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IS TSH SUPPRESSION NEEDED IN PAPILLARY THYROID CANCER PATIENTS AFTER LOBECTOMY?

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Introduction

Thyroid-stimulating hormone (TSH) suppression is recommended after total thyroidectomy for patients with intermediate and high risk papillary thyroid cancer (PTC) patients. However, more smaller PTCs were detected and more lobectomy was performed for such relative low risk patients since ATA 2015 edition published. The ideal TSH target for these lobectomy PTC patients is unknown, although the guideline weakly recommended the TSH target level should be between 0.5-2 mU/L at a low evidence level. The hypothesis of this study is that avoidance of TSH suppression therapy following thyroid lobectomy in patients with low-risk thyroid cancer would not increased cancer recurrence.

Materials and methods

A prospective, single arm study was initiated since 2016. TSH was measured 6-8 weeks post-lobectomy. If the TSH was in normal range (0.5-4.0mU/L), L-T4 was not prescribed. L-T4 was taken only when their TSH>4mU/L and then their TSH target was 0.5-2.0 mU/L. Thyroid and neck ultrasound was performed and thyroid function was monitored every 6 months in the first 2-3 years and yearly thereafter. Kuma's modified TSH-score[1] was used as the TSH average level. Recurrence was confirmed by pathology of re-operation.

Results

231 thyroid cancer patients with lobectomy were followed up for a medium 42 months (15-109 m)(Table1), 81% (186/231) were low risk of recurrence according to ATA 2015 criteria[2]. 96% of this cohort patients were not in TSH suppression status. **Only 2 cases (1%) were diagnosed with recurrence and re-operated (Table2)** even they were on L-T4.

Table1. Patients' clinical-pathologic characteristics

Characteristic	Category	N（%）
Median age, y (range)	41（19-69）	
Sex	female	155（67）
Mean tumor size ±SD, cm	0.9±0.7	
Tumor size, cm	≤1	169（73）
	1.1-4.0	62（27）
T stage	T1	189（82）
	T2	27（12）
	T3	15（6）
N stage	N0	161（70）
	N1a	62（27）
	N1b	8（3）
TNM stage	I	229（99）
	II	2（1）

Table2. TSH score during follow up and recurrence

TSH score*	N(%)	TSH suppression	rucurrence
2.5	10 (4)	Yes, mild	0
3	94 (41)	no	2
3.5	117 (51)	no	0
4	10 (4)	no	0

*Kuma modified TSH score scale[1]: 1 undetectable; 2 <0.05mU/L; 2.5 0.05-0.5mU/L; 3 0.5-2 mU/L; 3.5 2-4mU/L ; 4 >4 mU/L.

29% (65/222) patients were free of L-T4 supplement because of their normal TSH level. 166 patients took L-T4. 9 individuals who were already hypothyroid prior to surgery, 70 patients (32%, 70/222) developed hypothyroidism after the procedure (Table3).

Apart from the above findings, 54 patients with unknown TSH levels, due to intermediate risk stratification for recurrence. preoperative TSH levels were at the upper end of the normal range but became normal at 8 weeks postoperatively, L-T4 is recommended. Some patients sought care at other hospitals shortly after surgery and were prescribed L-T4 without TSH testing(Table3).

33 patients who received medication with TSH levels within the normal range, some had TSH values at the upper limit (TSH 2.5-4 mU/L). This discrepancy may be associated with differing treatment decisions by different physicians within our hospital or at external institutions (Table3).

Table3. TSH levels in 166 patients with LT-4 therapy

thyroid function	TSH value	N
unknown	unknown	54
Preoperative hypothyroidism	Preoperative level above the upper limit of normal (> 4 mU/L)	9
Postoperative hypothyroidism	Postoperatively above the upper limit of normal (> 4 mU/L)	70
nomal	Normal range (0.5 ~ 4.0 mU/L)	33

Conclusion

This study found that patients with thyroid cancer who did not undergo active TSH suppression therapy following lobectomy exhibited a recurrence rate of 1%. This rate is consistent with the 1% to 3% recurrence rates reported in the literature [3,4]. Notably, nearly one-third of the patients did not receive levothyroxine (LT-4) supplementation. This pilot prospective study suggests that TSH suppression may not be necessary for low-risk thyroid cancer patients post-lobectomy, provided their thyroid function remains within normal limits.

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