Thyroid Clinic 2017

Diana McNeill MD, FACP
Professor of Medicine
Division of Endocrinology and Metabolism
Duke University Medical Center

Disclosures

• I have no conflicts of interest to report at this time
In the clinic...

- 35 year old female with no significant past medical history.
- Notes “lump” on her neck one morning while brushing her teeth
- Has not had any difficulty swallowing or neck pain
- No history of neck irradiation
- Mother had some thyroid problems

What other questions would you ask to assess thyroid status? (Check all that apply.)

- Skin or hair changes
- Temperature intolerance
- Discolored urine
- Weight changes
- Emotional lability
- Decreased hearing
- Changes in bowel patterns
- Use of complementary or alternative medications
Physical exam

- Well appearing
- BP 110/70 P 72 RR16
- HEENT: no lid retraction or stare
- Thyroid: visible right thyroid nodule; moves easily with swallowing
- 1.5 cm in diameter; no lymphadenopathy
- Cardiac: regular rate and rhythm, no murmur
- Remainder of exam normal

Laboratory

- WBC 7, 500
- TSH 3.2uIU/ml (0.34-5.66 uIU/ml)
- FT4 0.9 ng/dl (0.52-1.21 ng/dl)
- Anti microsomal thyroid antibody - negative
What is the next step in her management?

- Thyroid US
- US directed Fine Needle Aspirate (FNA) of nodule
- Recheck thyroid exam and labs in 6 mos
- Reassure and tell patient to have thyroid checked again in one year

1. 1/15 women have a thyroid nodule
2. 1/40 men have a thyroid nodule
3. 90% benign
4. Thyroid cancer incidence has been increasing

Think BENIGN

- Family history of Hashimoto’s thyroid disease
- Hyper or hypothyroidism
- Pain
- Mobile, soft nodule
- Cyst on US
- Hot nodule on thyroid scan

Benign Thyroid Nodules

- Cysts
- Adenomas
- Thyroiditis
- Other: Riedels struma, painless thyroiditis
Suppressive Therapy

- No value of suppressive therapy
- (3 meta-analysis, several randomized control trials)
- Benefit in iodine-depleted diets


Think MALIGNANT

- Age less than 20 or greater than 70
- Male
- Hoarseness
- External neck irradiation
- Firm fixed nodule
- Cold on scan
- Cervical lymph nodes
2017 Guidelines

• No recommendation to screen unless high risk

Worrisome Ultrasound Findings

• Microcalcifications
• Hypervascularity
• Hypoechogeticity (Darker)
• Irregular borders
• Taller than wide

Follow up

- Patient underwent US directed FNA of right thyroid nodule
- Pathology: colloid nodule
- Repeat thyroid US in one year to confirm stability of nodule

FNA

- Nondiagnostic: REPEAT with 50% success on repeat; No sooner than 3 months
- Benign with colloid: GOOD
- Malignant: Except follicular and Hurtle Cell carcinoma cannot be diagnosed by FNA
- Suspicious: SURGERY... 25% malignant
Thyroid Cancer

- Papillary 60%
- Follicular 12%
- Follicular Variant of papillary 6%
- Medullary
- Anaplastic
- Lymphoma

Multinodular Goiter

- Same risk of malignancy as those with solitary nodule
- Aspiration of only predominant nodule may miss malignancy
- Ultrasound characteristics superior to size in diagnosing malignancy

Benign Thyroid Nodule Follow-up

• Palpable- 6-18 month clinical follow-up
• Not palpable- serial US 6-18 months after FNA
• If stable size- subsequent follow-up may be longer
• If larger nodule- repeat FNA


Take Home Points

• 7-15% of thyroid nodules are malignant
• Incidence of thyroid cancer increasing in part due to improved imaging techniques
• Thyroid US can help identify high risk nodules
• FNA of nodule necessary for diagnosis based on size, shape, appearance, other risk factors.

27 year old female G3P3Ab0 with goiter

- 6 months post partum
- Not breast feeding, menses not yet resumed
- Is being treated for post partum depression
Physical exam

- Anxious appearing female, jittery
- BP 150/70  P110 regular  RR18  T 99°F
- Bilateral stare with lid retraction
- Visible thyroid
- Thyroid bruit appreciated
- COR: RRR, S1S2 no S3, S4
- Bilateral resting tremor upper extremities

- FT4  6 ng/dl (0.52-1.21 ng/dl)
- FT3  normal range
- TSH  undetectable
- Positive thyroid stimulating immunoglobulin
- Positive thyroid peroxidase antibodies
- WBC 9,400  Hemoglobin 12
- Negative urine pregnancy test
What are the possible causes of her abnormal thyroid laboratories?

