ABC of thyroid cytopathology & follicular-patterned thyroid lesions & tumors

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Conflict of interest: no disclosure
DIAGNOSTIC SEQUENCE

- Clinical examination
- Ultrasound (US) echography (Doppler)
- Hormonal dosage (TSH)
- Fine-needle sampling (with or without aspiration) under US guidance: no contra-indications
5/10 mm • 25 gauge

4/10 mm • 27 gauge
NORMAL ASPECT

- Follicular cells
- Colloid substance
CYST diagnosis

• Clinico-radiologically
  – palpable or not, sometimes painful
  – hypoechoic, no vascularisation

• Cytologically
  – liquid + macrophages
  – follicular cells
CYSTS pitfalls

• « True » cysts
  – thyroglossal
  – of branchial cleft
  – of parathyroid glands...

• Cystic tumours
  – benign
  – malignant (papillary ca)
THYROIDITIS

- Acute: usually of infectious nature
- Subacute or granulomatous: mostly de Quervain’s, rarely specific
- Autoimmune: lymphocytic and Hashimoto
- Fibrous: Riedel’s (very rare)
ACUTE THYROIDITIS
diagnosis

• Neutrophilic infiltration
• Nonsuppurative, suppurative, abcess
• Cell debris
ACUTE THYROIDITIS

pitfalls

• Subcutaneous infection or generalized sepsis
• Poorly or undifferentiated carcinoma
HASHIMOTO’S THYROIDITIS diagnosis

- Lymphocytes and « small » multinucleated cells
- Follicular cells: often oxyphilic
- Colloid substance: scant or absent
HASHIMOTO’S THYROIDITIS: pitfalls

• Others thyroiditis: de Quervain, lymphocytic
• Lymphomas
• Follicular neoplasms
• Papillary carcinoma
DE QUERVAIN’S THYROIDITIS
diagnosis

• Granuloma: « large » multinucleated cells, epithelioid cells, lymphocytes, plasmocytes, neutrophils
• Follicular cells: sometimes oxyphilic
• Colloid substance: present
DE QUERVAIN’S THYROIDITIS pitfalls

- Specific granulomas: tuberculosis, sarcoidosis, mycoses
- Hashimoto’s thyroiditis
- Papillary carcinoma
TUMOURS

• Epithelial: follicular neoplasms, papillary carcinoma
• Medullary carcinoma
• Lymphoid lesions
• Others
• Metastases
EPITHELIAL TUMOURS

- Follicular neoplasms
- Papillary carcinoma
- Hürthle (oncocytic) tumours
- Poorly and undifferentiated (anaplastic) carcinomas
FOLLICULAR NEOPLASMS diagnosis

- Follicular cells
  - quantity: operator dependent
  - size of the nuclei / red blood cells
- Colloid substance
FOLLICULAR NEOPLASMS pitfalls

- Adenoma *versus* carcinoma
- Variants: with bizarre nuclei, oncocytic (oxyphilic), follicular variant of papillary carcinoma
- Hyalinizing trabecular adenoma
- Poorly differentiated carcinoma (insular)
PAPILLARY CARCINOMA
diagnosis

• Papillae and/or syncytial aspect
• Large cells with nuclei
  – size: 18-50 microns
  – pseudoinclusion, grooves, « clear »
• Psammoma bodies: rare
PAPILLARY CARCINOMA pitfalls

- Marked cystic changes
- Hyalinizing trabecular adenoma
- Medullary carcinoma
- Variants: follicular, oncocytic (oxyphilic), tall cell, columnar cell...
HÜRTHLE CELL TUMOURS

diagnosis

• No specific cytological feature of help for differentiating benign from malignant neoplasms
MEDULLARY CARCINOMA diagnosis

- Isolated cells, round and/or fusiform
- Excentrically situated nuclei in cells with a large cytoplasm where azurophilic granulations may be seen
- Amyloid substance rarely seen
MEDULLARY CARCINOMA pitfalls

- Follicular carcinoma
- Papillary carcinoma
- Poorly differentiated carcinoma (insular)
- Undifferentiated carcinoma
UNDIFFERENTIATED CARCINOMA diagnosis

- Highly pleomorphic cells: small, large, spindle shaped
- Nuclei: variable size and contour, mitoses
- Inflammatory and/or necrotic background
UNDIFFERENTIATED CARCINOMA

pitfalls

• Unsatisfactory specimen
• Normal cells: fibroblasts, macrophages
• Papillary carcinoma
• Medullary carcinoma
• Poorly differentiated carcinoma
• Mesenchymal tumour
• Metastasis
LYMPHOMAS diagnosis

- Isolated cells
- Centrally located nuclei
- High grade (diffuse B-cell type) or low grade (diffuse or nodular) lymphomas
- Immunophenotyping by flow cytometry
LYMPHOMAS pitfalls

- Hashimoto’s thyroiditis
- Medullary carcinoma (small cell)
- Poorly differentiated (insular)
- Undifferentiated
- Primitive lymphoma versus systemic lymphoma with thyroid involvement
METASTATIC TUMOURS
diagnosis and pitfalls

• Direct ENT local extension (squamous)
• Other tumours from skin (melanoma),
  breast, kidney and lung
• Please be cautious in case in the
  presence of « clear cells »!!
• Grazie!
Figure 3. Surgical and RIA treatment in patients with differentiated thyroid cancer. *, for further details of risk classification, see the American Thyroid Association guidelines (15).