THE GEORGE WASHINGTON UNIVERSITY
WASHINGTON, DC

Management of Well-Differentiated Thyroid Carcinoma Following 2015 ATA Updated Guidelines

Anahita Khoshnoud, BA[1], Sandhya Ganesan, BS[2,3], Chelsey K. Baldwin, MD[4]

1.The George Washington University School of Medicine and Health Sciences, 2.Division of Otolaryngology-Head & Neck Surgery, George Washington University, 3.The Renaissance School of Medicine at Stony Brook University, Stony Brook, NY, 4.Department of Endocrinology, The George Washington University School of Medicine & Health Sciences, Washington, DC 20037, USA.

Introduction

Globally thyroid cancer incidence has risen, largely due to increased detection of small papillary carcinomas, while mortality and disease free survival has remained relatively stable[1,2] These trends have raised concerns regarding advanced imaging contributing to over diagnosis and over treatment of thyroid cancer and revaluation of surgical intervention and RAI use[2].

The 2015 American Thyroid Association Guidelines acknowledged these changes in epidemiology and aimed updates towards "minimizing potential harm from over-treatment[3]." This was done by expanding lobectomy eligibility, limiting adjacent RAI, and supporting active surveillance for select patients[3].

AIM

To determine how the updated 2015 American Thyroid Association (ATA) Guidelines may have influenced the management of differentiated thyroid carcinomas (DTC) in the United Stated.

Methods

A retrospective evaluation of patients with well-differentiated thyroid cancer was performed using the TriNetX Research Network.

Patients with well-differentiated thyroid carcinomas were identified using ICD-10 (C73) and ICD-0 (C73, C73.9) codes. Patients with non-well differentiated thyroid carcinomas were excluded using ICD-0 codes (8345/3, 8021/3, 8337/3, 8513/3).

Data extracted included patient demographics, total number of patients diagnosed with well-differentiated thyroid cancers, and total case numbers categorized by three main treatment modalities–partial thyroidectomy, total thyroidectomy, and radioactive iodine (RAI) therapy–between the 2010-2018.

Patient data was further stratified according to implementation timeline of the updated 2015 ATA guidelines. Date ranges used to stratify the data were 2010-2014 and 2015-2018. To provide data stratification for high risk patients, both 2010-2014 and 2015-2018 groups were further divided by age into cases <55 years of age and >55years of age[5]. Additional stratification was performed based of location of treatment (academic vs. non-academic medical center).

Differences between groups were compared using chi-squared (x^2) test. *P-values <0.05* were considered statistically significant.

Results

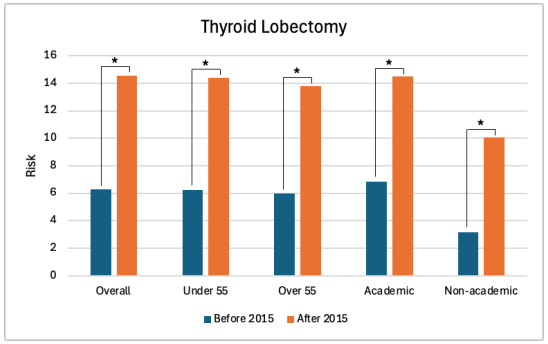

Figure 1. Rates of thyroid lobectomy before and after 2015. An asterisk (*) indicates p<0.05, identifying a significant difference.

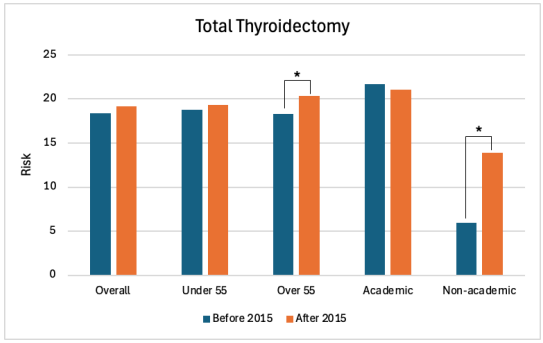

Figure 2. Rates of total thyroidectomy before and after 2015. An asterisk (*) indicates p<0.05, identifying a significant difference.

