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Microscopic Extrathyroidal Extension Is Not a High Risk Factor for Differentiated Thyroid Cancers Smaller than 4 cm

Nixon IJ, Ganly I, Patel S, Palmer FL, Whitcher MM, Tuttle RM, Shaha AR, Shah JP. The impact of microscopic extrathyroid extension on outcome in patients with clinical T1 and T2 well-differentiated thyroid cancer. Surgery 2011;150:1242-49.

SUMMARY

Background

Studies of national databases and from large institutions have indicated that age and gross extrathyroidal extension (ETE) of tumor are important predictive factors for disease-specific survival for well-differentiated thyroid cancer. However, it has never been clear that microscopic ETE of the primary tumor has the same prognostic impact. In patents older than 45 years of age, small tumors (<4 cm; American Joint Committee on Cancer/Union for International Cancer control [AJCC/UICC] cT1 and cT2) found to have microscopic ETE are upgraded to AJCC/UICC stage 3. This upgrading suggests that such patients have a higher risk of mortality. The authors of this study examined the impact of microscopic ETE in patients with small (<4cm; cT1 and cT2) well-differentiated thyroid cancer (91% papillary, 5% follicular, and 4% Hürthle-cell) to determine the effect of the extent of surgery and of adjuvant radioactive iodine (RAI) treatment on outcome.

Methods and Results

Patient records from 1986 to 2005 revealed that of 1810 patients who underwent initial surgery for thyroid cancer, 984 (54%) had well-differentiated thyroid cancer <4 cm (cT1/cT2) and no evidence of adenopathy, based on clinical examination at the time of operation plus central-neck node dissection, and no evidence of extension to fibroadipose tissue or strap muscles. Of the 984 patients, 869 (88.3%) were stage 1 and 2 (pT1 and pT2), while 115 (11.7%) were upstaged to stage 3 (pT3) because of microscopic ETE. There was less ETE in tumors <1 cm (6%), than in tumors 1 to 2 cm (16.4%), 2 to 3 cm (15.3%), and 3 to 4 cm (11.7%). Disease-specific survival (DSS) and recurrence-free survival (RFS) were estimated by means of Kaplan–Meier analysis. The entire group was followed for a median of 98 months (range, 6 to 291) with 95% 10-year overall survival, 99%DSS, and 98% RFS. There was no significant difference between the pT1/pT2 and pT3 groups in 10-year DSS (99% vs. 100%; P = 0.733) or RFS (98% vs. 95%; P = 0.188). Of the 869 stage 1 and 2 patients without ETE, 488 (56%) underwent total thyroidectomy, 350 (40%) had thyroid lobectomy, 15 (2%) had isthmusectomy, and 16 (2%) had subtotal thyroidectomy. Postoperative RAI was given to 186 (21%) of the 869 without microscopic ETE. Of the 115 with microscopic ETE, 86 underwent total or near-total thyroidectomy (77%), 26 had lobectomy (23%), and 2 (2%) had subtotal thyroidectomy. Postoperative RAI was given to 65 (57%, P<0.001). The extent of surgery or RAI ablation was not significant for recurrence on either univariate or multivariate analyses in the pT3 cohort. There were no disease-specific deaths in the group with microscopic ETE. There were 3 recurrences, all within cervical nodes, in the 115 with ETE (3%), whereas 5 of the 869 without ETE had cervical-node recurrence (0.5%, P = 0.032).

Conclusions

This study indicates that microscopic ETE does not affect the disease-specific survival and recurrence-free survival in patients with small well-differentiated thyroid cancer <4 cm (cT1 or cT2) who do not have abnormal nodes (N0).

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ANALYSIS AND COMMENTARY

The 2009 American Thyroid Association Guideline for Thyroid Nodule and Cancer suggests using both the TMN AJCC/UICC staging and risk factors to completely assess risk for death and persistence/recurrence of the tumor (1). These risk categories state that microscopic ETE places patients at medium risk while gross ETE places patients at high risk (2,3). In contrast, the current retrospective study shows that the excellent outcome expected for small tumors of differentiated thyroid cancer (cT1/cT2; <4 cm) without nodes (N0) is not affected by microscopic ETE. In the absence of other risk factors, such as lymphovascular invasion, aggressive histology, incomplete surgical removal, or clinically important metastatic nodes, it may not be necessary to upgrade tumors found to contain microscopic ETE to pT3. The impact of ultrasound examinations and thyroglobulin determinations was not assessed in this retrospective study, and they probably deserve to be included in future large multi-institution studies before guidelines for the management of thyroid cancer are altered.

— Stephanie L. Lee, MD, PhD

References

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