

Thyroid Disorders

A basic clinical orientation

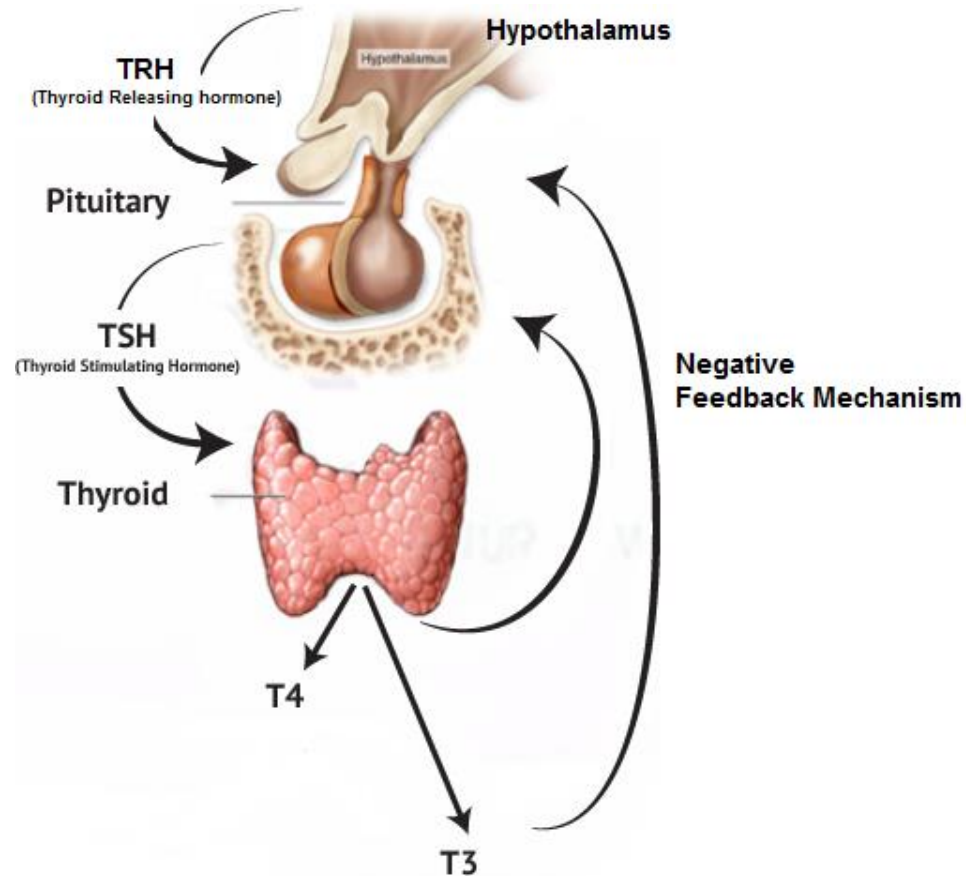
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Effects of Thyroid hormone

- Thyroid hormone increases Basal Metabolic Rate (BMR)
- It increases the rate of chemical rxn in body, especially exothermic reaction thus generating heat.
- It increases use of O₂ and Glucose in the body (Skeletal muscle, Heart, Kidney, Liver mainly)

