74 Year Old male with H&N cancer and abnormal TFT

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04/03/2014

HPI

- 74 year old M with PMH of HTN, recently Dx Sq.C.Ca of the tongue
- Was in his usual state of health until 8 months ago
- c/o Wt loss, difficulty swallowing, voice change, intermittent palpitation
- Found to have tongue lesion (Sq.c.ca on biopsy)
- Underwent hemi-glossectomy, elective bilateral neck dissection (3/10/14).
- During surgery found to have large Rt side thyroid nodule → Rt side thyroid Lobectomy.
- We were consulted for abnormal TFT

ROS

Constitutional: Wt loss (40 pounds over 8 months)

HENT: No blurred vision, no double vision, no headache

Neck: no neck pain, no neck swelling, + difficulty swallowing, + voice change.

Cardio/pulm: No CP, + intermittent palpitation, no orthopnea or PND

GI: No N/V/D, no constipation, no melena or hematochezia

GU: Negative,

Skin/MSK: negative, no rash

Neuro denied any tremors or weakness.

PMH:

✓Colon cancer s/p surgical resection and chemo in 2006

✓HTN

✓BPH

✓Recently Dx Sq.C.Ca (tongue)

Family History:

✓ No FH of thyroid cancer

✓ No FH of any other thyroid disease

Surgical history:

✓Total colectomy 2006

Social history

✓Quit smoking 8 months ago, drink alcohol socially, no illicit drugs.

Home medications

✓Atenolol 50 mg po daily

✓Doxazosin 2 mg po daily

✓Multivitamins

On examination

Vitals: BP 134/94, Pulse 71, no fever, RR 18, BMI 19

General: awake alert, comfortable, thin man

HEENT: normocephalic non traumatic, no pallor, no jaundice. No double vision, no increase insertion, no exophthalmos

Neck: supple, s/p Rt lobectomy and bilateral neck dissection

CVS/Pulm: clear equal air entry no added sounds, regular pulse, S1 + S2, no murmur.

Abd: soft lax, no organomegaly, no tenderness, audible bowel sounds.

Skin: normal, not diaphoretic

Neuro: alert, no tremor, CN intact, DTR normal

Psych: normal mood, and affect

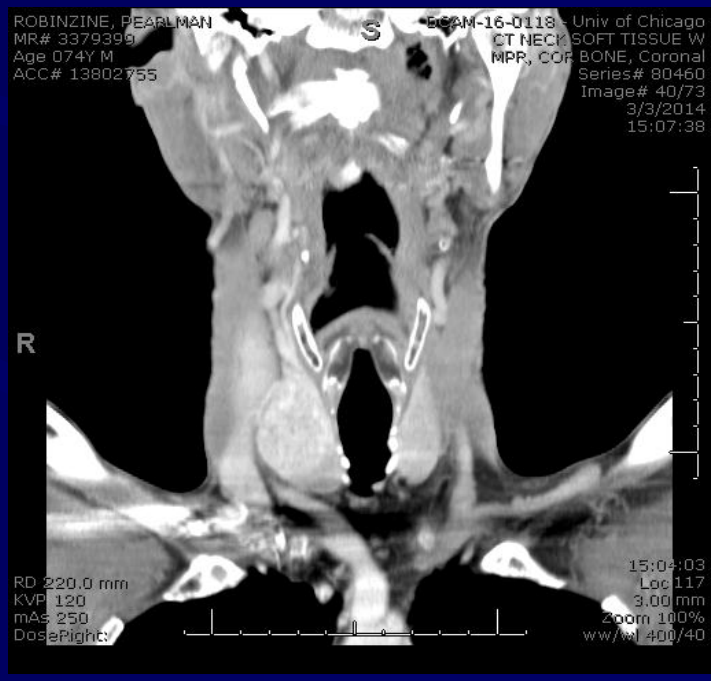
General labs

Test/date	3/10/2014
Na/K	138/4.0
BUN/Cr	6/0.6
eGFR	110
ALP	83
Ca	9.5
ALT/AST	9/12
Hb	11.6
WBC	7.6
Plt	322

TFT

Test/date	3/3	3/13	3/17
TSH (0.4 – 4.5)	<0.01	<0.01	<0.01
FT4 (0.8 – 1.8)	1.86	1.0	0.50
T3 (20 – 195)	184	66	37
rT3 (160 – 353)		380	
TPO&Tg Abs	<0.4		

Surgery 3/10



Neck CT scan prior to the surgery

Clinical Qs

- What is the pattern of recovery of hypothalamic-Pituitary-Thyroid axis following treatment of hyperthyroidism?

