
LETTERS TO THE EDITOR

The Incremental Value of Single-photon Emission Computed Tomography/Computed Tomography in Post-thyroidectomy Iodine-131 Scanning of Differentiated Thyroid Carcinoma

To the Editor: We read with interest the paper published in the December 2012 issue.¹ There are several points in the article that deserve comment.

1. It was repeatedly stated that *intense activity in the thyroid bed was suggestive of local residual malignancy in a high-dose I-131 scan after total thyroidectomy*. In clinical practice, a surgeon performing total thyroidectomy will remove most of the tumour foci in the thyroid gland. The intense uptake in the thyroid bed is due to residual normal thyroid tissue, within which there may be micro-tumour foci. The purpose of I-131 ablation after total thyroidectomy is to eradicate the residual normal thyroid tissue to enable subsequent biochemical follow-up by measuring serum thyroglobulin levels. If present, any micro-tumours can then be ablated. The ability to take up I-131 even by well-differentiated thyroid carcinoma would be far less than that by normal thyroid tissue. That is why malignancy cannot be excluded if a “cold nodule” is found by thyroid scanning.
2. Regarding *low-dose diagnostic I-131 scanning using 1.1 MBq of I-131 tracer*, the usual dose for such a diagnostic scan in most Nuclear Medicine departments in Hong Kong would be 3 to 5 mCi (i.e. 111 to 185 MBq). The international guideline from

the Society of Nuclear Medicine recommends 1 to 5 mCi (i.e. 37 to 185 MBq). In practice therefore, just a noise signal may ensue with an I-131 image if only 1.1 MBq of tracer dose is used. Such low doses can be used with a thyroid probe in an uptake study (a non-imaging procedure).

3. The description of Figure 4 states *a 79-year-old man showed I-131 activity localised to the posterior mediastinum in the region of mid-oesophagus, and was suspicious for metastasis. Consequent to these findings, it was decided to administer another ablation dose of I-131*. Multiple well-written articles address variants, pitfalls, and artefacts found on I-131 images, salivary activity in the oesophagus being one. Thus, proceeding to another ablation based on the aforesaid imaging findings may not have been appropriate, especially without a pattern suggesting metastatic cancer.

I trust that the authors can respond to these queries appropriately, in order to clear up any misconceptions about these important issues.

CM Lok

President

Hong Kong Society of Nuclear Medicine

Hong Kong

REFERENCE

1. Tang P, Wang K, Cheung CY, Leung SF. The Incremental Value of Single-photon Emission Computed Tomography/Computed Tomography in Post-thyroidectomy Iodine-131 Scanning of Differentiated Thyroid Carcinoma. Part II: Pictorial illustration. *Hong Kong J Radiol.* 2012;15:260-7.

Authors' reply

To the Editor: We greatly appreciate the letter from Dr Lok with his comment on our pictorial essay.¹

Our reply is as follows:

1. His message about surgeons performing total thyroidectomy will remove most of the tumour foci in the thyroid bed is correct. We state that the intense uptake in neck after a postoperative

radioactive iodine (RAI) scan is only suggestive of residual malignancy, although it may also be due to residual normal thyroid tissue (as in Figures 1, 2, 4, and 7). On reviewing these cases (Figure 2), ultrasonography of the neck was performed after the RAI scan and confirmed malignant-looking neck lymph nodes. Regarding Figures 4 and 8, there were clinically palpable nodules in the neck suspicious of local recurrence and highly related to the intense

neck uptake on the RAI scan. Accordingly we are adding a short paragraph on page 261 of the pictorial essay (before the description of Figure 1), under the heading USE OF INTEGRATED SPECT/CT SYSTEM IN IMPROVING ACCURACY: “Intense uptake in neck on postoperative RAI scan could be due to residual local normal thyroid tissue, while residual or recurrent thyroid malignancy is difficult to exclude as it may not be totally resected by total thyroidectomy.”

2. We admit that 1.1 MBq was typing error. The figure should have been 111 MBq or 3 mCi. The editorial office has been informed regarding correction of this error.
3. In Figure 4 (1st RAI scan), the patient actually had two RAI scans and one 3 mCi scan performed in the intervening period (9 months in total). All these showed persistent activity in the posterior mediastinum in the region of mid-esophagus. Moreover, in the three mCi scan and last RAI scan, except in the posterior mediastinum, there

was no other suspicious activity (including the neck). The serial findings were discussed with the referring oncologist, who also considered the activity was likely to be pathological rather than physiological, as it had persisted in the same site over 9 months in the presence of raised thyroglobulin level.

We appreciate Dr Lok’s comments.

P Tang¹, K Wang¹, CY Cheung¹, SF Leung²

¹Department of Imaging and Interventional Radiology, and ²Department of Clinical Oncology, Prince of Wales Hospital, Hong Kong

REFERENCE

1. Tang P, Wang K, Cheung CY, Leung SF. The Incremental Value of Single-photon Emission Computed Tomography/Computed Tomography in Post-thyroidectomy Iodine-131 Scanning of Differentiated Thyroid Carcinoma. Part II: Pictorial illustration. *Hong Kong J Radiol.* 2012;15:260-7.

Note from Editorial Office

The article is correct at www.hkjr.org.