

Comparison of 5-Tiered and 6-Tiered Diagnostic Systems for the Reporting of Thyroid Cytopathology

A Multi-Institutional Study

Massimo Bongiovanni, MD¹; Stefano Crippa, MD¹; Zubair Baloch, MD²; Simonetta Piana, MD³; Alessandra Spitale, PhD¹; Fabio Pagni, MD⁴; Luca Mazzucchelli, MD¹; Camillo Di Bella, MD⁴; and William Faquin, MD, PhD⁵

BACKGROUND: At present, thyroid fine-needle aspiration (FNA) specimens are diagnosed using a tiered classification scheme, with the most popular of these being the 5-tiered and 6-tiered systems. In this study, the authors present their institutional experiences using these 2 different systems and evaluate their efficacy based on the surgical follow-up. **METHODS:** Thyroid FNA specimens and their corresponding surgical resection specimens were collected between 2007 and 2009. The following diagnostic categories are used in both systems: unsatisfactory/nondiagnostic, benign, follicular neoplasm/suspicious for follicular neoplasm, suspicious for malignancy, and malignant. An additional category termed atypia of undetermined significance/follicular lesion of undetermined significance was used for atypical cases in the 6-tiered system. Statistical analysis was performed by comparing the different diagnostic categories. **RESULTS:** The case cohort included a total of 7686 thyroid FNA specimens representing 3962 nodules and 3724 nodules, respectively, in the 5-tiered and 6-tiered systems. Negative predictive values for the benign categories (96.9% vs 97.5%; $P = 1$) and positive predictive values for both the follicular neoplasm categories (26.5% vs 32.1%; $P = .2531$) and the malignant categories (99.1% vs 99.4%; $P = 1$) were similar. The most significant differences between the 5-tiered and 6-tiered systems were the percentage of cases classified as benign (83.9% vs 55.4%; $P < .0001$) and as follicular neoplasms (4.6% vs 23.8%; $P < .0001$). It is interesting to note that fewer patients were referred for surgery in the 5-tiered system compared with the 6-tiered one (9.1% vs 36.5%; $P < .0001$). **CONCLUSIONS:** Use of either the 5-tiered or 6-tiered reporting systems for thyroid FNA specimens can potentially affect the clinical management of patients with thyroid nodules. **Cancer (Cancer Cytopathol)** 2012;120:117-25. © 2011 American Cancer Society.

KEY WORDS: thyroid, fine-needle aspiration, reporting system, Bethesda, Italian Society for Anatomic Pathology and Cytopathology-International Academy of Pathology (SIAPEC-IAP).

Corresponding author: Massimo Bongiovanni, MD, Institute of Pathology, Via in Selva 24, CH 6600 Locarno, Switzerland; Fax: (011) 41 91 81 60 899; massimo.bongiovanni@ti.ch

¹Institute of Pathology, Locarno, Switzerland; ²Department of Pathology, University of Pennsylvania Medical Center, Philadelphia, Pennsylvania; ³Department of Pathology, Arcispedale Santa Maria Nuova, Reggio Emilia, Italy; ⁴Department of Pathology, Desio Hospital, Desio, Italy; ⁵Department of Pathology, Massachusetts General Hospital, Boston, Massachusetts

The first 2 authors contributed equally to this article.

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