News and Notes

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Conference Notes

Management of Thyroid Disorders

Lecture by Laurie Tom MD, an endocrinologist at QMC-UH, July 29, 1995

The thyroid gland produces T3 and T4 which affect multiple organ systems including the reproductive system.

Hypothyroidism (most common)

- 4 to 8 times more common in women than men
- More likely with autoimmune family hx
- Occurs in 10% to 21% of women over age 50; and symptoms often attributed to menopause.
- High T4, T3 cause hyperthyroidism
- Low T4, T3 cause hypothyroidism

Hypothyroidism

- Masks coronary artery disease (CAD)
- A/C lipid abnormalities
- With CAD can be exacerbated by hypertension, anemia, etc.
- Affects reproductive system

Etiology

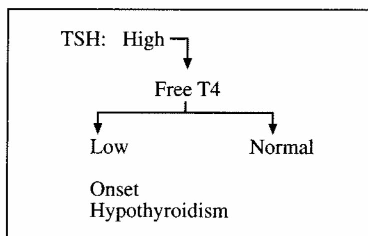
Hashimoto's dis; autoimmune family hx; head and neck radiation and surgery; thyroid belt (iodine deficient areas around Great Lakes); drugs.

Thyroid Function Studies

TSH: \$60 reduced to \$34; free T4: \$34

TSH Values:	Low	Normal	High
	<0.5	.5 - 5.0	>5.0

TSH changes before T3 and T4 in early subclinical hypothyroidism and hyperthyroidism.



Subclinical hypothyroidism progresses to clinical dis. Initially 13.2% had normal T4, high TSH. Four years later, 33% had low T4 and high TSH. Once patient diagnosed, treatment begins. High titer of anti-TPO microsomal antibodies are predictive of those that progress to overt hypothyroidism—estimated at a rate of 5% to 8% per year.

Hypothyroidism may mask CAD symptoms by:

- Bradycardia, depressed contractility leading to reduced O_2 demand
- Physical inactivity so angina less likely
- Altered mental status so symptoms not reported

CAD symptoms can be exacerbated in hypothyroidism by:

- Hypertension leading to increased O_2 demand
- CHF with depressed ventricular function
- Anemia so less O_2 available to myocardial tissue

Lipoprotein changes in hypothyroidism:

- Increased total cholesterol, LDL, HDL, and VLDL, but the degree of increased HDL less than LDL, so still an *unfavorable* ratio.

Effects on reproductive system

- Anovulation
- Increased frequency of periods
- Heavier menses
- Fertility difficult
- Increased rate of miscarriages

Appropriate population for thyroid screening: Patients with family history of autoimmune thyroid disease; Hashimoto's or Graves' non-thyroid autoimmune diseases; diabetes mellitus type I; pernicious anemia; SLE; myasthenia gravis.

Therapy of choice in hypothyroidism

Proper dose of LT4 (levothyroxine sodium)

- Desiccated thyroid contains T3 which has adverse stimulatory effects on heart

Determinants for LT4 dose: Age, weight
Dose first thing in am: 1.6 μ/kg/d
(Improved absorption on empty stomach)
Stable elderly. Start 25 μg to 50 μg; titrate upward with 12.5 μ; monitor TSH

- Follow up with annual TSH

With age, lower LT4 dose may be required.

- Overdose in premenopausal woman

12.8% have low bone density. Over-suppression (low TSH) may cause *subclinical* hyperthyroidism and may have adverse effects on heart and bone density by aggravating osteopenia. New sensitive TSH assays are good for distinguishing low normal from suppressed values.

Hyperthyroidism

Incidence: Women more than men

- Graves' disease: most common; auto immune disease
- TMG (Toxic multinodular goiter): Dx: TSH and T4 (TSH producing tumors)

Preferred treatment

- Graves' disease: I^{131}
  Anti thyroid Rx
  Surgery
- TMG: Surgery
  I^{131}
- Painful thyroiditis Symptomatic (anti-inflammatory drugs)
- Non-painful thyroiditis: Symptomatic (watch for eventual hypothyroidism)
- Hashimoto's thyroiditis: Symptomatic (watch for eventual hypothyroidism)

re Anti-thyroid drugs: Graves' disease pretreated with ATD leads to reduced efficiency of I^{131} therapy

Thyroid Nodules

Five percent incidence of cancer. Nodules are common (10% to 15% in adults undergoing PE). Up to 15% of nodules have suspicious features clinically.
Dx: thyroid scanning: "cold" and "hot" nodules, biopsy "cold" nodules.
Ddx: thyroid nodules: Adenoma, carcinoma, cyst, other
Malignancies usually "cold," *but* most nodules are cold.

➤ *Continued on next page*

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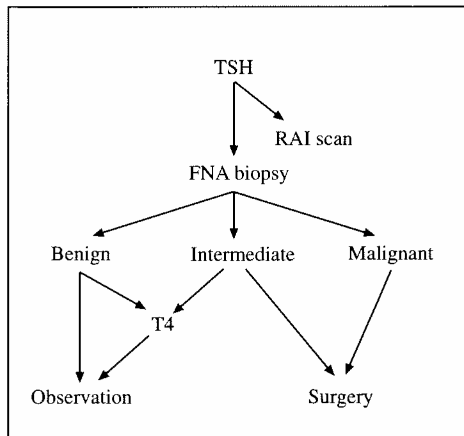
➤ *Continued from page 55*

Initial evaluation: TSH
If TSH low, then scan; hot nodule almost never malignant
Normal TSH, then FNA (need cytology)
Ultrasound and RAI scan add to costs and not helpful in ruling out malignancy
Nondiagnositic biopsies (no cells to examine) are not "negative"
Indeterminate biopsies, if suspicious clinically may require surgery.
FNA (fine-needle aspiration) is simple, cost-effective and accurate in the hands of a good endocrinologist along with a good cytopathologist.

Clinical approach:



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