

Insufficient Experience in Thyroid Fine-Needle Aspiration Leads to Misdiagnosis of Thyroid Cancer (*Endocrinol Metab* 2014;29:293-9, Jung Il Son et al.)

Hyon-Seung Yi¹, Sihoon Lee²

¹Laboratory of Liver Research, Graduate School of Medical Science and Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon; ²Department of Internal Medicine and Laboratory of Genomic and Translational Medicine, Gachon University School of Medicine, Incheon, Korea

After leaving the issue of thyroid cancer epidemics in Korea out of the discussion [1], it is clear that thyroid nodules are common worldwide, ranging from 5% to 7% of the adult population. Furthermore, the cost-of-illness of thyroid disease is relatively great in an economically active age group, and demonstrates a very rapid growth rate in Korea, which is facing an economic burden regarding the diagnosis and treatment of thyroid diseases, especially involving thyroid nodules [2]. The vast majority of cases are benign, and most cases of thyroid cancer are curable by surgery if detected early. Fine-needle aspiration (FNA) of the thyroid plays a pivotal role in distinguishing benign and malignant lesions, triaging patients who need the appropriate surgery and reducing the rate of unnecessary thyroid surgery for patients with benign lesions. Up to 80% of thyroid nodules are clearly classified as either benign or malignant; however, the remaining 20% to 30% of them have equivocal findings including indeterminate, atypia or suspicious, usually due to vagueness of the optical images. These nodules usually require re-aspiration or surgery for a definite diagnosis, which increases the inconvenience and cost. The current guidelines recommend repeat FNA for patients with a diagnosis of “atypia of undetermined significance” and lobectomy with or without intraoperative pathology consultation for those with a suspi-

cious diagnosis.

In addition to such a degree of uncertainty with regard to FNA, operators’ experience should be taken into consideration when diagnosing thyroid cancer. According to a recent paper in *Endocrinology and Metabolism*, Son et al. [3] reported that a non-experienced group had a substantially higher false-negative rate than an experienced group, and the sensitivity of the FNA test also tended to be lower in the non-experienced group. There are certainly interpersonal and inter-institutional differences in the diagnostic accuracy of thyroid FNA; thus, an intensive training program and a high standard of qualified operators are required.

Meanwhile, in order to improve the diagnostic accuracy of thyroid FNA, new approaches including molecular analysis for somatic genetic alterations such as BRAF and RAS point mutations and RET/PTC and PAX8/PPAR γ rearrangements have been developed for either clinical-based or lab-based use.

There is no doubt that FNA should be performed by well-trained operators; molecular analysis using thyroid aspirates enables the identification of patients who need to proceed to surgery, and might guide the extent of surgery necessary. Moreover, a gene expression classifier enables the identification of patients who do not need surgery and can be safely followed.

Corresponding author: Sihoon Lee

Department of Internal Medicine and Laboratory of Genomic and Translational Medicine, Gachon University School of Medicine, 21 Namdong-daero 774beon-gil, Namdong-gu, Incheon 405-760, Korea

Tel: +82-32-460-8207, **Fax:** +82-32-460-3009, **E-mail:** shleemd@gachon.ac.kr

Copyright © 2014 Korean Endocrine Society

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Ahn HS, Kim HJ, Welch HG. Korea's thyroid-cancer "epidemic": screening and overdiagnosis. *N Engl J Med* 2014; 371:1765-7.
2. Hyun KR, Kang S, Lee S. Cost-of-illness trends associated with thyroid disease in Korea. *Endocrinol Metab (Seoul)* 2014;29:257-69.
3. Son JI, Rhee SY, Woo JT, Park WS, Byun JK, Kim YJ, Byun JM, Chin SO, Chon S, Oh S, Kim SW, Kim YS. Insufficient experience in thyroid fine-needle aspiration leads to misdiagnosis of thyroid cancer. *Endocrinol Metab (Seoul)* 2014;29:293-9.