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

A Multi-Institutional Study

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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.

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