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The Bethesda System for Reporting Thyroid Cytopathology Is Effective for Clinical Management of Thyroid Nodules

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Bongiovanni M, Spitale A, Faquin WC, Mazzucchelli L, Baloch ZW. The Bethesda System for Reporting Thyroid Cytopathology: a meta-analysis. Acta Cytol. 2012;56:333-9. Epub July 25, 2012; doi: 10.1159/000339959.

SUMMARY

Background

The Bethesda System for Reporting Thyroid Cytopathology (BSRTC) resulted from a conference held at the National Institutes of Health in 2007. The system led to standardization of FNA reports based on six diagnostic categories: DC I = nondiagnostic, DC II = benign, DC III = atypia/follicular lesion of undetermined significance (AUS/FLUS), DC IV = follicular neoplasm/suspicion for a follicular neoplasm (FN/SFN), DC V = suspicious for malignancy, and DC VI = malignant (1). The purpose of the present report was to perform a meta-analysis of thyroid FNA studies in order to examine the validity of the system with regard to histologic outcomes and to assess the variability of the use of the six DCs between institutions.

Methods

The authors reviewed reports published between January 2008 and September 2011 that classified thyroid cytopathology according to the Bethesda System and included surgical histopathology. Incidentally detected lesions in the surgical specimens that were not the target of the thyroid FNA were excluded from the analysis.

Results

Eight published studies that included a total of 25,445 thyroid FNAs were selected for the meta-analysis. Surgery was performed in 6362 (25%; range, 12 to 45 among institutions) of the cases. The malignant category (DC VI) was assigned to 5.4% of the FNAs (range, 2 to 16); 74% had histologic follow-up and 98.6% were malignant. The suspicious for malignancy category (DC V) was assigned to 2.6% of the FNAs (range, 1 to 6); 74% had histologic follow-up and 75.2% were malignant. The FN/SFN (DC IV) category was assigned to 10.1% of the FNAs (range, 1 to 25); 70% had histologic follow-up and 26.1% were malignant. The AUS/FLUS category (DC III) was assigned to 9.6% of the FNAs (range, 3 to 27); 39% had histologic follow-up and 15.9% were malignant. The benign category (DC II) was assigned to 59% of the FNAs (range, 39 to 74); 10.4% had histologic follow-up and 3.7% were malignant. Lastly, the nondiagnostic category (DC I) was assigned to 13% of the FNAs (range, 2 to 24); 16% had histologic follow-up and 16.8% were malignant.

Conclusions

The BSRTC has proven to be an effective and robust thyroid FNA classification scheme to guide the clinical treatment of patients with thyroid nodules.

continued on next page

ANALYSIS AND COMMENTARY

The data summarized in the current report show considerable variability among institutions with regard to the frequency of the various categories. This finding suggests that there may be a subjective element in categorizing a given FNA.

With regard to the possibility of malignancy for a given classification, the data corroborate the results anticipated when the classification was set up (1). In patients with benign FNA or inadequate specimens who undergo surgery, it is likely that clinical factors, such as a family history of thyroid cancer, the size of the nodule, compressive symptoms, or suspicious findings on ultrasonography are the basis for the decision to perform surgery.

The authors recommend that the FNA be repeated when the diagnosis is AUS/FLUS; this seems reasonable given that the alternative is to operate on all of these patients when the overall possibility of malignancy is 16% (about the same as the nondiagnostic category). Eventually, molecular markers may help to clarify which patients should be referred for surgery (2).

In patients in the suspicious for malignancy category, the data also show that there is a very high percentage of malignancy, 75%. Although the three categories of AUS/FLUS, FN/SFN, and suspicious for malignancy had previously been lumped together to comprise an "indeterminate" class (2), it is clear that when the FNA is in the suspicious for malignancy category (DC V), the patient should undergo thyroidectomy. It is reasonable to consider removing DC V, from the "indeterminate" classification. It should be noted that the authors do not use this term.

References

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