Thyroid Disease Update

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Learning Objectives
1. Identify the diagnosis and management of the common types of hypothyroidism and hyperthyroidism.
2. Differentiate the common types of thyroid cancer with diagnosis and management.

1. A 17 yo WF c/o “swelling” in her neck x 2-3 wks. 5-lb wgt gain and somewhat tired. ROS neg

PE: 5’10”, 155 lb, BP 132/80, P 80, AF, thyroid diffusely enlarged, smooth & NT; remainder WNL

What single test would you order for this patient?
A. T4
B. RT3U
C. TSH
D. Ultrasound

Hypothyroidism
- Female-male = 6:1
- Prevalence: 2%
- Causes:
  - Hashimoto’s
  - Ablation
  - 2ndary: Lithium, interferon

What single test would you order for this patient?

4%  A. T4
3%  B. RT3U
33% ✓ C. TSH
52% D. Ultrasound
Thyroid Disease Update

Presentation

- Fatigue
- Dry skin
- Hair loss
- Hoarseness*
- Slow DTRs*
- Depression
- Myalgia*
- Weight gain
- Cold Intolerance
- Course hair
- Goiter
- Constipation
- Concentration loss*
- Hyperlipidemia*

Diagnosis

- Hx & PE:
  - Look for presentations
- Lab:
  - TSH
  - Thyroid antibodies?

2. In the elderly, levothyroxine replacement should be started at what percentage of the starting dose in the non-elderly adult patient?

   A. 50%-60%
   B. 60%-75%
   C. 75%-90%
   D. 100%

Treatment

- Start @ 1.6 mcg/kg/day
- Start lower in the elderly (1.0-1.25)
- Re-evaluate 6 wks after dosage change
- Different products = different bioavailability

Treatment Principles

- Avoid desiccated thyroid
- Avoid triiodothyronine
- Too much causes osteoporosis & A Fib
- Take on fasting stomach & wait 30 mins before eating
- Watch other interactions:
  - Iron, Carafate, Cholestyramine, Antacids, Anticonvulsants, Grapefruit, Amiodarone, Lithium, SSRIs, Retinoids

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Treatment Principles

- If TSH WNL but patient not feeling well, consider problems with conversion of T4 to T3:
- Nutrient Deficiency:
  - Heavy Metals: Selenium, Chromium, Zinc, Iron, Copper, Mercury, Lead
  - Iodine
  - Vitamins: A, B2, B6, B12, D, E

Conversion Problems

- Meds: Steroids
  - OCPs
  - Beta Blockers
  - Lithium
  - SSRIs
  - Phenytoin
  - Iodinated Contrast Agents
  - Theophylline
  - Chemotherapy
  - Fluoride
  - Opiates
  - Estrogen

Conversion Problems

- Stress
- Aging
- ETOH
- Fasting
- Radiation
- Cruciferous vegetables (in excess)
- Receptor antibodies
  - Low Ferritin
  - Pesticides
  - Soy (excess)
  - Hemochromatosis
  - Smoking
  - Kidney dz

3. A 42 yo WM c/o fatigue, wgt loss, voracious appetite, hand tremor, HAs, decreased exercise tolerance; all x 4 weeks

PE: 6'0", 150 lb, Thyroid diffusely large and NT, + fine hand tremor

Which of the following lab tests are indicated?

A. TSH
B. T4
C. T3
D. Thyroid antibodies

Which of the following lab tests are indicated?

A. TSH
B. T4
C. T3
D. Thyroid antibodies
Hyperthyroidism

- Female-Male = 8:1
- Prevalence: 0.2%
- Causes:
  - Graves
  - Multinodular goiter
  - Adenoma
  - Thyroiditis
  - Ingestion

Presentation

- Nervousness
- Palpitations
- Heat intolerance
- Tremor
- Fatigue*
- Insomnia
- HA*

Diagnosis

- Hx: Ask about presenting Sx
- PE: Wgt BP
  - Pulse Thyroid
  - CV Neuromuscular
  - Eye Skin

Diagnostic Labs

- TSH
- T3
- T4
- Nuclear uptake scan
- Thyroid antibodies?

- Patient Lab Results:
  - Low TSH
  - High T3 & T4
  - Scan: Diffuse increased uptake

4. The most likely diagnosis is

A. Hashimoto’s
B. Graves
C. Multinodular goiter
D. Ingestion
E. Amiodarone administration
4. The most likely diagnosis is

A. Hashimoto’s
B. Graves
C. Multinodular goiter
D. Ingestion
E. Amiodarone administration

Graves Disease

- Most common cause of hyperthyroidism
- Caused by TSH receptor-stimulating antibodies.

Other Causes of Hyperthyroidism

- Amiodarone
- Iodine
- Postpartum thyroiditis
- Metastatic thyroid cancer
- Hyperemesis gravidarum

Other Causes of Hyperthyroidism

- Hashimoto’s will have tender neck, fever, dysphagia, high ESR or CRP
- Postpartum Thyroiditis:
  - Prevalence = 7.5%
  - Usually within 1 yr of parturition

Workup of Hyperthyroidism

- TSH (Duh!)
- Free T4 & T3 A Rec
- CBC B Rec
- Radioactive Uptake Scan A Rec
- “Maybe”s: ESR, Ultrasound C Rec
- All of above is after a good Hx & PE

