

**Review: Dr Anthony Toft, *Thyroid Disorders: Symptoms; Tests; Diagnosis; Treatments; Self-Help; Lifestyle*, Dorling Kindersley, London, UK, 2000**

Pages: 72

### **Thyroid Basics**

This is a straight-forward detailing of the thyroid gland, hyper/hypothyroidism, goitre and cancer conditions from a purely Western medical perspective.

It would be recommended for those with a suspected thyroid condition for basic understanding. However, 'treatment' options given are the standard "cut, burn, and poison" with associated lifelong drug dependency (e.g. thyroxine after a thyroidectomy). There is no mention of diet, exercise, or lifestyle changes.

Interestingly, one mole of thyroid-stimulating hormone weighs 777 grams.

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### **Introduction (pp. 7-12)**

The thyroid gland is butterfly-shaped with right and left lobes of 5cm length and joined in a midline. It only weights about 20g and is in the lower neck.

The gland has follicles cells which produce thyroid hormones, surrounded by patches for storage.

Thyroxine has four iodine (I) atoms in each molecule so is called "T4". Likewise, triiodothyronine has three, so i s "T3". Doctors believe T4 is only active after processing in the liver which converts it to T3.

TSH is thyroid-stimulating hormone, which is secreted by the anterior (front) pituitary gland which is pea-size. Thyroid disease raise raise (hyperthyroidism, also called thyrotoxicosis and Graves' disease) or lower (hypothyroidism) T\$ and T3 hormone levels. In the former, the pituitary

switches off TSH production, in the latter it increases it. This is a case of an intelligently-designed *negative feedback* system.

## **II) Overactive Thyroid (pp. 13-29)**

Graves was a physician who described hyperthyroidism 200 years ago. It most commonly affects women 40-50 years old. Symptoms include: irritability; breathlessness; tremor and deteriorating handwriting; thigh muscle weakness; diarrhoea; pretibial myxoedema (raised itchy patches on the lower legs); excessive eye-watering, pain and grittiness, double vision [diplopia] and bags.

Pharma treatment for Graves is drugs, surgery and radioactive I (I-131).

Neomercazole (30 mg p.d.) reduces T4 and T3 production.

Surgery removes three-quarters of the thyroid.

The parathyroid glands control blood Ca .

Hypothyroidism is treated with thyroxine at 100-150mcg per diem.

De Quervain's thyroiditis causes severe acute pain over the thyroid with flu-like symptoms.

Amiodarone is an I-containing drug.

Prednisolone reduces water accumulation behind the eyeball.

## **III) Underactive Thyroid (pp. 30-38)**

Hypothyroidism affects 1% of the population and occurs slowly over months. Advanced stages are called "myxoedema". Symptoms include: weight gain [5-10kg]; cold sensitivity; depression and paranoia ["myxoedema madness"]; pernicious anemia; diabetes mellitus; low blood Ca; vitiligo [skin pigmentation loss]; slurred speech; heart failure; dry skin; increased blood lipids; arteriosclerosis; angina.

## **IV) Thyroid Disease in Pregnancy (pp. 38-45)**

One in 3,500 newborns has an underactive thyroid. If left untreated this causes cretinism; permanent mental and physical handicap.

Antithyroid drugs cross the placenta.

Propylthiouracil is excreted from much less milk.

Doctors try and predict baby hyperthyroidism via high antibodies in the mother's blood towards the end of a pregnancy. Babies are also screened by a blood test between five and seven days after they are born. In rare cases the condition is temporary.

Postpartum thyroiditis affects 5% of women. Propranolol is prescribed at 40mg 2X p.d.

#### **V) Enlarged Thyroid (pp. 46-54)**

This can be caused by  $\text{Li}_2\text{CO}_3$ , automimmune disease like Hashimoto's thyroiditis, and Graves' disease.

Large goitres cause swallowing difficulty, and can squash the windpipe causing breathing difficulty.

Isotope scanning using injected Tc-99m is used to check goitre lumps.

I-131 can reduce goitres by 50% over several months.

Half of patients have generalised nodular enlargement (multinodular goitre).

The most important test is fine needle aspiration (FNA); a needle removes fluid and if the nodule disappears it was just a cyst, otherwise, it may be benign or malignant.

#### **VI) Cancer of the Thyroid Gland (pp. 55-60)**

The ratio of Graves' to thyroid cancer in patients is 50-100 to 1.

Thyroid follicular cancer is unusual before 30. Both this and papillary cancers make thyroglobulin, a cancer marker increased by high TSH levels.

Enlarged lymph nodes may first be suspected to be Hodgkin's disease.

After thyroidectomy surgery, doctors destroy[!] remaining tissue with I-131. This means the patient must take thyroxine for the rest of his life.

## **VII) Thyroid Blood Tests (pp. 61-64)**

T3 and T4 are nearly always bound to a protein in the blood; under 1% is "free" to regulate metabolism.

Normal hormone ranges are:

TT4 (Total T4): 60-150nmol/L

fT4 (Free T4): 10-25 pico moles/L

TT3: 1.1-2.6 nmol/L

fT3: 3-8 pmol/L

Thyrotropin/TSH" 0.15-3.5 milliunits [mU]/L

Interestingly, a mole of TSH weighs 777 grams.

## **VIII) Q&A (pp. 65-67)**

Excessive TSH may damage the heart and cause osteoporosis.

## **Glossary (pp. 68-69)**