

## USE OF RADIOIODINE ABLATION FOR THYROID CANCER HAS INCREASED AND VARIES INEXPLICABLY AMONG HOSPITALS

Haymart MR, Banerjee M, Stewart AK, Koenig RJ, Birkmeyer JD, Griggs JJ. **Use of radioactive iodine for thyroid cancer.** JAMA 2011;306:721-8.

### SUMMARY ●●●●●●●●●●●●●●●●●●●●

#### BACKGROUND

Radioactive iodine-131 (<sup>131</sup>I) has been administered after thyroidectomy for differentiated thyroid cancer for half a century to eliminate residual thyroid tissue and possible metastatic disease. After initial surgery, the indications for radioiodine ablation have not been rigidly defined, leading to considerable variability in its use. The purpose of this study was to determine possible change in practice patterns and the degree to which hospitals in the United States vary in their use of radioactive iodine ablation and the factors that contribute to these variations.

#### METHODS

The National Cancer Database tracks about 85% of all thyroid cancers in the United States. The study queried 314,039 patients with primary thyroid cancers between January 1990 and December 2008. Only the 189,219 patients with differentiated thyroid cancer who had undergone total thyroidectomy were selected for analysis of various risk factors. Factors that correlated with use of <sup>131</sup>I were evaluated in the 85,948 patients diagnosed between 2004 and 2008. Cancer programs fell into the following four categories: community hospitals, comprehensive

community, teaching/research, and National Cancer Institute/National Comprehensive Cancer Network.

#### RESULTS

Between 1990 and 2008, the proportion of patients who received <sup>131</sup>I as adjuvant therapy after total thyroidectomy increased significantly ( $P < 0.001$ ). In 1990, 40.4% of patients received radioactive iodine; in 2008, 56.0% received it. The increased use occurred for both larger and smaller tumors.

For the 2004–2008 cases, younger age was associated with a twofold increased use of <sup>131</sup>I. There was less use for AJCC stage 1 as compared with stages 2 to 4. There was less use of <sup>131</sup>I adjuvant therapy in hospitals with low case volumes ( $< 7/\text{yr}$ ) as compared with hospitals with high case volumes ( $> 34/\text{yr}$ ). For patients in the same risk category, there was wide variation between hospitals in the use of radioactive iodine. Patient and tumor variables were calculated to account for 21% of the variation in use of radioiodine ablation and unknown hospital factors for 29% of the variation.

#### CONCLUSIONS

The use of radioactive iodine ablation therapy increased between 1990 and 2008, and much of the variation in its use was associated with hospital characteristics.

### ANALYSIS AND COMMENTARY ●●●●●

The large variation in use of radioactive iodine ablation among hospitals does not surprise me. I have noted through the years that the use of this therapy is based on local preferences, often those of hospital nuclear medicine departments, with some being much more aggressive than others. Although the study confirms that ablation therapy was used more

with higher stages of cancer, it is startling that it was used more with younger rather than older patients, since older patients tend to have more aggressive and recurrent tumors. The increased use of radioiodine ablation in the period 1990–2008 probably reflects that its use became the “standard of care,” despite a lack of controlled studies. The 2009 ATA guideline is to use radioiodine ablation in only select cases of stage

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1 disease, especially those with multifocal disease, nodal metastases, extrathyroidal or vascular invasion, and/or more aggressive histologies (1). Therefore, avoidance of radioiodine ablation in patients with tumors <2 cm and no other risk factors may reverse the trend of increased use, especially as more small tumors are being diagnosed and removed. In addition, there is increasing concern about the side effects of this therapy that include damage to the salivary glands and nasolacrimal ducts and secondary cancers, although these side effects are generally dose-related. These unfortunate consequences can be avoided with a return to the lower doses, such as 50 or 60 mCi, that were previously used for ablation therapy and that have been shown to be as effective as 100 mCi (2, 3). It is also important to note that a recent review

did not find a statistically significant improvement in mortality or disease-specific survival in low-risk patients treated with radioiodine ablation (4).

It should be noted that this study was criticized because there was incomplete knowledge about how and why care was delivered in hospitals showing variation (5). If radioiodine ablation was not given to high-risk patients, the reasons it was not administered (such as patient preferences) were not captured in the database. If radioiodine ablation was given to low-risk patients, subtle information regarding a clinician's decision to administer radioactive <sup>131</sup>I is not captured in these databases.

— Jerome M. Hershman, MD

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