

Repeat Radioactive Iodine Often a Tough Call

Low thyroglobulin levels after thyroidectomy may make radioactive iodine ablation again unnecessary.

BY JEFF EVANS
Senior Writer

CHANTILLY, VA. — Thyroid cancer patients who have received radioactive iodine ablation after thyroidectomy and who later have a negative whole body scan for thyroid cancer probably do not need to receive radioactive iodine therapy if their stimulated thyroglobulin levels stay below 10 ng/mL, R. Michael Tuttle, M.D., said at the annual meeting of the Mid-Atlantic Chapter of the American Association of Clinical Endocrinologists.

Whether a patient with a very low stimulated thyroglobulin level should be treated again with radioactive iodine (RAI) "is probably one of the most common phone calls I get from around the country," said Dr. Tuttle of Memorial Sloan-Kettering Cancer Center, New York.

The way thyroid cancer is treated today is "so remarkably different now than it was 10 or 15 years ago," he said, adding that the detection of persistent thyroid cancer has improved to the point where thyroglobulin (Tg) levels of 1, 0.5, or 0.2 ng/mL can be detected and 3-mm lymph nodes in the tracheal-esophageal groove can be seen with ultrasound in patients who were thought to be cured 20 years ago.

"I can't tell you the number of patients who leave my office mad at me because I've explained to them that I cannot cure their thyroid cancer. Their thyroglobulin level of 0.3 ng/mL is probably going to be there for awhile and taking out that 2-mm lymph node beside their recurrent laryngeal nerve is probably only going to help the surgeon and pathologist because they can bill and code for it, and it is unlikely to help our patient."

About 80% of full body scans after repeat administration of therapeutic RAI appear to show some uptake by thyroid cells in the neck, but about 40% of these may be lung

metastases, based on experience with all forms of thyroid cancer. If physicians give 100-150 mCi of RAI to patients with a high Tg level but a negative body scan, "you're very likely to find real disease," Dr. Tuttle said, "and I think it's that finding of the lung metastasis that made us all do this."

Rationale for RAI Changes Over Time

One rationale for using a therapeutic level of RAI when stimulated Tg levels remain high despite a negative diagnostic whole body scan was to localize the disease, not necessarily to treat it, Dr. Tuttle pointed out. Today's imaging modalities of helical CT and PET scans and neck ultrasounds can give the same information that RAI scanning would, without the possibility of side effects.

There is no evidence that repeat RAI treatment for patients who have a high stimulated Tg level after an initially negative whole body scan increases disease-specific or overall survival, Dr. Tuttle said.

Most clinicians would give another course of therapeutic RAI if the stimulated Tg level rose above 10 ng/mL, and most would not use repeat RAI if the stimulated level was below 2 ng/mL. RAI treatment for Tg levels of less than 2 ng/mL offers little potential benefit, while potentially causing complications, including damage to salivary glands, taste buds, and tear ducts. "We don't know what to do between 2 and 10," Dr. Tuttle said.

Multiple RAI treatments appear to clear small-volume papillary thyroid cancer from pediatric to 30-year-old patients with positive lymph nodes by consistently decreasing stimulated Tg levels and clearing evidence of the tumor on CT scans and x-



rays. These patients, who do not have distant metastases, are either cured or go into long-term remissions.

But older patients with thyroid cancer extending beyond the thyroid are more commonly seen than are younger patients with less aggressive, localized disease. Older patients may have a negative whole body scan and the same level of Tg as a younger patient, but the tumor is likely to

be visible in the lungs on x-ray, CT, and PET scans. RAI will not help these patients if the lung lesions are poorly differentiated.

In a soon-to-be published study, Dr. Tuttle found that of

about 400 thyroid cancer patients who received ¹⁸fluorodeoxyglucose PET scans, the result of a PET scan was the most powerful prognostic indicator of survival. Patients with a markedly positive PET scan in extrathyroidal areas such as the lungs have a 3-year survival of less than 30%, he said.

Observe or Treat?

