

## Reply to: False-negative thyroglobulin measurement in recurrent/metastatic thyroid carcinomas

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Dear Sir,

We greatly appreciate the thoughtful comments of Dr. Giovanella regarding our article investigating the clinical characteristics of patients with false-negative thyroglobulin (Tg) in the setting of positive I-131 whole-body scan [1].

In his letter, Giovanella asked if there was any difference in the preoperative serum Tg levels in patients who had received posttherapy I-131 whole-body scan (PT-WBS) between those who were Tg-positive (TgP) and those who were Tg-negative (TgN). Preoperative serum Tg levels in the TgP and the TgN patients were  $395.9 \pm 1296.6$  and  $302.6 \pm 1486.2$  ng/ml, respectively ( $p=0.74$ ). Thus there was no significant difference in preoperative serum Tg levels between the TgP and the TgN patients. Preoperative serum Tg levels were negative in 2.8% of patients in the TgP group and in 7.9% of patients in the TgN group, and this was also not significantly different ( $p=0.24$ ).

Giovanella also suggested that the cut-off value should be elucidated. The cut-off value was a serum Tg level of 2 ng/ml. This was based on many other previous studies in which cut-off values of 2, 3, 5 or 10 ng/ml were used [2–4], and was selected based on clinical data in our hospital [5]. ROC analysis appears to show interdependence between PT-WBS and the Tg value and therefore PT-WBS cannot be used as a gold standard.

Giovanella further stressed that one should be cautious in the measurement of Tg levels to avoid potential methodological biases. We agree with this comment and that is why we performed Tg measurements using four different assay kits in order to avoid false-negative Tg results. Even with this, however, we were still able to find functioning metastasis on PT-WBS in the absence of positive Tg in 6.3% of all patients. We would like to point out that a WBS should be undertaken routinely as a complementary modality to detect functioning recurrences and metastases regardless of the serum Tg results.

### References

1. Park EK, Chung JK, Lim IH, Park DJ, Lee DS, Lee MC, et al. Recurrent/metastatic thyroid carcinomas false negative for serum thyroglobulin but positive by posttherapy I-131 whole body scans. *Eur J Nucl Med Mol Imaging* 2008. doi:10.1007/s00259-008-0912-0.
2. Grant S, Luttrell B, Reeve T, Wiseman J, Wilmshurst E, Stiel J, et al. Thyroglobulin may be undetectable in the serum of patients with metastatic disease secondary to differentiated thyroid carcinoma. Follow-up of differentiated thyroid carcinoma. *Cancer* 1984;54: 1625–8.
3. Mazzaferri EL, Robbins RJ, Spencer CA, Braverman LE, Pacini F, Wartofsky L, et al. A consensus report of the role of serum thyroglobulin as a monitoring method for low-risk patients with papillary thyroid carcinoma. *J Clin Endocrinol Metab* 2003;88: 1433–41.
4. Muller-Gartner HW, Schneider C. Clinical evaluation of tumor characteristics predisposing serum thyroglobulin to be undetectable in patients with differentiated thyroid cancer. *Cancer* 1988;61: 976–81.
5. Chung JK, Park YJ, Kim TY, So Y, Kim SK, Park DJ, et al. Clinical significance of elevated level of serum antithyroglobulin antibody in patients with differentiated thyroid cancer after thyroid ablation. *Clin Endocrinol (Oxf)* 2002;57:215–21.

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