Clinical THYROIDOLOGY



Thyroid Nodule Size Larger Than 4 cm Does Not Increase the Risk of False Negative FNA Cytology or the Risk of Malignancy

Burch HB, Shrestha M, Crothers BA. The impact of thyroid nodule size on the risk of malignancy and accuracy of fine-needle aspiration: a ten-year study from a single institution. Thyroid September 10, 2012 [Epub ahead of print].

SUMMARY • • •

Background

In current practice, thyroid nodules are evaluated by ultrasound and FNA. In addition to the cytologic diagnosis, the size of the nodule is often used as a basis for referral of the patient for thyroidectomy. In this study, the authors evaluated whether nodule size >4 cm affected the accuracy of thyroid FNA or the incidence of malignancy.

Methods

During a 10 year period (2001-2011), 3013 patients had FNA of thyroid nodules at the Walter Reed Army Medical Center. Only patients who had subsequent thyroid surgery were included in the analysis. Nodule size was assessed by ultrasound measurement of the largest diameter and categorized as 0.5 to 0.9 cm (group A), 1.0 to 3.9 cm (group B), and \geq 4 cm (group C). FNA cytology was categorized by the Bethesda System for Reporting Thyroid Cytopathology: benign, atypia (follicular lesion of undetermined significance), follicular neoplasm, suspicious for malignancy, or malignant. All categories except for benign were considered positive for calculation of the sensitivity and specificity of the FNA.

Results

Included in the analysis were 540 patients with 695 nodules. The average age was 49 years, and 71% were female. The FNA results were benign in 417 nodules (60%), atypia in 22 (3.2%), follicular neoplasm in 122 (17.6%), suspicious for malignancy in 77 (11.1%), and malignant in 57 (8.2%). There were 35 nodules in group A, 533 nodules in group B, and 127 nodules in group C. The malignancy rate based on surgical pathology was 18.6% (129 of 695 nodules) and did not differ among the size categories. The malignancy rate was 23% in both men and women. The yield of malignancy for a benign FNA was 7%, atypia 3.2%, follicular neoplasm 23%, suspicious for malignancy 34%, and malignant 79%.

False negative rates did not differ significantly based on size. The accuracy and specificity of FNA increased as the size of the nodule increased. The accuracy of FNA cytology was 60%, 68%, and 80% in groups A, B, and C, respectively. The specificity was 59%, 65%, and 83%. However, negative predictive values were not significantly different among the three groups.

Conclusions

The results show that thyroid nodule size ≥ 4 cm does not increase the risk of false negative FNA results or the overall risk of malignancy.

ANALYSIS AND COMMENTARY • • • • •

In the days before FNA of nodules, a nodule >4 cm in a man was considered grounds for surgical removal because of a high suspicion of malignancy based on the factors of sex and size. The current study showed no difference in the incidence of malignancy based on sex. More recent work has shown that larger nodules are not more likely to be malignant than smaller nodules, but calcified nodules in men are more likely to be malignant (1). Other clinical factors, such as suspicious features on ultrasound, nodule growth, local compressive symptoms, very large nodule size, and patient concern may be the basis for surgery in large nodules that are cytologically benign.

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In some studies, a false negative (benign) cytology rate of 11% to 20% was found in nodules \geq 4 cm, leading to concern that all nodules >4 cm should be removed (2-4). However, others have found a false negative result of only 4% in nodules of this size, somewhat lower than the 7% found in this study (5, 6).

The 2009 ATA guidelines recommend that nodules <1 cm not be biopsied unless they have features that

are suspicious for malignancy. On this basis, there is concern about the basis for including group A in this study, even though there were only 35 nodules in this group. Nevertheless, I am reassured by their main conclusion stating that large nodules do not predispose to FNA cytology that is falsely negative.

— Jerome M. Hershman, MD

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