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<th>Graves</th>
<th>Adenoma</th>
<th>Multinodular</th>
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<tbody>
<tr>
<td>TSH</td>
<td>Low</td>
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<tr>
<td>SCAN</td>
<td>Diffuse uptake</td>
<td>Nodule</td>
<td>Multiple nodules</td>
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<tr>
<td>T4</td>
<td>High</td>
<td>High</td>
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5. The preferred definitive treatment for Graves disease is:

A. Surgery
B. Radioactive iodine ablation
C. Antithyroid drugs
D. Close monitoring

Graves Disease

- Radioactive Iodine is the TOC: A Rec
  - Except perhaps in cases with ophthalmopathy: B Rec
- Surgery is uncommon today
- Drugs: PTU or methimazole; & beta blockers
- Insufficient evidence for Chinese herbal meds: I Rec, Cochrane 2007

Graves Disease Treatment

- Methimazole much safer than PTU
- With PTU risk of serious liver injury is:
  - Adults: 1:10,000
  - Peds: 1:2,000
- PTU now considered a 2nd-line agent
  - EXCEPT during pregnancy
- A Rec FDA: June, 2009
  Monitor aminotransferases & CBC in both: C Rec

Graves Disease Treatment

- In pregnancy, PTU is TOC in 1st trimester
- Switch to methimazole in 2nd & 3rd trimesters
- If breastfeeding, PTU is preferred as less is transferred through milk

Graves Pharmacotherapy

- Joint decision-making
- Medical treatment is for 18 months and then attempt to wean: B Rec, Cochrane, 2009
  - Success rate of 30%-50%, but
  - Recurrence in those is 50%
6. A 46 yo WF c/o neck mass x 6 Wks
ROS Negative
PE: All WNL except palpable 2-cm firm mass in right lobe of thyroid

What is the initial diagnostic test for this patient?

A. TSH
B. Fine-needle aspiration
C. Nuclear thyroid scan
D. Surgery

Thyroid Nodules
• Work up all nodules
• Start with TSH*
• TSH results determine further workup

Nodule Workup
If low TSH

I-123 SCAN
Cold
FNA

Nmt or high TSH

FNA
Hot
Endocrine or surgery

Positive FNA?
• 5% of samples
• Types of cancer
  – Papillary: Most common
  – Medullary
  – Anaplastic: Usually older pts
Workup of Multinodular Thyroid for Cancer

- Dynamic Contrast Medium-Enhanced MRI (DCE-MRI) is more accurate than FNA in detecting cancer in a multinodular gland: B Rec, Tezelman. Archives of Surgery, 2007
- Negative predictive value = 100%;
  - For FNA, it’s 58%
  - PPV: DCE-MRI = 78.5%; FNA = 100%
  - Diagnostic accuracy: DCE = 90%; FNA = 71%

Thyroid Cancer Rx?

- Refer
- Surgery
- Metastasis determines prognosis

7. Which of the following organizations recommends screening for ASX thyroid dz?

- A. USPSTF
- B. AAFP
- C. ACP
- D. AACE

Only the ACP & Am Thyroid Assoc

- ACP: Only in women > 60 YO
  - Not in men
- ATA: All adults > 35 YO Q 5 years
- USPSTF & AHRQ give it an I recommendation

Subclinical Disease
Subclinical Hypothyroidism

- Prevalence:
  - 5%-17%
- Risk for progression to overt disease:
  - 8%-18%
- Look for Sx
- Treat if TSH > 10, attempting conception
- Be observant for overtreatment: Osteoporosis, A Fib
- Treatment does NOT result in improved survival or morbidity, nor QOL nor Sx: A Rec, Cochrane, 2007

Subclinical Hyperthyroidism

- Subclinical hyperthyroidism: Any antithyroid drug is effective A Rec, Nygaard B. AFP’s Clinical Evidence Concise. 2007;76:1014-7.
- Prevalence: 0.1%-6%
- Risk higher in women, age > 60, + antibodies
- Higher osteoporosis, death from CV causes, A Fib
- Joint decision-making for treatment or not

The Thyroid in Pregnancy

- Pregnancy has profound impact on the thyroid.
- Pregnancy can be called a stress test for the thyroid.
- Esp. hypothyroidism during pregnancy is harmful to maternal & fetal health & to child’s future intellectual development
- Levothyroxine is indicated with overt hypothyroidism
- Levothyroxine is indicated for subclinical hypothy (SbHypo) with + TPO Abs
- Gravid women with SbHypo not treated should have TSH & T4 checked Q 4 weeks til 16-20 wks & then ≥ once from 26-32 wks

The Thyroid in Pregnancy

- Thyroid can increase 10% in size.
- A 50% increase in thyroid hormones and in iodine need.
- 10% of gravid women in 1st trimester will be + for thyroid peroxidase or thyroglobulin Abs.
  - 16% of them have hypothyroidism
  - 33-50% develop pp thyroiditis
- Treatment not needed for isolated low T4
- Women already on levothyroxine should increase dose by 25-30% @ pregnancy
- Antithyroid meds are NOT indicated for women with gestational hypERThyroidism
- For Graves, use PTU in 1st trimester, then methimazole
The Thyroid in Pregnancy

- During pp thyroiditis toxic phase, don’t need antithyroid meds.
- Check TSH Q 2 months after toxic phase
- Can try to wean off replacement @ 6-12 months after starting Rx
- No radioactive iodine scanning during pregnancy

Summary

- 3 Major Thyroid Problems
  - Use TSH to start diagnosis in all 3
- Subclinical Disease
- The Thyroid in Pregnancy
- Questions during Q & A Period

Thanks

Answers

1. C
2. B
3. A
4. B
5. B
6. A
7. C