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COMMUNICATION

The 2017 Bethesda System for Reporting Thyroid Cytopathology

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The Bethesda System for Reporting Thyroid Cytopathology (TBSRTC) established a standardized, category-based reporting system for thyroid fine-needle aspiration (FNA) specimens. The 2017 revision reaffirms that every thyroid FNA report should begin with 1 of 6 diagnostic categories, the names of which remain unchanged since they were first introduced: (1) Nondiagnostic or Unsatisfactory; (2) Benign; (3) Atypia of Undetermined Significance (AUS) or Follicular Lesion of Undetermined Significance (FLUS); (4) Follicular Neoplasm or Suspicious for a Follicular Neoplasm; (5) Suspicious for Malignancy; and (6) Malignant. There is a choice of two different names for some of the categories: a laboratory should choose the one it prefers and use it exclusively for that category; synonymous terms (eg, AUS and FLUS) should not be used to denote 2 distinct interpretations. Each category has an implied cancer risk that ranges from 0% to 3% for the "Benign" category to virtually 100% for the "Malignant" category, and, in the 2017 revision, the malignancy risks have been updated based on new (post 2010) data. As a function of their risk associations, each category is linked to updated, evidence-based clinical management recommendations. The recent reclassification of some thyroid neoplasms as non-invasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP) has implications for the risk of malignancy, and this is accounted for with regard to diagnostic criteria and optional notes. Such notes can be useful in helping guide surgical management.

Introduction

With its inception, The Bethesda System for Reporting Thyroid Cytopathology (TBSRTC) established a standardized reporting system with a limited number of diagnostic categories for thyroid fine-needle aspiration (FNA) specimens. Using TBSRTC, cytopathologists can communicate their interpretations to the referring physician in terms that are succinct, unambiguous, and clinically useful.[1-3]

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TBSRTC has been widely adopted in the United States and in many places worldwide and has been endorsed by the American Thyroid Association.[4] It has improved communication and provided a uniform template for sharing data among investigators. Since its acceptance in clinical practice, however, questions have arisen over the proper use of the diagnostic categories, the associated risks of malignancy, and the appropriate management. By 2016 the time had come to consider revisions. The 2017 revision described herein was inspired by new data and new developments in the field of thyroid pathology: revised guidelines for the management of patients with thyroid nodules,[4] the introduction of molecular testing as an adjunct to cytopathologic examination, and the reclassification of the non-invasive follicular variant of papillary thyroid carcinoma as non-invasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP).[5] Much of the groundwork for this revision was laid down by a symposium entitled "The Bethesda System for Reporting Thyroid Cytopathology (TBSRTC): Past, Present, and Future" at the 2016 International Congress of Cytology in Yokohama, Japan. Preparations for the symposium began 12 months earlier with the designation of a steering group and the appointment of an international panel of 16 cytopathologists and an endocrinologist whose task was to review and summarize the published literature in English since the introduction of TBSRTC.

The symposium, moderated by Drs. Syed Ali and Philippe Vielh, took place on May 30, 2016, and the discussions and recommendations from the symposium have been summarized in a publication by Pusztaszeri et al.[6] Based on the panel's recommendation, the 6 original general categories ("Nondiagnostic/Unsatisfactory [ND/UNS]," "Benign," "Atypia of Undetermined Significance/Follicular Lesion of Undetermined Significance [AUS/FLUS]," "Follicular Neoplasm/Suspicious for a Follicular Neoplasm [FN/SFN]," "Suspicious for Malignancy [SUS]," and "Malignant") have been retained in the 2017 revision, and a revised atlas is in press, with updated and expanded chapters devoted to these categories and refined definitions, morphologic criteria, and explanatory notes.[7]

Table 1 The 2017 Bethesda System for Reporting Thyroid Cytopathology: recommended diagnostic categories.

I. Nondiagnostic or Unsatisfactory
Cyst fluid only
Virtually acellular specimen
Other (obscuring blood, clotting artifact, etc)
II. Benign
Consistent with a benign follicular nodule (includes adenomatoid nodule, colloid nodule, etc)
Consistent with lymphocytic (Hashimoto) thyroiditis in the proper clinical context
Consistent with granulomatous (subacute) thyroiditis
Other
III. Atypia of undetermined significance or follicular lesion of undetermined significance
IV. Follicular neoplasm or suspicious for a follicular neoplasm
Specify if Hürthle cell (oncocytic) type
V. Suspicious for malignancy
Suspicious for papillary carcinoma
Suspicious for medullary carcinoma
Suspicious for metastatic carcinoma
Suspicious for lymphoma
Other
VI. Malignant
Papillary thyroid carcinoma
Poorly differentiated carcinoma
Medullary thyroid carcinoma
Undifferentiated (anaplastic) carcinoma
Squamous cell carcinoma
Carcinoma with mixed features (specify)
Metastatic carcinoma
Non-Hodgkin lymphoma
Other

Adapted from Ali and Cibas[7] with permission of Springer.

Format of the report

For clarity of communication, the 2017 BSRTC continues to recommend that each report begin with a general diagnostic category. Because they are more ambiguous and less clearly descriptive, numerical designations alone (eg, "Bethesda III") are discouraged for the purposes of cytologic reporting, although the numerical designations may be used in conjunction with the category name—for example, "Atypia of Undetermined Signficance (Bethesda III)."

The 6 general diagnostic categories are unchanged and shown in upper case in Table 1. Some categories have two alternative names; a laboratory should choose the one it prefers and use it exclusively for that category; synonymous terms (eg, AUS and FLUS) should not be used to denote two distinct interpretations. Each of the categories has an implied cancer risk (ranging from 0% to 3% for the Benign category to virtually 100% for the Malignant category) that links it to an evidence-based clinical management guideline (Table 2).

For some of the general categories, some degree of subcategorization can be informative and is often appropriate (see Table 1). Additional descriptive comments (beyond such subcategorization) are optional and left to the discretion of the cytopathologist.

Notes and recommendations are not required but can be useful in certain circumstances, particularly if the cytomorphologic features raise the possibility of NIFTP. Some laboratories, for example, may wish to state the risk of malignancy associated with the general category, based on its own data or that found in the literature.

Table 2 shows revised risks of malignancy (ROMs) based on data since 2010. NIFTP has added a wrinkle in this regard by excluding the non-invasive follicular