Thyroid Nodules

Contemporary Diagnostic Radiology, Volume 34 Number 19, September 15, 2011. Thyroid nodule evaluation: a multimodality review-making sense of it all.

1. Prevalence:
   a. 50% of adults have nodules on cross sectional imaging.
   b. Majority of nodules are benign.
   c. Cancer types
      i. Papillary 75-80%
      ii. Follicular 10-20%
      iii. Medullary 3-5%
      iv. Anaplastic 1-2%

2. High risk history:
   a. Radiation therapy to head and neck.
   b. Age <20 or >70.
   c. Male.
   d. History of thyroid cancer in 1st degree relative.

3. Malignant features on Ultrasound (presence of 1 or more = 78% chance of cancer):
   a. Taller than wide.
   b. Spiculated margins.
   c. Marked hypoechogenicity (relative to adj. strap muscles).
   d. Microcalcification (<1mm).
   e. Macrocalcification (>1mm)
   f. NOT hypervascularity!!!
      ii. 1083 nodules assessed.
      iii. Vascularity was more common in benign then malignant.
      iv. In fact, malignant nodules were more commonly not vascular.

4. Benign features on Ultrasound:
   a. Isoechoic.
   b. Spongiform: more than half the volume is small cysts (like Swiss cheese).

5. Nodule seen on CT or MR has 4% chance of cancer.

6. Hot nodule on PET/CT has a 48% chance of cancer.

7. Thyroid scan is appropriate if TSH is low to look for toxic nodule.

8. When to recommend FNA:
   a. 10 mm solid nodule with microcalcification.
   b. 15 mm solid nodule with macrocalcification.
   c. 20 mm solid and cystic nodule.
   d. 20 mm cystic with mural nodule.
   e. Substantial interval growth.
   f. 5 mm solid with high risk history.
   g. 5 mm solid hot nodule on PET/CT.
   h. Any nodule when cervical lymph nodes are present.
   i. Any nodule with: speculated margins, marked hypoechogenicity, microcalcification, taller than wide, chaotic intranodular vascular spots.