td>N/A</td>
<td>Spiculated Margins Hypoechoic Posterior acoustic shadowing Avascular</td>
<td>4</td>
<td>1.7 cm</td>
<td>Negative</td>
<td>90</td>
</tr>
<tr>
<td>21</td>
<td>Female</td>
<td>N/A</td>
<td>Well circumscribed Margins Hypoechoic Posterior acoustic enhancement Avascular</td>
<td>4a</td>
<td>1.6 cm</td>
<td>Negative</td>
<td>126</td>
</tr>
<tr>
<td>29</td>
<td>Male</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>1.4 cm</td>
<td>Negative</td>
<td>N/A</td>
</tr>
<tr>
<td>40</td>
<td>Female</td>
<td>Round mass Well circumscribed No calcifications</td>
<td>Lobulated Margins Hypoechoic Posterior acoustic enhancement Avascular</td>
<td>4</td>
<td>1.2 cm</td>
<td>Close</td>
<td>3</td>
</tr>
<tr>
<td>50</td>
<td>Female</td>
<td>Spiculated mass Fatty elements No calcifications</td>
<td>Spiculated Margins Hypoechoic Posterior acoustic shadowing Avascular</td>
<td>4c</td>
<td>0.8 cm</td>
<td>Close</td>
<td>22</td>
</tr>
<tr>
<td>53</td>
<td>Female</td>
<td>Mass 1: Spiculated mass Fatty elements No calcifications</td>
<td>Mass 1: Spiculated Margins Hypoechoic Posterior acoustic shadowing Avascular</td>
<td>5</td>
<td>1.5 cm</td>
<td>Mass 1: Negative</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mass 2: Spiculated mass Fatty elements No calcifications</td>
<td>Mass 2: Spiculated Margins Hypoechoic Posterior acoustic shadowing Vascularity present</td>
<td>5</td>
<td>2.3 cm</td>
<td>Mass 2: Positive</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>Female</td>
<td>Spiculated mass Fatty elements No Calcifications</td>
<td>Spiculated Margins Hypoechoic, Posterior acoustic shadowing Vascularity present</td>
<td>4c</td>
<td>1.5 cm</td>
<td>Positive</td>
<td>6</td>
</tr>
</tbody>
</table>

Summary
The majority of masses had distinct radiographic characteristics; spiculated margins, posterior acoustic shadowing, and absence of calcifications
No recurrences were noted with a mean follow up time of 44 months

Conclusion
Granular cell tumors of the breast are almost universally benign, are unlikely to recur independent of margin status, and have distinct radiographic characteristics as outlined. Tumors with radiographic-pathologic concordance for granular cell tumor on biopsy may be treated conservatively with follow-up imaging versus surgical excision.

References

For questions/comments please email mcgreecm@njms.rutgers.edu