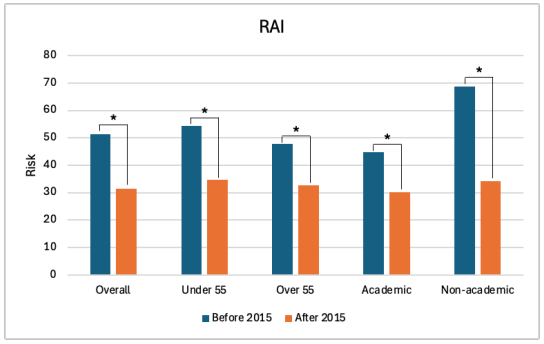

Figure 3. Rates of RAI treatment before and after 2015. An asterisk (*) indicates p<0.05, identifying a significant difference.

Discussion

Following the 2015 ATA Guidelines, patients were 7.76% more likely to undergo thyroid lobectomy and 19.68% less likely to undergo RAI treatment. Specifically:

- A statistically significant increase in thyroid lobectomy was observed in both age cohorts and in both academic and non-academic medical centers
- A significant decrease in RAI therapy was observed in both age cohorts and academic and non-academic medical centers
- A statistically significant increase in total thyroidectomy was observed in ≥55 years cohort and in non-academic centers.

These trends align with a emerging shift towards patient centered care. Lobectomy offers the advantages of preserving endogenous thyroid function while also reducing risks of hypoparathyroidism and recurrent laryngeal nerve injury without compromising disease free survival[4]. In addition, the updated AJCC staging guidelines–which raised cutoff age from 45 to 55–better aligned with tumor biology and survival outcomes[5]. Emerging evidence finds that patients ≥55 years demonstrated more aggressive tumor biology and mutations (BRAF, RAS,TERT), which aligns with the AJCC new age cutoff and trends identified in this study[6].

Limitations of the study included a retrospective database design and inability to to distinguish initial and completion thyroidectomies.

Conclusion

Following the publication of the updated ATA Guidelines, the clinical management of DTC in the US has changed with increased thyroid lobectomy and decreased RAI treatment, consistent with the de-escalation of treatment outlined in the updated guidelines.

This is consistent with the hypothesis that the 2015 ATA Guidelines were successful in influencing treatment patterns in patients with DTC.

References

1.Jegerlehner S, Bulliard J, Aujesky D, et al. Overdiagnosis and overtreatment of thyroid cancer: A population-based temporal trend study. *PLoS One*. 2017;12(6):e0179387. doi: 10.1371/journal.pone.0179387.
2.Vaccarella S, Franceschi S, Bray F, Wild CP, Plummer M, Dal Maso L. Worldwide thyroid-cancer epidemic? the increasing impact of overdiagnosis. N Engl J Med. 2016;375(7):614–617. doi: 10.1056/NEJMp1604412.
3. Haugen BR, Alexander EK, Bible KC, et al. 2015 american thyroid association management guidelines for adult patients with thyroid nodules and differentiated thyroid cancer: The american thyroid association guidelines task force on thyroid nodules and differentiated thyroid cancer.
4. Rodriguez Schaap PM, Botti M, Otten RHJ, et al. Hemithyroidectomy versus total thyroidectomy for well differentiated T1-2 N0 thyroid cancer: Systematic review and meta-analysis. *BJS Open*. 2020;4(6):987–994. doi: 10.1002/bjs5.50359.
5. Nixon IJ, Wang LY, Migliacci JC, et al. An international multi-institutional validation of age 55 years as a cutoff for risk stratification in the AJCC/UICC staging system for well-differentiated thyroid cancer. *Thyroid*. 2016;26(3):373–380. doi: 10.1089/thy.2015.0315.
6. Kim K, Kim JH, Park IS, Rho YS, Kwon GH, Lee DJ. The updated AJCC/TNM staging system for papillary thyroid cancer (8th edition): From the perspective of genomic analysis. *World J Surg*. 2018;42(11):3624–3631. doi: 10.1007/s00268-018-4662-2.

School of Medicine & Health Sciences
THE GEORGE WASHINGTON UNIVERSITY

smhs.gwu.edu