WHO Classification of Tumours of Endocrine Organs, 4th Edition (2017)

- New entities, expanded genetic profiles (including papillary vs. follicular patterned tumors), updated diagnostic criteria.
- A group of **borderline thyroid tumors** was introduced: **NIFTP** (noninvasive follicular thyroid neoplasm with papillary-like nuclear features), **FT-UMP** (follicular tumor of uncertain malignant potential) and **WDT-UMP** (well differentiated tumor of uncertain malignant potential).
- Borderline tumors are equivalent to carcinoma in situ in other organs; they are placed between follicular adenoma and follicular carcinoma or follicular variant of papillary carcinoma.
- The **hobnail variant** is the latest variant of papillary thyroid carcinoma. It is clinically aggressive, has a micropapillary growth pattern and its cells have a hobnail appearance (Figure 1).
- **Follicular thyroid carcinomas are divided into minimally invasive** (capsular invasion only), **angioinvasive** (grossly encapsulated with vascular invasion) and **widely / grossly invasive**.
- **Hürthle cell (oncocytic) tumors** are reintroduced as a separate entity. These tumors include **Hürthle cell adenoma and carcinoma**; they previously were classified as oncocytc variants of follicular adenoma and carcinoma (Figure 2).
- **Turin criteria** were adopted for the diagnosis of poorly differentiated thyroid carcinoma:
  (a) Presence of a solid/trabecular/insular growth pattern,
  (b) Absence of the conventional nuclear features of papillary carcinoma and
  (c) Presence of at least one of the following: convoluted nuclei, ≥ 3 mitoses per 10 high powered fields, tumor necrosis (Am J Surg Pathol 2007;31:1256).
- Micromedullary carcinoma vs. nodular C cell hyperplasia: suspect invasion if C cell proliferation plus stromal desmoplasia; collagen type IV IHC recommended to identify invasion of basement membrane.

**NIFTP updates**

- Additional exclusion criteria are:
  1. **No true papillae** (no more 1% cutoff).
  2. **No BRAF V600E or TERT promoter mutations**
  3. No distant metastasis.
- **NIFTP is not staged** by AJCC; only size, location and margin status should be reported.
• NIFTP is accommodated in the new edition of the Bethesda system (see below).
• NIFTP is relatively common in Western practice (15%) but exceedingly rare in Asia (1%).
• Reference: Endocr Pathol 2018 Feb 23 [Epub ahead of print].

Thyroid cancer staging, AJCC, 8th Edition (2017)

I. Differentiated thyroid cancer:
• Age cutoff for staging was increased from 45 to 55 years at diagnosis.
• Minimal extrathyroidal extension detected only on histologic examination was removed from the definition of pT3 disease and therefore has no impact on either pT category or overall stage.
• pT3 has two new subcategories: **pT3a for tumors > 4 cm confined to the thyroid gland** and **pT3b for tumors of any size demonstrating gross extrathyroidal extension into strap muscles**.
• N1 disease no longer upstages a patient to stage III; if the patient’s age is < 55 years at diagnosis, N1 disease is stage I; if age is ≥ 55 years, N1 disease is stage II.
• **Identification of a psammoma body in a cervical lymph node meets the definition of pN1 disease**, whether or not malignant cells are present.
• **Microscopically positive margins (R1) have no prognostic significance** (equal to negative margins, R0); only grossly positive margins (R2) carry higher risks of recurrence and disease specific mortality.

II. Anaplastic cancers:
• Unlike previous editions in which all anaplastic thyroid cancers were classified as pT4, anaplastic cancers will now use the same pT definitions as differentiated thyroid cancer.

III. Medullary thyroid cancer:
• Has its own chapter, but most staging parameters are the same as differentiated/anaplastic thyroid carcinoma.
• Staging is age independent.

Bethesda System for Reporting Thyroid Cytopathology, 2nd Edition (2018)

* Only minor updates: 6 diagnostic categories remain the same.
• Risks of malignancy (ROM) recalculated based on post-2010 data.
• ROM is based on when NIFTP is not considered a malignancy and when NIFTP is still considered a carcinoma.
• The “usual management” of atypia (or follicular lesion) of undetermined significance (AUS/FLUS) and follicular nodules / suspicious for follicular nodules (FN/SFN) now has the option of molecular testing.
• Diagnostic criteria for category IV (FN/SFN) are revised in light of NIFTP by including cases with mild nuclear papillary thyroid carcinoma (PTC)-like changes.
• Diagnostic criteria for PTC subset of the malignant category is limited to cases with “classical” features of PTC.
• Optional notes may be used to acknowledge NIFTP for subsets of categories IV-VI with cytologic features suggestive of follicular variant of PTC/NIFTP.

Meet the Author

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