

### Inconsistencies

On the basis of erroneous and incomplete data, the authors (1) suggest algorithms for the diagnostic evaluation of the thyroid, which cannot be applied in their current form—at least not in Germany, (formerly) a region with iodine deficiency.

The specificity of scintigraphy was given as 5%; this is not correct—the three citations are not conclusive: a 20-year-old study from Ireland and two review articles without concrete data.

Furthermore, the article contains some technical inconsistencies.

Firstly, the cited European guideline was introduced in 2006 and the others even later, which means they had not been published at the time of data collection. The procedural recommendations of the German Society of Nuclear Medicine of 2003 (2), which were coordinated with the German Society of Endocrinology and the German Society for Surgery and deposited with the Association of the Scientific Medical Societies in Germany (Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften, AWMF) were not cited.

Secondly, the authors combined their data with a figure from the AACE/AME/ETA guideline, which was published only in 2010, two years after the collection of data.

Thirdly, how would it have been common knowledge that 94% of patients who underwent scintigraphy also had a low concentration of thyroid stimulating hormone (TSH) or multinodular goiter? Scintigraphy in (euthyroid) uninodular goiter was “done in accordance with the guideline.” According to the valid German guideline (2), indications for thyroid scintigraphy are amongst others:

- Palpable and/or sonographically distinct focal findings (nodules of 1 cm or larger).
- Suspected focal/diffuse autonomy in manifest/latent hyperthyroidism.
- After definitive therapy in order to document therapeutic success.
- If required during the course of untreated functional autonomy.

The depicted algorithm can therefore not be applied to the situation in Germany. A single nodule  $\geq 1$  cm would directly undergo fine-needle aspiration cytology (FNAC) without scintigraphic investigation. For a hyperfunctional and therefore benign nodule, the cytopathological finding often is “follicular neoplasia,” and the patient would probably have unnecessary surgery because scintigraphy was not done. A recent German study found no decreased TSH concentration in 70% of all cases of focal autonomy (3).

Lastly, the cited article (Fast et al.) on thyroid hormone administration in the treatment of goiter studied the long abandoned concept of TSH suppressive administration of levothyroxine; but a recent, methodologically superior German study remains unmentioned (4).

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### Better Diagnostics and Treatment

In contrast to what is shown in Figure 2 (1), thyroid scintigraphy is relevant in nodules larger than 1 cm when the TSH concentration is normal. If a hot nodule is present or the scintigram shows an autonomous nodule, then malignancy can be excluded with a probability bordering on certainty (2). In such cases, fine-needle aspiration cytology (FNAC) is not required. As multicenter study showed that most autonomous nodules are accompanied by a normal TSH concentration, although a focal raised concentration is shown by the scintigram (3). Before performing FNAC in a sonographically suspect finding, technetium-99m pertechnetate scintigraphy should be undertaken.

Unfortunately, a negligible proportion of thyroid cancers present as sonographically normal. Especially multinodular goiter (where not all nodules can be aspirated) therefore leaves us all a desire for a procedure with a high predictive value. FNAC is important, but its usefulness in excluding malignancy is limited (10–20% false-negatives). Technetium-99m-MIBI tumor scintigraphy of the thyroid can rule out malignancy with a probability of 97% if the findings are negative (4).

On the basis of the data analyzed by Wienhold et al., the unsatisfactory preoperative risk stratification of thyroid nodules can be assumed, if at all, only for uninodular goiter (it is not obvious from the coding whether local symptoms/mechanical relevance is present). And in uninodular goiter too, a significant displacement of the trachea or swallowing difficulties can be reason enough for performing surgical resection. Furthermore it should not remain unmentioned that in the article, out of 9000 patients with uninodular goiter, only 4.5% had surgery. A large number of diagnostic thyroid operations can therefore not be deduced from the data presented.

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