- What is the cause of central hypothyroidism (direct pituitary thyrotroph suppression or hypothalamic TRH deficiency)?
- Is the length of preexisting hyperthyroidism and baseline free T4 predict the duration of the central hypothyroid phase?

Pattern of Recovery of the Hypothalamic-Pituitary-Thyroid Axis Following Radioactive Iodine Therapy in Patients with Graves' disease

Harry L. Uy, MD, Charles A. Reasner, MD, Mary H. Samuels, MD, San Antonio, Texas

The American Journal of Medicine' Volume 99, August 1995

- ✓ 21 subjects with Graves' disease (17 women and 4 men), aged 18 to 54 years entered the study.
- ✓ Patients who were pregnant, who had underlying psychiatric or cardiopulmonary illness, or who required medications known to affect TSH values were excluded from the study.
- ✓ None of the patients were treated with thionamides or iodides after receiving radioactive iodine. Beta blockers were continued as required to control hyperadrenergic symptoms.

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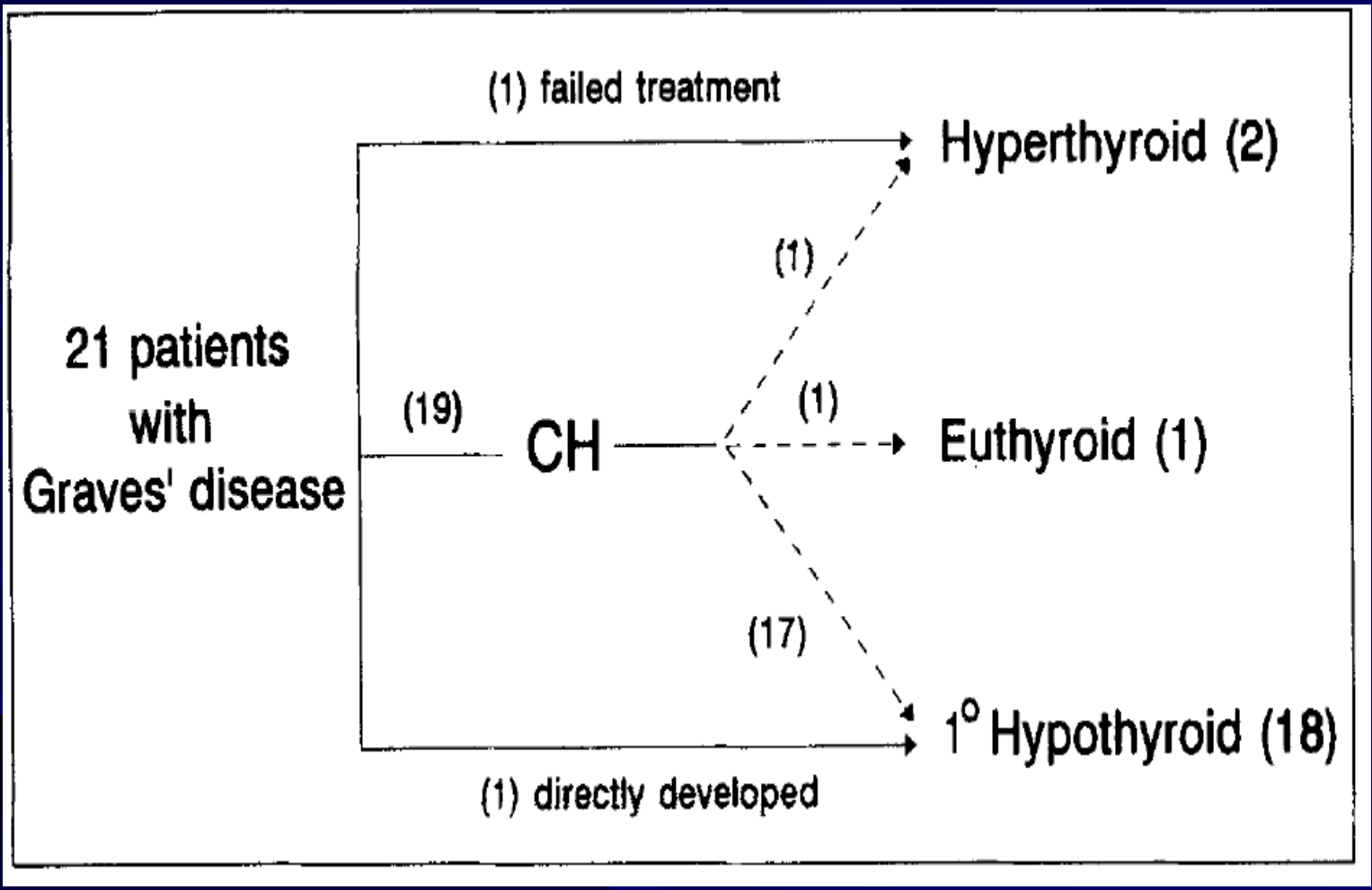

