INCIDENTAL THYROID NODULES AND PROMINENT LYMPH NODES ON CHEST CT

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MEDIASTINAL LYMPH NODES
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NODE SIZE

- Glazer AJR 144: 261-265, 1984
- Quint AJR 147: 469-472, 1986
- Kiyono AJR 150: 771-776, 1988
MEDIASTINAL LYMPH NODE SIZE

- Jornal Brasileiro de Pneumologia
- J bras pneumol 33:133-140, 2007
  
- Mediastinal lymph node distribution, size and number: definitions based on an anatomical study
  
- Aurelino Fernandes Schmidt Júnior I; Olavo Ribeiro Rodrigues II; Roberto Storte Matheus III; Jorge Du Ub Kim IV; Fábio Biscegli Jatene V
### Table 2 - Maximum standard size per area (long axis and short axis).

<table>
<thead>
<tr>
<th>Region</th>
<th>Area (mm²)</th>
<th>Axis (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Long</td>
</tr>
<tr>
<td>1</td>
<td>117.73</td>
<td>16.23</td>
</tr>
<tr>
<td>2L</td>
<td>80.17</td>
<td>13.53&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>2R</td>
<td>149.17</td>
<td>17.79</td>
</tr>
<tr>
<td>3a</td>
<td>188.51</td>
<td>23.42</td>
</tr>
<tr>
<td>3p</td>
<td>112.99</td>
<td>15.35&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>4L</td>
<td>124.29</td>
<td>17.74</td>
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<tr>
<td>4R</td>
<td>268.76&lt;sup&gt;a&lt;/sup&gt;</td>
<td>29.54</td>
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<tr>
<td>5</td>
<td>165.13</td>
<td>19.75</td>
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<tr>
<td>6</td>
<td>116.77</td>
<td>17.20</td>
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<tr>
<td>7</td>
<td>348.56&lt;sup&gt;a&lt;/sup&gt;</td>
<td>33.30</td>
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<td>8</td>
<td>164.04</td>
<td>23.63</td>
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<tr>
<td>9L</td>
<td>145.77</td>
<td>18.76</td>
</tr>
<tr>
<td>9R</td>
<td>106.55</td>
<td>17.31</td>
</tr>
</tbody>
</table>

<sup>a</sup> Values with lower coefficients of variation.
MEDIASTINAL LAD AND CHF

- LAD present in 81% of patients with ejection fraction < 35%
- 63% of enlarged nodes were pretracheal in location with a SAD of 1.3 cm

*Erly JCAT 27: 485-489, 2003*
42% of patients with left heart failure showed LAD. 62% showed regression with treatment.

LAD group showed lower EF (34% vs 43%), larger R superior pul vein, more peribronchovascular thickening.

Chabbert  Eur Radiol 14: 481-489, 2004
MEDIASTINAL LAD AND CHRONIC INFILTRATIVE LUNG DISEASE

- 67% with CILD had LAD
- UIP, IPF, CVD, BOOP, EAA

Niimi JCAT 20: 305-308, 1996
• 44.7% with PAH had LAD
• Associated with pleural and pericardial effusions
• ? Due to increased lymphatic flow caused by right heart failure
PULMONARY ARTERY HYPERTENSION

- Dyspnea
- Fatigue
- Dizziness
- Chest pain
- Tachycardia
- Palpitations
- Syncope
- Lower extremity edema
- Cyanosis
THE THYROID NODULE

PANDEMIC

- 4-8% adults by palpation
- 41% adults by ultrasound
- 50% adults at autopsy
- 25,690 new cases annually
- 1,460 annual mortality
INCIDENTAL THYROID LESIONS SEEN ON NECK CT AND MRI

- 16% incidence (6% prosp, 10% retrosp)
- Scintigraphy, sonography, TFT, FNA, lobectomy
- Mean cost of work up was $1,158

Yousem AJNR 18: 1423-1428, 1997
THYROID NODULES FOUND ON CAROTID DOPPLER

- 9.4% incidence of one or more thyroid nodules
- 7.7% ultimately had thyroidectomy

*Steele Arch Surg* 140: 981-985, 2005
EPIDEMIC OF NODULAR THYROID DISEASE

- Assume a cost of $1,500 for US-guided FNA and cytologic analysis
- Thyroid operations cost $20,000 each
THE STAGGERING POTENTIAL
COST OF THYROID NODULES

- 35,000,000 neck and chest CT performed annually
- 10% have thyroid nodules
- 3.5 million patients with nodules
- \$1,500 \times 3.5 \text{ million} = \$5,250,000,000
- \$5,250,000,000 / 1,500 = \$3,500,000
INCIDENTAL THYROID NODULES ON NECK CT

- 3.9% prevalence of malignant nodules
- 7.4% prevalence of potentially malignant lesions
- Patients ≤ 35 y.o. have a significantly greater rate of malignancy
- CT underestimates the number of nodules relative to sonography

*Shetty AJR 187: 1349-1356, 2006*
INCIDENTAL THYROID NODULES ON NECK CT

- No distinguishing features on CT could confidently identify a lesion as malignant
- Features that warrant suspicion: punctate calcifications, larger size, younger patient

Shetty AJR 187: 1349-1356, 2006
Defer evaluation unless patient symptomatic or hyperthyroid

For you who are about to die, we salute you
Patient < 50 years old
ULTRASOUND EXAM

- Document the number and size of nodules
- Marked hypoechogenicity
- Intranodular vascularity
- Incomplete peripheral halo
- Irregular margin
- Central microcalcification
WHAT ABOUT THE 75 MILLION OTHERS OF US OLDER THAN 50 YEARS AND THE 12,000 BOOMERS REACHING 50 EACH DAY

• No one ever got sued for recommending a thyroid ultrasound for an incidental thyroid nodule found on MDCT
THYROID CANCER RISK EVALUATION

- History of radiation
- Personal or FH of endocrine neoplasms
- Male gender
- Hoarseness or dysphagia
- Adenopathy
- Thyroid function tests
NODULES < 8mm or 8-15 mm without worrisome features

- Risk factors
- Age
- Life expectancy and comorbidities
- Patient counseling to report any change
- Reevaluation with ultrasound in 6 months
• In an asymptomatic patient with normal thyroid function, no history of radiation or other thyroid cancer risk factors, this lesion is statistically most likely benign.
NODULES 8-15 mm WITH ≥ 1 WORRISOME FEATURE

- Mural thickening
- Mural nodularity
- Calcification
- FNA with ultrasound guidance
NODULES > 15 mm

- FNA with ultrasound guidance