Letter to the Editor: "Postoperative Thyroglobulin and Neck Ultrasound in the Risk Restratification and Decision to Perform ^{131}I Ablation"

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We read with interest the article by Matrone *et al.* (1) on the role of postoperative thyroglobulin (Tg) and neck ultrasonography (US) in deciding to perform or not to perform radioiodine ablation in patients with low- to intermediate-risk differentiated thyroid carcinoma (DTC). They retrospectively selected 505 patients with low- to intermediate-risk DTC who had undergone total thyroidectomy and recombinant human thyrotropin–stimulated ablation with 1.1 GBq of radioiodine. A posttreatment whole-body scan (PT-WBS) was performed and compared with basal Tg and US assessments just before radioiodine ablation. Among the main findings, 150 patients had Tg levels <0.1 ng/mL and 1 of 150 showed cervical persistence at US (with negative results at PT-WBS); 287 patients had Tg levels between 0.1 and 1.0 ng/mL, 15 of whom had metastases with 7 detected by PT-WBS alone; and 68 patients had Tg levels >1.0 ng/mL, 11 of whom had neck metastases at US. Also, 4 patients, all with Tg levels of 0.1 to 1.0 ng/mL, had distant metastases detected by PT-WBS. The authors concluded that Tg and especially US are relevant in decisions to perform or not perform radioiodine ablation.

We have several comments and concerns regarding the study design and conclusions:

- The title of the article is confusing. To properly assess "the role of Tg and neck US in the decision to perform 131I ablation," they should have designed a prospective randomized study with posttreatment follow-up. Rather, this study considered PT-WBS as the reference standard; the results thus simply addressed the role of preablation basal Tg and neck US in predicting the results of PT-WBS (i.e., the persistence of disease).
- Accordingly, one would expect that PT-WBS was performed with the highest quality equipment. However, PT-WBS was performed in planar mode using an old single-head gamma camera. It is largely accepted that modern single-photon emission computed tomography (SPECT)/computed tomography (CT) imaging determines lymph node involvement and detects distant metastases more accurately than planar imaging does. Overall, SPECT/CT may alter management in approximately one-quarter of patients with thyroid carcinoma by upstaging or downstaging their disease (2).
- In addition, the sensitivity of PT-WBS in detecting metastases is significantly reduced in the presence of large thyroid remnants, especially in the neck and upper mediastinum. Even when a radioiodine uptake test was performed, no data on postsurgery radioiodine residual uptake were provided. Considering that a fixed-activity (1.1 GBq) therapy protocol was adopted, it is totally unclear why the radioiodine uptake test was carried out.

Because of the study design, the data provided by Matrone *et al.* (1) cannot support the use of Tg and US in decisions for or against radioiodine ablation in DTC patients. Again, even the simple comparison between preablation basal Tg and US and PT-WBS results was hampered by the inaccuracy of the comparator method (*i.e.*, PT-WBS). All in all, as stated in the American Thyroid Association 2015 guidelines (3), imaging and Tg measurement should not be used to decide whether to ablate a DTC patient after surgery until adequately designed studies have been performed, completed, and published.

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Abbreviations: CT, computed tomography; DTC, differentiated thyroid carcinoma; PT-WBS, posttreatment whole-body scan; SPECT, single-photon emission computed tomography; Tg, thyroglobulin; US, ultrasonography.

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References

1. Matrone A, Gambale C, Piaggi P, Viola D, Giani C, Agate L, Bottici V, Bianchi F, Materazzi G, Vitti P, Molinaro E, Elisei R. Postoperative thyroglobulin and neck ultrasound in the risk restratification and decision to perform ^{131}I ablation. *J Clin Endocrinol Metab*. 2017; **102**(3):893–902.
2. Avram AM. Radioiodine scintigraphy with SPECT/CT: an important diagnostic tool for thyroid cancer staging and risk stratification. *J Nucl Med*. 2012;**53**(5):754–764.
3. Haugen BR, Alexander EK, Bible KC, Doherty GM, Mandel SJ, Nikiforov YE, Pacini F, Randolph GW, Sawka AM, Schlumberger M, Schuff KG, Sherman SI, Sosa JA, Steward DL, Tuttle RM, Wartofsky L. 2015 American Thyroid Association Management Guidelines for adult patients with thyroid nodules and differentiated thyroid cancer: the American Thyroid Association Guidelines Task Force on thyroid nodules and differentiated thyroid cancer. *Thyroid*. 2016;**26**(1):1–133.