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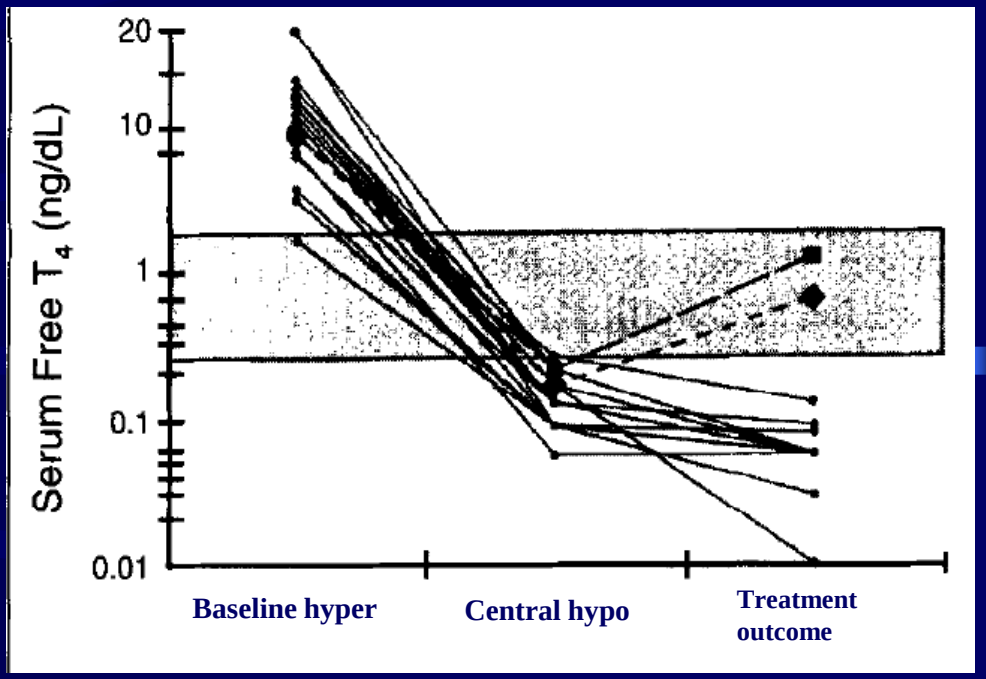
TABLE