Another study involved 70 patients with thyroid cancer who had detectable Tg levels despite having a total thyroidectomy, RAI ablation, a negative whole body scan, and no structural evidence of disease. Of the 28 patients with a median stimulated Tg level of 9.5 ng/mL who were observed instead of being treated with RAI, 19 (68%) had an undetectable stimulated Tg level after 12 years of follow-up. Among the 42 patients with a median Tg level of 55 ng/mL who received RAI, only 12 (29%) had an undetectable stimulated Tg level after 7 years of follow-up (J. Clin. Endocrinol. Metab. 2001;86:4092-7).

Most patients who have undergone thyroidectomy and RAI ablation and have a negative whole body scan and a stimulated Tg level in the range of 2-10 ng/mL will see their Tg level decline to an unde-

tectable level, so they probably should not be treated subsequently with RAI, Dr. Tuttle advised. It is likely that "if you do nothing, you are going to take credit for this thyroglobulin number going down over time all by itself."

It is not necessary to treat patients with high Tg levels with two to three doses of RAI, he added. In a study of 17 patients with a negative initial whole body scan and an elevated Tg level, 16 patients had a positive scan after RAI therapy. During the course of three subsequent RAI doses, the percentage of patients with a decreasing Tg level increased from 81% to 90% to 100%, but the mean stimulated Tg level only decreased from 74 to 62 to 32 ng/mL, respectively (J. Clin. Endocrinol. Metab. 1995;80:1488-92).

Low Tg: RAI Probably Not Helpful

To determine if follow-up RAI therapy contributes to any changes in the stimulated Tg level of patients with an initial stimulated Tg level below 10 ng/mL, Dr. Tuttle conducted a study of 110 thyroid cancer patients who had Tg levels between 0.6 and 10 ng/mL and a negative whole body scan 1 year after receiving a total thyroidectomy and RAI ablation. At that point, 18 patients received repeat RAI therapy and 92 were observed.

After 1-2 years, stimulated Tg levels subsequently decreased in 71% and became undetectable in 29% of patients who had an initial stimulated Tg level between 0.6 and 2 ng/mL. In patients with an initial stimulated Tg level between 2 and 10 ng/mL, a significantly lower percentage of patients (3%) had an undetectable stimulated Tg level than those who had a decreased level (42%).

But among observed and RAI-treated patients with an initial stimulated Tg level between 2 and 10 ng/mL, there was no significant difference in the percentage of patients who had a reduction (40% vs. 45%, respectively), no change (12% vs. 18%), or an increase (48% vs. 37%) in their stimulated Tg level at follow-up. ■

Monitor TSH Regularly After Radiotherapy to the Neck

BY BRUCE JANCIN
Denver Bureau

DENVER — Hypothyroidism occurs in up to half of patients within 5 years following radiotherapy for head and neck cancer in which the gland remains outside the primary field of radiation but is included in the low-neck field, Anna A. Norris, M.D., reported at the annual meeting of the American Society for Therapeutic Radiology and Oncology.

Endocrinologists agree that it's important to begin thyroid replacement therapy at the first indication of hypothyroidism, so regardless of whether symptoms are even present, it's advisable

to screen patients who have undergone radiotherapy which included the thyroid in the low-neck field by regularly measuring TSH levels. A good regimen is to check the TSH every 6 months for the first 2 years and annually thereafter, said Dr. Norris of the University of Florida, Gainesville.

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She reported on 390 consecutive patients who underwent radiotherapy for oropharyngeal cancer during the 1990s at the university medical center.

None had a history of thyroid disease or surgery. All received radiotherapy with a standard low-neck field that covered the area—including the entire thyroid—with a dose of 50 Gy, with boosts bringing the total dose to selected portions of the field up

to 70 Gy. Median follow-up was 6 years.

During the 1990s, the practice at the university was to not routinely monitor TSH in patients who had undergone radiotherapy that included the thyroid only in the low-neck field. But in the subset of 169 patients in whom TSH was monitored, the 5-year incidence of hypothyroidism—as defined by a TSH greater than 4.5 ng/mL, regardless of symptoms—was 54%.

In a retrospective study like this it's impossible to know how many patients had their TSH mea-

sured. But even if none of the 221 patients whose TSH was unchecked had hypothyroidism, the 5-year rate following radiotherapy was still 31%, she noted. ■

PAIN RELIEVERS



"I already diagnosed myself on the Internet. I'm just here for a second opinion."