Ultrasound Features of Thyroid Nodules: Distinguishing Benign From Malignant
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1. Which of the following features is a benign feature?
   
   A. Microcalcifications
   B. Irregular borders
   C. Entirely cystic
   D. Completely solid lesion

Correct Answer: C. Entirely cystic

Rationale: An entirely cystic nodule is characteristically a colloid nodule and is not associated with malignancy. A, B and D are features of malignant lesions by both ACR TI-RADS and ATA criteria.

2. Regarding lymph nodes in the setting of a solid thyroid nodule:
   
   A. FNA should be performed of the nodule and not the nodes.
   B. Lymph nodes less than 1.5 cm are not concerning, regardless of their sonographic features.
   C. All patients with a thyroid nodule should have bilateral lateral neck dissections
   D. A lymph node with calcifications is concerning for metastatic disease and may be targeted for biopsy.

Correct Answer: D. A lymph node with calcifications is concerning for metastatic disease and may be targeted for biopsy.

Rationale: Patients with a thyroid nodule should have sonographic evaluation of the cervical regions for metastatic lymph nodes prior to surgery. Suspicious nodes should be targeted at FNA to guide the surgical approach. All patients with thyroid cancer should have central neck exploration, but only those with suspicious/known metastatic adenopathy in the lateral neck require LND.

References:

Biopsy of Thyroid Nodules: When and How
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3. Regarding biopsy of thyroid nodules in children:

A. If the nodule is large enough, FNA can be done by palpation
B. A hyperfunctioning nodule should always be biopsied prior to surgery
C. All thyroid nodules in children should be performed using ultrasound guidance
D. Repeat FNA is never indicated

Correct Answer: C. All thyroid nodules in children should be performed using ultrasound guidance

Rationale: The Pediatric ATA guidelines state that: ALL FNA of thyroid nodules in children should be performed using ultrasound guidance, therefore, FNA by cytopathologists using palpation only is not recommended. The ATA guideline also states that hyperfunctioning nodules in children should ALL be surgically resected, thus obviating the need for FNA. Repeat FNA is recommended in a previously benign lesion that demonstrates interval growth or develops suspicious imaging features.

References:

Radioactive Iodine Therapy vs. Surgical Treatment of Thyroid Carcinoma
Marguerite T. Parisi, MD, MS

4. Which of the following is TRUE regarding differentiated thyroid cancer (DTC) in adults and children?

A. The biologic behavior of DTC is similar in children and adults
B. Children with DTC present with less advanced disease at diagnosis than adults with DTC
C. Children with DTC have higher local and distant recurrence rates than adults with DTC
D. Overall survival is lower in children than adults with DTC

Correct Answer: C. Children with DTC have higher local and distant recurrence rates than adults with DTC

Rationale: A is false: The biologic behavior of differentiated thyroid cancer in children is DIFFERENT than that in adults. B is false: Children with DTC present with more advanced disease at diagnosis than adults with DTC. Extensive regional nodal disease is present in 60%-80% of children compared to 30%-40% of adults. Children also have a higher rate of distant metastases compared to adults. D is false. Overall survival of children with DTC is greater than 98% compared to 40% 5-year and 20% 10-year survival rates in adults with DTC who have distant or pulmonary metastases.

References:


5. Which is true regarding the surgical treatment of differentiated thyroid cancer (DTC) in children?

   A. Children are at lower risk for endocrine-specific surgical complications than adults.
   B. Hemithyroidectomy or lobectomy is an acceptable surgical treatment in children with low risk disease.
   C. Central neck dissection is recommended for all children with DTC
   D. Use of an high-volume thyroid surgeon will minimize the risks of permanent hypoparathyroidism

Correct Answer: D. Use of an high-volume thyroid surgeon will minimize the risks of permanent hypoparathyroidism

Rationale: A is false. Children experience higher endocrine-specific complication rates than adults who undergo total thyroidectomy for DTC. B is false. While a hemithyroidectomy is deemed sufficient in adult patients without metastases and with a primary tumor <1cm, the same is not true for children. In children who underwent hemithyroidectomy for PTC, not having a total thyroidectomy was one of the greatest risk factors for developing recurrent disease. C is false. Central neck dissection is recommended at time of initial surgery in all children with nodal metastases identified in the central or lateral neck compartments during pre-operative evaluation. However, central neck dissection is associated with an increased risk of hypoparathyroidism which should be weighed against the risk for progressive disease.

References:


6. Which of the following has not been reported as a potential long-term complication of I-131 radiotherapy of pediatric differentiated thyroid cancer (DTC)?
Alternatively, the question can be phrased as follows: All of the following are reported complications of I-131 radiotherapy for treatment of pediatric differentiated thyroid cancer EXCEPT:

A. Salivary gland damage  
B. Growth arrest  
C. Pulmonary fibrosis  
D. Development of secondary malignancies

**Correct Answer:** B. Growth arrest

**Rationale:** A, C, and D are reported complications of I-131 therapy of pediatric differentiated thyroid cancer.

**References:**

1. Van Nostrand D. The Benefits and Risks of I-131 Therapy in Patients with Well-Differentiated Thyroid Cancer. Thyroid 2009; 19(12):1381-1391