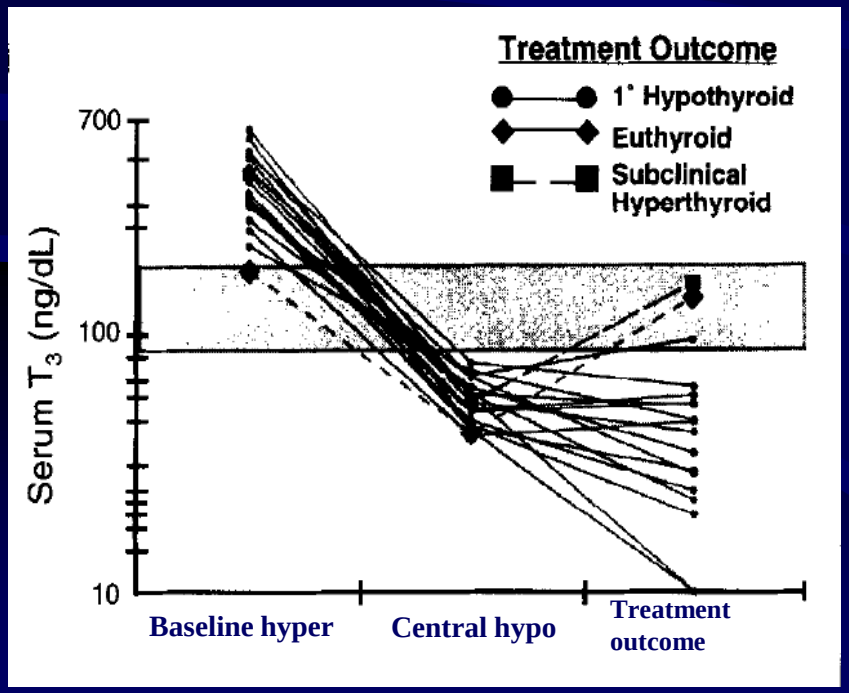
Characteristics of 19 Patients With Graves' Disease Who Experienced a Central Hypothyroid Phase Following ^{131}I Therapy

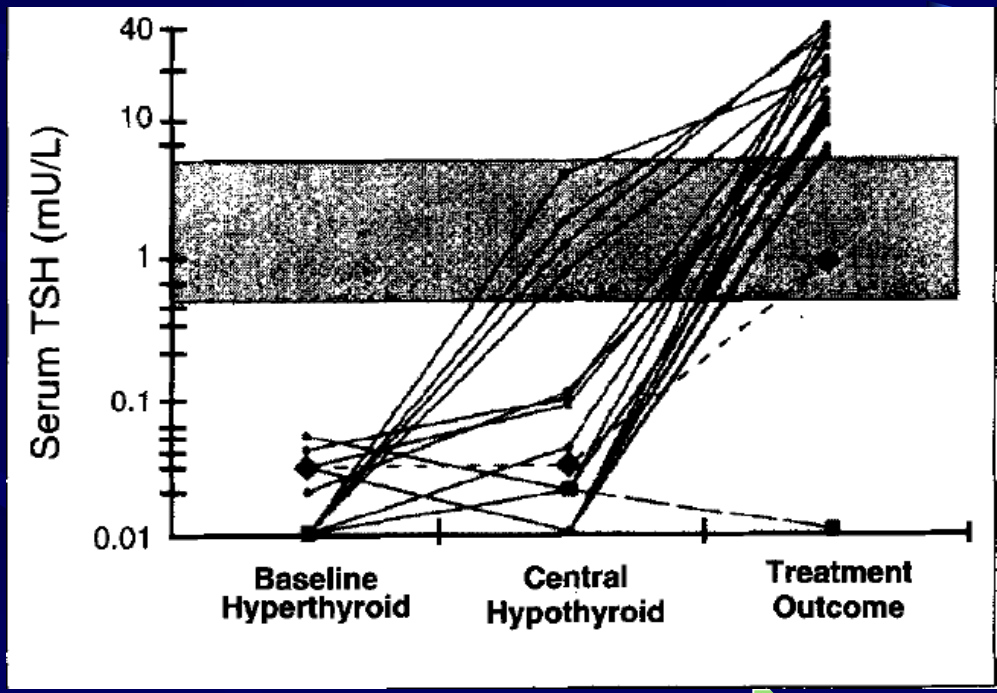
Patient No.*	^{131}I Dose (mCi)	Onset of CH (Days)	Duration of CH (Days)	Thyroid Profile at Onset of CH		
				Free Thyroxine (0.8–2.7 ng/dL)	Triiodothyronine (90–190 ng/dL)	TSH (0.39–4.6 mU/L)
1†	17.7	29	28	0.5	60	0.09
2	29.9‡	50	18	0.4	70	0.01
3†	11.2	84	14	0.4	41	1.1
4†	9.8	119	14	NA§	NA	0.1
5†	15	68	16	0.4	47	1.6
6	19.8	55	28	0.6	43	0.01
7	16.3	55	47	0.7	60	0.01
8	20.4	56	15	0.4	74	0.0B
9	15.5	27	28	0.7	59	0.02
10	13.7	71	19	0.3	52	0.01
11	12.1	85	14	0.5	80	0.4
12†	15.4	44	28	0.6	45	0.01
13†	12.1	65	35	0.5	44	0.01
14	10	73	14	0.4	56	3.5
15	15.8	27	14	0.5	64	0.7
16	20	69	43	0.8	71	0.02
17†	13.6	68	28	0.5	51	0.02
18†	12.3	72	31	0.6	42	0.03
19†	9.4	77	35	0.7	56	0.02

