Preoperative Thyroglobulin Levels and Sentinel Lymph Node Biopsy Outcomes in Well Differentiated Thyroid Carcinomas: Is There a Correlation?

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ABSTRACT

Objective: To retrospectively assess the usefulness of preoperative Thyroglobulin (Tg) levels in predicting sentinel lymph node biopsy (SLNB) outcomes. To evaluate the correlation between preoperative Tg levels and the overall number of positive SLNs. To compare Primary Tumor (T) classification in patients according to SLNB outcomes.

Methods: Data from patients operated on well differentiated thyroid carcinomas (WDTC) at the McGill University Thyroid Cancer Center was collected from January 2007 to January 2012. Statistical analyses were performed with SAS® (version 9.2). A Mann-Whitney-Wilcoxon test, a Pearson Correlation Coefficient and a Pearson χ2 test.

Results: Preoperative Tg levels and SLNB results were available in 107 patients: 57 positive and 50 negative SLNBs. Mean preoperative Tg levels for negative and positive SLNB groups were 18.3 and 31.0 ng/mL, respectively, yielding no statistically significant difference (p=0.595). Moreover, the statistically significant correlation was reported between Tg levels and the number of positive SLNs (r=0.36). While 42.9% of patients with negative SLNBs had a T1 or T2 class WDTC, 77.3% of patients with positive SLNBs had a T3 or higher class, yielding a statistically significant difference between these two groups (p=0.001).

Conclusions: Preoperative Tg levels are not significantly different in patients with positive SLNBs as compared to patients with negative SLNBs and show no significant correlation with the number of positive SLNs. Thus, an increased preoperative Tg level may predict the presence of SLNB status. Patients with positive SLNBs, however, have a significantly worse T classification.

Keywords: Thyroid gland, Clinical Science, Practice Guidelines

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Introduction

Sentinel lymph node (SLN) - • First fully described in 1977 (Cancer 1977). • Used for cutaneous melanoma, breast ca, merkel cell ca, gastric ca, colorectal ca, ophthalamic ca. 


Methods

Patient selection - • Retrospective chart review of WDTC patients who underwent a total thyroidectomy with elective SLNB at the McGill University Thyroid Cancer Center. Among the 851 patients operated at our institution, 79 were retained for this study. • Exclusion criteria: subjects with hemi or complete thyroidectomies (330), unavailable preoperative Tg (157), measurable TgAb (n=107), unavailable SLNB (n=83), high-risk DTC (n=72) and benign tumors (n=59).

Surgical management - • Shortly after incision patients’ thyroid was injected with 0.2cc of 1% methylene blue dye. • SLNs excised and sent for frozen section analysis.

Statistical analyses - • Mann-Whitney-Wilcoxon test, Pearson Correlation Coefficient, Pearson χ², Fisher Exact test. • P<0.05 was considered significant.

Results

NEGATIVE SLNB POSITIVE SLNB Statistical significance

Number of cases 57 22 p=0.748

Females 48 (84.2%) 18 (81.8%) p=0.973

Males 9 (15.8%) 4 (18.2%) p=0.138

<45 years old 18 (31.6%) 7 (31.8%) p=0.801

≥45 years old 39 (68.4%) 15 (68.2%) p>0.05

Mean preop Tg (ug/L) 129.3 91.0

T1 + T2 class 47 (82.5%) 5 (22.7%) p<0.001

T3 + T4 class 10 (17.5%) 17 (77.3%)

Discussion

• First study to assess preoperative Tg as a predictive factor in SLNB outcomes. • Tg levels were not associated with SLNB outcomes. • No correlation was found between Tg levels and the number of positive SLNs in each patient. • This was a retrospective study with a limited number of cases, although patients are being added on a monthly basis. • Our key finding was that Tumor classification was significantly higher in patients with positive SLNBs, although this was not our primary objective.

Conclusion

• According to this study, preoperative Tg levels are not significantly different between positive and negative SLNB patients. • Preoperative Tg levels do not correlate with the number of positive SLNs found in a patient. • Having a positive SLNB is associated with higher Primary Tumor (T) classification.

References

• Please contact author for references.