- Grave’s Disease
- Post-partum thyroiditis
- Lab error
- Toxic multinodular goiter
- Depression

Clinical evaluation

- Nodular gland
- Thyroid scan and uptake -1-2% (low)
Thyroid changes in pregnancy

- TSH has similar structure to pregnancy hormone BHCG, which may have slight effect on thyroid
- Increase in thyroid binding globulin which increases total hormone levels
- FT4 and FT3 levels remain unaffected

Fetal thyroid

- Not synthesizing thyroid hormone until 18 weeks gestation
- Prior to that time depends on mother’s thyroid hormone
Abnormal thyroid function in pregnancy

- Early recurrent miscarriage
- Subclinical hypothyroidism (elevated TSH with normal FT4 and FT3) may need to be treated.


Thyroid levels in pregnancy

- First trimester TSH < 2.5mIU/ml
- Second trimester TSH < 3.0mIU/ml
- 15% of pregnant women have subclinical hypothyroidism.

Thyroid. 2011. 21:1081-1125
Should Subclinical hypothyroidism be treated in pregnancy

- Cochrane review-No 2013
- Systematic Review- maybe 2016

Thyroid. 2016. 26: 580-589
Cochrane Database Syst Rev 5:CD007752

Diagnosis

- Thyroiditis: Post partum
- Need to r/o Grave’s disease
- Grave’s Disease often has an elevated FT3/FT4
- Treatment is different dependent on diagnosis

But if she had Grave’s disease…
What are the side effects of methimazole?

- Rash
- Transaminitis (abnormal liver function tests)
- Photosensitivity
- Idiosyncratic leucopenia (rare)
Breast Feeding?

• Can breast feed on methimazole up to 20 mg daily


Postpartum thyroiditis and Depression

• No evidence of clear association
• No evidence that treatment with T4 or T3 hormones can resolve depressive symptoms.

Back to our patient...

- Diagnosed with thyroiditis
- Propranolol 10 mg every 6 hours as needed for symptoms of hyperthyroidism
- Recheck labs in 4-6 weeks
- No indication to start antithyroid medications

Take home points

- Thyroid disease is more common in women
- Synthroid doses need to be adjusted both during and after pregnancy due to changes in thyroid binding protein
- Autoimmune thyroid disease often can present during or after pregnancy
48 y/o female with history of Hypothyroidism

- Feels poorly
- 20 pound weight gain over past two years
- No energy
- Poor sleep pattern
- Losing hair
Medications

- Levothyroxine 50 micrograms daily
- Atorvastatin 10 mg daily
- Women’s Multivitamin one daily

Physical exam

- Tired appearing, flat affect
- BP 110/75 P80 afebrile
- HEENT: no exophthalmos
- Neck: firm thyroid without palpable nodule
- COR: RRR no S3, S4, No murmur
- Neuro: Brachioradialis reflexes slightly delayed
- Skin: no rash
- Remainder of exam normal
What would you do to begin evaluation of this patient’s concerns?

- TSH
- FSH
- TSH and FT4
- Sed rate
- 2 and 3

- TSH 12uIU/ml (0.34-5.66 uIU/ml)
- FSH 50 uIU/ml (postmenopausal)
- CBC normal
- Chemistries acceptable
What do you now ask the patient before adjusting her levothyroxine dose?

- Missed doses
- Taking separately from calcium, statin, iron, proton pump inhibitor
- Changed brands of thyroid hormone replacement
- Additional symptoms: missed menses, hot flushes, check for pregnancy
- Biotin use
Thyroid Physiology

- Thyroxine (T4) and triiodothyronine (T3) are released by the thyroid gland.
- Most of the T3 is from peripheral conversion of T4 to T3.
- Free T4 and free T3 (not bound to proteins) feedback to the pituitary and hypothalamus to affect thyroid stimulating hormone release (TSH) from the pituitary.

Hypothyroidism treatment

- T4 used because of long half life
- T3 (Cytomel) must be given several times a day
- No good evidence for combination T4/T3 replacement

Thyroid Association Task Force on Thyroid Hormone Replacement
Thyroxine Dose

• 1.6ug/ kg daily
• Stay with same brand or generic (may have different costs)
• Increase the dose for pregnancy or other conditions with increased binding globulin
• Decrease dose for
  — Elderly
  — Patients with known heart disease
  — Patients with significant comorbid health issues

When to recheck thyroid labs

• 6-12 weeks
• TSH recovery lags behind T4 normalization
Menopause and the Thyroid

- Decreasing estrogen levels lead to decrease in thyroid binding globulin
- There will be more free hormone available so often T4 dose may need to be decreased.

Other thyroid preparations

- Grains
- Compounded formulations
- T3
- Other

Thyroid Association Task Force on Thyroid Hormone Replacement.
Back to our patient

- Pregnancy test is negative
- Menopausal symptoms discussed with patient
- Exercise encouraged
- Levothyroxine increased to 75 mcg daily
- Repeat thyroid (TSH) labs ordered for 3 mos.

Take home points

- Hypothyroidism symptoms are common to many other conditions.
- T4 is the accepted replacement hormone at this time for hypothyroidism.
- T4 replacement must be taken at separately from other medications that may delay absorption