Controversies in Thyroid and Parathyroid Surgery

Moderator - Joe Sniezek, MD
Steve Bayles, MD
Marc Coltrera, MD
Kathleen Stickney, MD

Swedish Cancer Institute
Virginia Mason Medical Center
University of Washington
Polyclinic Otolaryngology
32 y/o woman referred for evaluation of thyroid mass by her PCP. What is your evaluation?

1. Thyroid ultrasound
2. Thyroid and neck ultrasound
3. TSH
4. Endocrinology referral
5. surgery
2015 American Thyroid Association Management Guidelines for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer

The American Thyroid Association (ATA) Guidelines Taskforce

on Thyroid Nodules and Differentiated Thyroid Cancer

Bryan R. Haugen, M.D.¹ (Chair)*,
Erik K. Alexander, M.D.², Keith C. Bible, M.D., Ph.D.³, Gerard M. Doherty, M.D.⁴, Susan J. Mandel, M.D., M.P.H.⁵, Yuri E. Nikiforov, M.D., Ph.D.⁶,
Furio Pacini, M.D.⁷, Gregory W. Randolph, M.D.², Anna M. Sawka, M.D., Ph.D.⁹,
Martin Schlumberger, M.D.¹⁰, Kathryn Schuff, M.D.¹¹, Steven I. Sherman, M.D.¹²,
Julie Ann Sosa, M.D.¹³, David L. Steward, M.D.¹⁴, R. Michael Tuttle, M.D.¹⁵,
and Leonard Wartofsky, M.D.¹⁶
RECOMMENDATION 6

Thyroid sonography with survey of the cervical lymph nodes should be performed in all patients with known or suspected thyroid nodules. (Strong recommendation, High-quality evidence)
32 y/o woman with 2.5 cm thyroid nodule on US. Next test?

1. Palpation-guided fna in office
2. US-guided fna in office
3. Radiologist performed US-guided fna
4. surgery
2.5 cm nodule - FNA shows follicular lesion unspecified. Action?

1. Repeat FNA
2. Genetic testing
3. Recommend Observation
4. Recommend Surgery
5. Refer to endocrinologist
<table>
<thead>
<tr>
<th>Bethesda diagnostic category</th>
<th>Risk of malignancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Nondiagnostic or unsatisfactory</td>
<td>1% to 4%</td>
</tr>
<tr>
<td>II Benign</td>
<td>0% to 3%</td>
</tr>
<tr>
<td>III Atypia of undetermined significance or follicular lesion of undetermined significance</td>
<td>5% to 15%</td>
</tr>
<tr>
<td>IV Follicular neoplasm or suspicious for a follicular neoplasm</td>
<td>15% to 30%</td>
</tr>
<tr>
<td>V Suspicious for malignancy</td>
<td>60% to 75%</td>
</tr>
<tr>
<td>VI Malignant</td>
<td>97% to 99%</td>
</tr>
</tbody>
</table>

- **Action**
  - Repeat FNA
  - Observe?
  - Lobectomy/gene test
  - Total thyroidectomy
  - Total thyroidectomy
RECOMMENDATION 13

If molecular testing is being considered, patients should be counseled regarding the potential benefits and limitations of testing, and about the possible uncertainties in the therapeutic and long-term clinical implications of results. (Strong recommendation, Low-quality evidence)

Bottom Line

In summary, there is currently no single optimal molecular test that can definitively rule in or rule out malignancy in all cases of indeterminate cytology, and long-term outcome data proving clinical utility are needed.
48 y/o woman referred to you with 4 cm thyroid nodule that shows follicular lesion on FNA. Other lobe normal on ultrasound.

1. FNA
2. FNA with gene testing
3. Thyroid lobectomy with intra-operative frozen section
4. Thyroid lobectomy
43 y/o male has 2.1 cm nodule in right thyroid lobe with FNA showing PTC.

1. Surgery?
2. Inpatient vs. outpatient?
3. Post-operative calcium/rocalaltrol?
26 y/o female s/p total thyroidectomy for PTC with 5 mm node in right paratracheal region. TG is 5 ng/ml.