*Following treatment, patients 1–17 became hypothyroid; 18 became euthyroid; and 19 became subclinically hyperthyroid.
†Treated with a short course of thionomides before ^{131}I therapy.
‡Received maximum outpatient dose of ^{131}I as retreatment.
§Total thyroxine = 3.9 μg/dL (normal range 4.5–12.0).
CH = central hypothyroid; TSH = thyroid-stimulating hormone; NA = not available.

Pattern of recovery of HPT Axis







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Response to TRH stim test

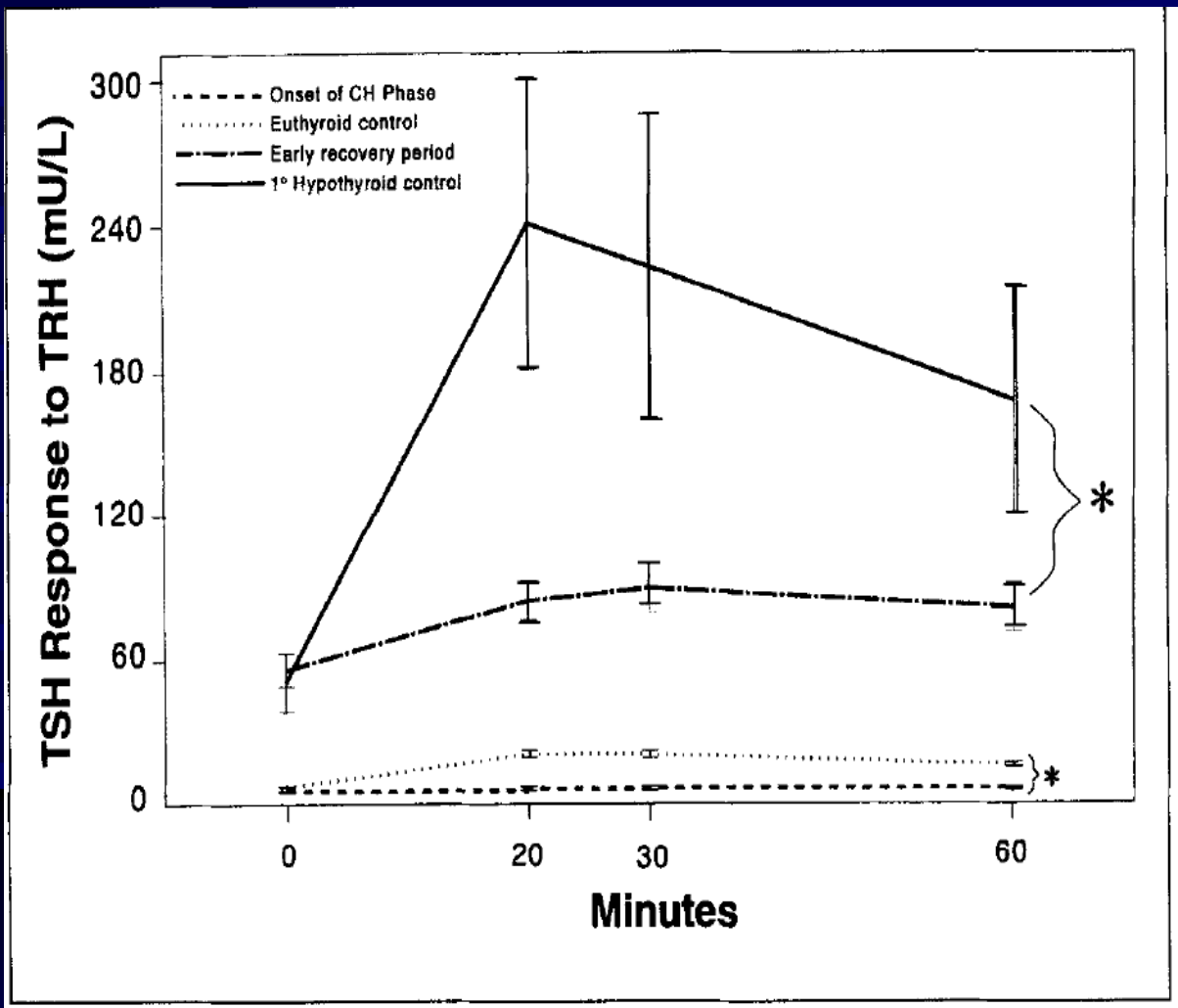

Figure 3. Thyrotropin-releasing hormone (TRH) test results. Thyroid-stimulating hormone (TSH) response following 500 µg intravenous TRH injection in 18 patients who experienced a central hypothyroid phase (CH), and in 29 euthyroid and 3 hypothyroid control patients. At onset of CH (---), patients exhibited a blunted TSH response (*P <0.01, by repeated-measures analysis of variance using the natural logarithms of the TSH value) compared with euthyroid control patients (n = 29, •••). Similar blunted TSH response (*P <0.01) was observed during the early period after onset of 1° hypothyoidism (n = 12, -•-•-•) in patients compared to control hypothyroid subjects with similar basal TSH elevations (n = 3, —).

Results

- ✓ Nineteen **(90%)** of the patients with Graves' disease experienced a transient central hypothyroid phase.
- ✓ Recovery of the HPT axis occurred a mean of **24.7 +- 2.4** days (range 14 to 47) after the onset of central hypothyroidism.
- ✓ Central hypothyroid phase occurred a mean of **62.8 + 5.1** days following 131-I treatment.
- ✓ **Blunted TSH response** to TRH compared to 29 euthyroid control subjects, suggesting primary feedback suppression at the level of the pituitary thyrotrophs
