



## Should $^{99m}\text{TcO}_4$ Thyroid Scintigraphy Still Be Used In Investigating Thyroid Nodules In Multinodular Goiter?

Graf D, et al.

### Conclusions

In a country with prior iodine deficiency, small nodular goiters are a frequent finding. If thyroid scintigraphy is extensively used, as was done in the

current study, it will reveal autonomously functioning tissue in about one third of cases). Therefore, thyroid scintigraphy may allow one to avoid FNAB in these circumstances.

### ANALYSIS AND COMMENTARY ● ● ● ● ●

The recommendations of the ATA and ETA support the use of scintigraphy for nodules present in a multinodular goiter if the patient's serum TSH level is low-normal or suppressed, which was observed in 32% of the autonomous nodules studied here. This percentage would have been even higher if a "low-normal serum TSH" had been defined as higher than the 0.39 mU/L set in this study. Nevertheless, in a considerable percentage of apparently euthyroid patients (TSH >0.4 mU/L),  $^{99m}\text{TcO}_4$  scintigraphy indicated a possibly autonomously functioning area. These nodules were selected by their scintigraphic appearance. The authors consider them to be adenomas.

Presumably, thyroids in patients with multinodular goiters whose serum TSH is >0.4 mU/L do not produce excessive amounts of thyroid hormones, but some areas are merely more active than other areas within the goiter. This could correspond to cohorts of follicles that do not correspond to true, clearly circumscribed adenomas. This pathology is obviously very frequent in multinodular goiters and is a completely different entity than adenomas. Since  $T_3$ -suppression tests were not done routinely, it is even possible that these areas are not autonomously functioning (3).

Except for anecdotal observations of "functioning" thyroid cancers, "hyperfunction" is generally considered to occur only in benign thyroid lesions. Unfortunately, the authors did not perform FNABs, which is the method of choice for most thyroidologists. We are

therefore missing the critical information of how many operations may have been avoided by preferring scintigraphy over FNAB. It is reasonable to assume that some FNABs would have yielded a cytologic report of indeterminate-type tissue, and some of these patients would have been sent for surgery.

From another viewpoint, one may argue that patients with thyroid autonomy are at-risk for eventual hyperthyroidism. However, the real incidence of this possibility is not known. Excluding transient Jod-Basedow syndrome due to iodine contamination, it certainly would take years, if not decades, for this course of events to occur, and simple surveillance of thyroid function by serum TSH should eliminate the risk of unrecognized hyperthyroidism.

The apparently high incidence of thyroid autonomy in Germany is striking and does not correspond to the rarer observation of thyroid autonomy in iodine-replete areas. It is likely that in Germany many of these observations correspond to autonomously functioning cohorts of follicles of varying size within multinodular goiters (3).

In practice the article reminds us that scintigraphy can still be useful in certain circumstances. However, it should not be considered as a routine procedure in all patients with nodular goiter. A patient with a multinodular goiter who lives or lived in an iodine-deficient area—or a patient who refuses FNAB—may benefit from thyroid scintigraphy, even if she or he has normal TSH values.

*continued on next page*

## Should $^{99m}\text{TcO}_4$ Thyroid Scintigraphy Still Be Used In Investigating Thyroid Nodules In Multinodular Goiter?

Graf D, et al.

### References

1. Cooper DS, Doherty GM, Haugen BR, Kloos RT, Lee SL, Mandel SJ, Mazzaferri EL, McIver B, Pacini F, Schlumberger M, et al. Revised American Thyroid Association management guidelines for patients with thyroid nodules and differentiated thyroid cancer. *Thyroid* 2009;19:1167-214.
2. Pacini F, Schlumberger M, Dralle H, Elisei R, Smit JW, Wiersinga W. European consensus for the management of patients with differentiated thyroid carcinoma of the follicular epithelium. *Eur J Endocrinol* 2006;154:787-803.
3. Derwahl M, Studer H. Nodular goiter and goiter nodules: where iodine deficiency falls short of explaining the facts. *Exp Clin Endocrinol Diabetes* 2001;109:250-60.
4. Paschke R. [Diagnostic work-up of euthyroid nodules: which nodules should undergo fine-needle aspiration biopsy? Relevance of ultrasound]. *Dtsch Med Wochenschr* 2009;134:2498-503. Epub November 25, 2009.
5. Gorges R, Kandror T, Kuschnerus S, Zimny M, Pink R, Palmedo H, Hach A, Rau H, Tanner C, Zaplatnikov K, et al. [Scintigraphically "hot" thyroid nodules mainly go hand in hand with a normal TSH]. *Nuklearmedizin* 2011;50:179-88. Epub July 8, 2011.

American Thyroid Association

Prevent  
Diagnose  
Treat

[www.thyroid.org](http://www.thyroid.org)

Support valuable patient education  
and crucial thyroid research!