Improving Medical Community Awareness of the Thyroid Imaging Reporting and Data System (TI–RADS): An Active Role in Shaping Standardized Reports

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None of the other authors have a financial relationship with a commercial organization that may have a direct or indirect interest in the content.
The reporting of thyroid ultrasounds at our institution is widely variable, and the current satisfaction of radiology reports regarding thyroid nodules is not known.

The purpose of our study was to actively engage with primary care physicians with a common goal of creating standardized radiology reports regarding thyroid nodule assessment and management recommendations.
Methods

- A 12 question survey regarding current satisfaction with non-standardized thyroid nodule reporting was disseminated to the primary care physicians of our institution.  
  - [https://evms.co1.qualtrics.com/jfe/form/SV_5AuofJtMux5ffcp](https://evms.co1.qualtrics.com/jfe/form/SV_5AuofJtMux5ffcp)

- Respondents were then provided an educational document discussing Thyroid Imaging Reporting and Data Systems (TI–RADS), and were then asked if they would prefer the utilization of a proposed standardized means of reporting thyroid nodules using TI–RADS.
What is TI–RADS?

Thyroid Imaging and Reporting Data System (TI–RADS) was initially proposed in 2011 by Kwak, et al, as a standardized radiology lexicon directed at minimizing variability amongst radiology reporting of thyroid nodules.

It was inspired by the well-known BI–RADS lexicon in place for mammography, and stratifies thyroid nodules by suspicious ultrasound features associated with risk of thyroid malignancy.
What are the categories of TI–RADS?

<table>
<thead>
<tr>
<th>TIRADS</th>
<th>Description</th>
<th>Risk of Malignancy</th>
<th>Types of Nodules</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Normal Thyroid</td>
<td>0%</td>
<td>• Avascular anechoic nodule w/echoogenic specks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Vascular heteroechoic, non-encapsulated w/peripheral halo</td>
</tr>
<tr>
<td>2</td>
<td>Benign</td>
<td>&gt;5%</td>
<td>• Vascular isoechoic or heteroechoic, non-encapsulated, expansile</td>
</tr>
<tr>
<td>3</td>
<td>Probably benign</td>
<td>0%</td>
<td>• Hyper-/iso-/hypo-echoic nodule w/partially formed capsule, peripheral vascularity,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Hashimoto’s pseudonodules”</td>
</tr>
<tr>
<td>4</td>
<td>Suspicious</td>
<td>4a: 5–10%</td>
<td>• 4a–1 suspicious feature</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4b and 4c: 10–80%</td>
<td>• 4b–2 suspicious features</td>
</tr>
<tr>
<td>5</td>
<td>Probably Malignant</td>
<td>&gt;80%</td>
<td>• 4c– 3 or 4 suspicious features</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>All 5 suspicious features</td>
</tr>
<tr>
<td>6</td>
<td>Biopsy proven</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>
Educational Document

What are the 5 suspicious features?

<table>
<thead>
<tr>
<th>Solid</th>
<th>Markedly hypoechoic</th>
<th>Microlobulated/irregular margins</th>
<th>Microcalcifications</th>
<th>Taller than wide</th>
</tr>
</thead>
</table>

Results

Survey Respondents (N=34)

76.5% almost always or always found the final radiologist impression regarding thyroid nodules helpful in clinical management.
Results

- 64.7% of respondents had *never* heard of TI–RADS.

- After reviewing an educational document on TI–RADS and a proposed modified TI–RADS lexicon that included malignancy risk and recommendations regarding management, 94.1% found it to be clinically useful.
Results

- For thyroid nodule management:

<table>
<thead>
<tr>
<th>Guidelines</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rely on radiology report</td>
<td>6</td>
</tr>
<tr>
<td>Refer to endocrinology or surgery</td>
<td>18</td>
</tr>
<tr>
<td>American Thyroid Association (ATA)</td>
<td>6</td>
</tr>
<tr>
<td>American Association of Clinical Endocrinologists (AACE)</td>
<td>4</td>
</tr>
</tbody>
</table>
Results

- If a thyroid nodule biopsy is warranted:
  - 70.5% always refer their patients directly to endocrinology or surgery
  - 29.5% refer patients to radiology

Survey Respondents (N=34)
Conclusions

- The current reporting of thyroid ultrasounds, as well as the clinical management of thyroid nodules is widely variable with multiple sets of guidelines in place.
- Majority of the primary care clinicians have never heard of TI–RADS, but once educated of its implications, most found the lexicon clinically useful.
- It is prudent that radiologists not only educate clinicians, but present a united front regarding reporting of thyroid nodules including implications regarding clinical management.
Clinical Relevance

- In a world of Imaging 3.0 with the constant evolution and movement towards standardized radiology reports, we must be mindful of our integrated role in the entire decision making process, impact on patient care, and what referring clinicians require to manage patients when reporting thyroid nodules.

- This project demonstrates the need for a unified front towards cohesive patient care and opportunities for future quality improvement efforts that can be achieved at any institution.
References

- Haugen BR, Alexander EK, et al. 2015 American Thyroid Association Management Guidelines for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer; 2016: 26(1).
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Thank you for watching!