1. Observe
2. PET/CT
3. FNA
4. Surgery
47 y/o male referred with Ca 10.5 and PTH 78.

1. Urine calcium
2. Bone density studies
3. Localization studies
4. Endocrinology referral
• Pts who lack signs and symptoms of PTH excess or hypercalcemia
• Largest cohort of pts with PHPT
Table 3. Recommendations for the Evaluation of Patients With Asymptomatic PHPT

<table>
<thead>
<tr>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry panel (calcium, phosphate, alkaline phosphatase activity, BUN, creatinine), 25(OH)D</td>
</tr>
<tr>
<td>PTH by second- or third-generation immunoassay</td>
</tr>
<tr>
<td>BMD by DXA</td>
</tr>
<tr>
<td>Lumbar spine, hip, and distal 1/3 radius</td>
</tr>
<tr>
<td>Vertebral spine assessment</td>
</tr>
<tr>
<td>X-ray or VFA by DXA</td>
</tr>
<tr>
<td>24-h urine for:</td>
</tr>
<tr>
<td>Calcium, creatinine, creatinine clearance</td>
</tr>
<tr>
<td>Stone risk profile</td>
</tr>
<tr>
<td>Abdominal imaging by x-ray, ultrasound, or CT scan</td>
</tr>
<tr>
<td>Optional</td>
</tr>
<tr>
<td>HRpQCT</td>
</tr>
<tr>
<td>TBS by DXA</td>
</tr>
<tr>
<td>Bone turnover markers (bone-specific alkaline phosphatase activity, osteocalcin, P1NP [select one]; serum CTX, urinary NTX [select one])</td>
</tr>
<tr>
<td>Fractional excretion of calcium on timed urine sample</td>
</tr>
<tr>
<td>DNA testing if genetic basis for PHPT is suspected</td>
</tr>
</tbody>
</table>

Abbreviations: BUN, blood urea nitrogen; P1NP, procollagen type 1 N-propeptide; CTX, C-telopeptide cross-linked collagen type I; NTX, N-telopeptide of type I collagen. This evaluation is for PHPT, not to distinguish between PHPT and other causes of hypercalcemia.
47 y/o male referred with Ca 10.5 and PTH 78. What are your pre-operative imaging studies?

1. Ultrasound
2. Sestimibi scan
3. 4-D CT
4. MRI
# Parathyroid Localization and Implications for Clinical Management

John W. Kunstman, Jonathan D. Kirsch, Amit Mahajan, and Robert Udelsman

Departments of Surgery (J.W.K., R.U.) and Radiology (J.D.K., A.M.), Yale University School of Medicine, New Haven, Connecticut 06520; and Yale-New Haven Hospital (R.U.), New Haven, Connecticut 06520

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## Table 2. Comparison of Features, Radiation Dose, and Cost for Parathyroid Imaging

<table>
<thead>
<tr>
<th>Method</th>
<th>Relative Advantages</th>
<th>Relative Disadvantages</th>
<th>Calculated Effective Radiation Dose (Ref.)</th>
<th>Medicare Reimbursement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical ultrasound</td>
<td>Widely available, no radiation</td>
<td>User-dependent interpretation, limited evaluation ectopic glands</td>
<td>None</td>
<td>$125.10</td>
</tr>
<tr>
<td>Sestamibi scintigraphy</td>
<td>Ease of interpretation, assessment for ectopic glands</td>
<td>Radiation, cannot assess thyroid</td>
<td>Sestamibi/SPECT, 6.7–7.8 mSv (58, 71); SPECT/CT, +.9 mSv (72)</td>
<td>$546.76; sestamibi alone, $262.53</td>
</tr>
<tr>
<td>CT</td>
<td>Assessment for ectopic glands</td>
<td>Radiation, limited sensitivity</td>
<td>~3–6 mSv (71); varies by protocol</td>
<td>$371.83</td>
</tr>
<tr>
<td>4D-CT</td>
<td>Increased anatomical detail, assessment for ectopic glands</td>
<td>Significant radiation to thyroid, not widely available</td>
<td>10.4 mSv (58)</td>
<td>$424.51</td>
</tr>
<tr>
<td>MR Catheter-based localization</td>
<td>Assessment for ectopic glands</td>
<td>Limited sensitivity</td>
<td>None</td>
<td>$644.33</td>
</tr>
<tr>
<td></td>
<td>Less affected by prior interventions, wide</td>
<td>High level of expertise required</td>
<td>~8–19.6 mSv (71); varies by case</td>
<td>$2,310.85</td>
</tr>
</tbody>
</table>
41 y/o male with Ca 11.1 and PTH 138

1. Explain your surgical approach
2. Post-op care
3. Post-op medication
4. Post-op f/u