



## RE: Thyroid Core Needle Biopsy: The Strengths of Guidelines of the Korean Society of Thyroid Radiology

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Dear Editor,

In the last few years, several authors have reported the use of core needle biopsy (CNB) in assessing thyroid nodules. The large majority of these papers (mainly from Korea and Italy) investigated the reliability of CNB as a second-line approach for the thyroid nodules with indeterminate (Thy 3/Category III-IV-V) or inadequate (Thy 1/Category I) features on the previous fine needle aspiration (FNAC) report (1). Findings from these papers are very interesting, and more recently, this biopsy option was included in the international guidelines (2). Specimens obtained by CNB represent the optimal material to evaluate the general architecture of the thyroid lesion, the alteration of follicular structures, and its relationship with adjacent tissues. This examination is highly important for all histologic assessments. In addition, CNB is advantageous in analyzing nuclear changes, as the formalin-fixed and paraffin-embedded tissue is quite similar to a post-surgical

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histological sample (1). Also, the rates of inadequate samples and complications derived from the procedure are very low. As a non-negligible issue, these tissue fragments have a size up to 500  $\mu$  and length up to 1.5 cm, and they represent the optimal material for extensive studies and ancillary techniques (3).

Recently, the Korean Society of Thyroid Radiology (KSThR) has published its guidelines on the CNB management and reporting system (4). In this document, the experts provide essential information on thyroid CNB based on 11 recommendations focused on its clinical use. In addition, they report a stimulating proposal on the reporting system that should be adopted. We have read this paper with great interest and are persuaded by the proposal. As described by the KSThR, we encourage the use of CNB by an expert operator using modern devices, in patients with previous inadequate or indeterminate FNAC. This approach can significantly reduce (and virtually exclude) specific complications.

The lack of a widely used CNB reporting system may represent a potential limitation for its diffusion; behind patients' selection criteria, in fact, the interpretation of morphologic data actually needs a standardized approach. The paper published by the KSThR proposes to classify the CNB samples based on the pathologic features, and this is expected to contribute to expanding the practice of this type of biopsy in other countries. The reporting system proposed by the Korean Endocrine Pathology Thyroid Core Needle Biopsy Study Group is based on a six-tiered category classification, which is similar to the Bethesda system for reporting thyroid cytology. All international pathologists are familiar with this scheme because it is along the lines of cytological categories and their prognostic value. It is quite likely that CNB recommendations will be used in an increasing number of medical institutions and this will allow the assessment of malignancy risk for each category. Risk stratification is a mandatory step in proposing clinical algorithms for the management of patients. One important difference between CNB and FNA cytology is the possibility that CNB can determine the presence of a well-developed fibrous capsule limiting the nodular tissue from the normal parenchyma, and the Korean system underlines this feature. Future studies comparing these lesions with final histology on surgical specimens in a large series are required to

determine whether this morphologic characteristic is reliable and reproducible in detecting neoplastic thyroid lesions. The use of ancillary techniques is also included in the paper as a support for challenging cases. Finally, while cytology has a gray area of indeterminate results that accounts for about 20% of cases, CNB usually achieves a definitive diagnosis in a larger number of cases (5-7). The extended use of CNB may allow a more accurate definition of how this method really improves thyroid nodule selection for surgery and it will be possible to assess its appropriate use.

All in all, based on our personal experience with thyroid CNB, we feel that the recommendations for the use of CNB reported by the KSThR are appropriate for clinical practice and the proposed reporting system may represent an effective scheme to improve communication between clinicians and pathologists.

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**Response**

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To the Editor,

We have read the letter regarding our recently published core needle biopsy (CNB) recommendations in Korean Journal of Radiology (1), and we hereby provide our reply. We appreciate the reviewers' comments and their encouragement regarding our work in the letter. They emphasized the role of CNB in diagnosing thyroid nodules, especially in those with previously non-diagnostic or indeterminate fine needle aspiration (FNA) results.

We agree with the authors' opinion, and they have suggested several tasks in future CNB studies. First, they pointed out the limitations of widespread use of CNB in diagnosing thyroid nodules. The lack of consensus on the CNB pathology reporting system may represent a potential limitation for its diffusion. Recently, the Korean Endocrine Pathology Thyroid Core Needle Biopsy Study Group introduced a six-tiered category classification (2); however, malignancy risk validation of this classification has not yet been published. We agree with their opinion; therefore, validation studies for pathology classification are necessary in the near future. Moreover, a risk stratification system, by combining US features and CNB results, should be established (3, 4). Second, they highlighted the important difference between CNB and FNA cytology. CNB can determine the presence of a fibrous capsule which separates the nodular tissue from the normal parenchyma. This ability is useful for differentiating between nodular hyperplasia and follicular neoplasm (5, 6). Future studies comparing CNB pathology with surgical specimens are required to determine whether this morphological characteristic is reliable and

reproducible. Finally, they pointed out the role of CNB in a gray area of indeterminate results that accounts for about 20% of cases. Although CNB achieves excellent results for thyroid nodules with indeterminate FNA results (6), the role of CNB should be validated further; with respect to whether CNB improves the selection of thyroid nodules that need to undergo surgery. We agree on this point because their suggestion is a very important and practical issue in the use of CNB.

In conclusion, the letter placed emphasis on the important role of CNB in evaluating thyroid lesions and suggested several points that should be validated in the future. We appreciate the reviewers' encouragement regarding our work and agree with our future task for thyroid CNB.

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