- ✓ ******** The length of preexisting hyperthyroidism, baseline free T4, and administered dose of I-131failed to predict the duration of the central hypothyroid phase, although a higher dose of I-131 was associated with an earlier onset of central hypothyroidism ($P < 0.05$)

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Summary

- Clinicians should be aware of the delay in the recovery of the HPT axis that occurs after treatment of patients with hyperthyroidism and is manifested by a transient central hypothyroid phase.
- The blunted TSH response to TRH stimulation during this period suggests that suppression occurs primarily at the level of the pituitary thyrotrophs
- The length of preexisting hyperthyroidism, and baseline free T4 failed to predict the duration of the central hypothyroid phase

Back to my patient

Surgical pathology:

- Invasive squamous cell carcinoma (3.8 cm), moderately differentiated
- The **1.9 cm** microfollicular thyroid nodule , unencapsulated but well circumscribed and demonstrates microfollicular architecture with stromal hyalinization, calcification, and associated random endocrine atypia. These findings are not diagnostic of carcinoma
- papillary thyroid microcarcinoma measures <0.1 cm, is unencapsulated, and shows no evidence of lymphovascular invasion, perineural invasion, or extrathyroidal extension. Margins are uninvolved

- ✓ **Patient was complaining of worsening fatigue**
- ✓ **started on Levothyroxine 50 mcg po daily**
- ✓ **Will see me in 4 weeks in the clinic → repeat TFT**

References

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Thank you

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04/03/2014