How Thyroid hormones are secreted

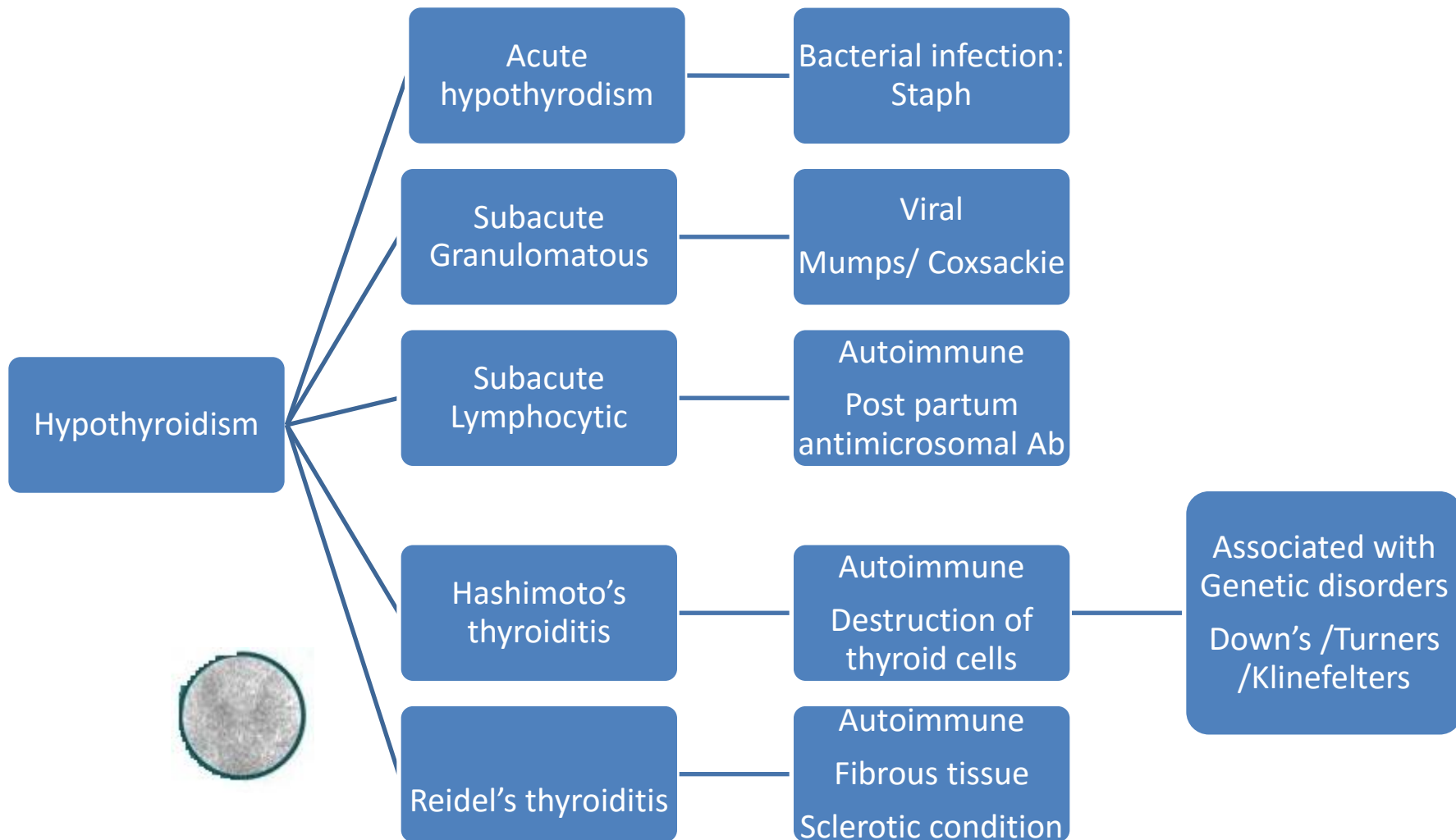


Hypothalamic-pituitary-thyroid axis

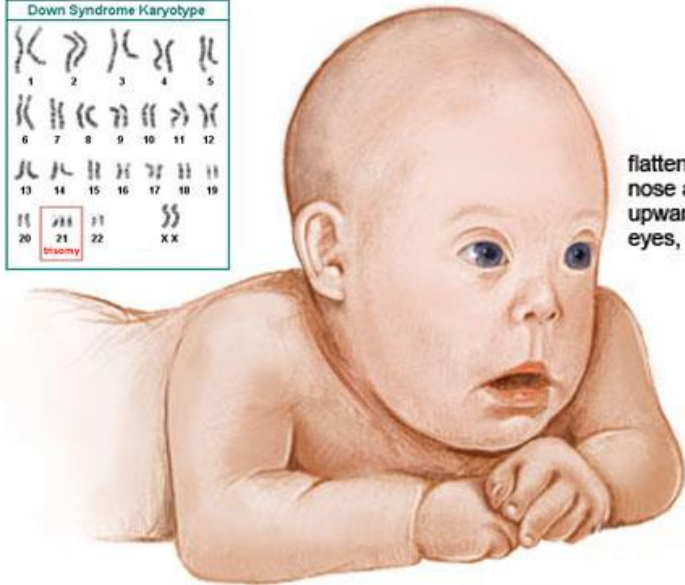
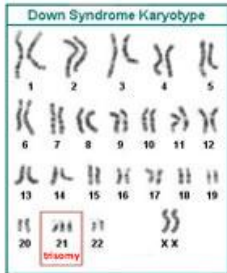
Thyroid disorders

- Hyperthyroidism: Increased production of thyroid hormones
- Hypothyroidism: Decreased production of thyroid hormones.

Classification of Hypothyroidism



Downs syndrome



flattened nose and face, upward slanting eyes,

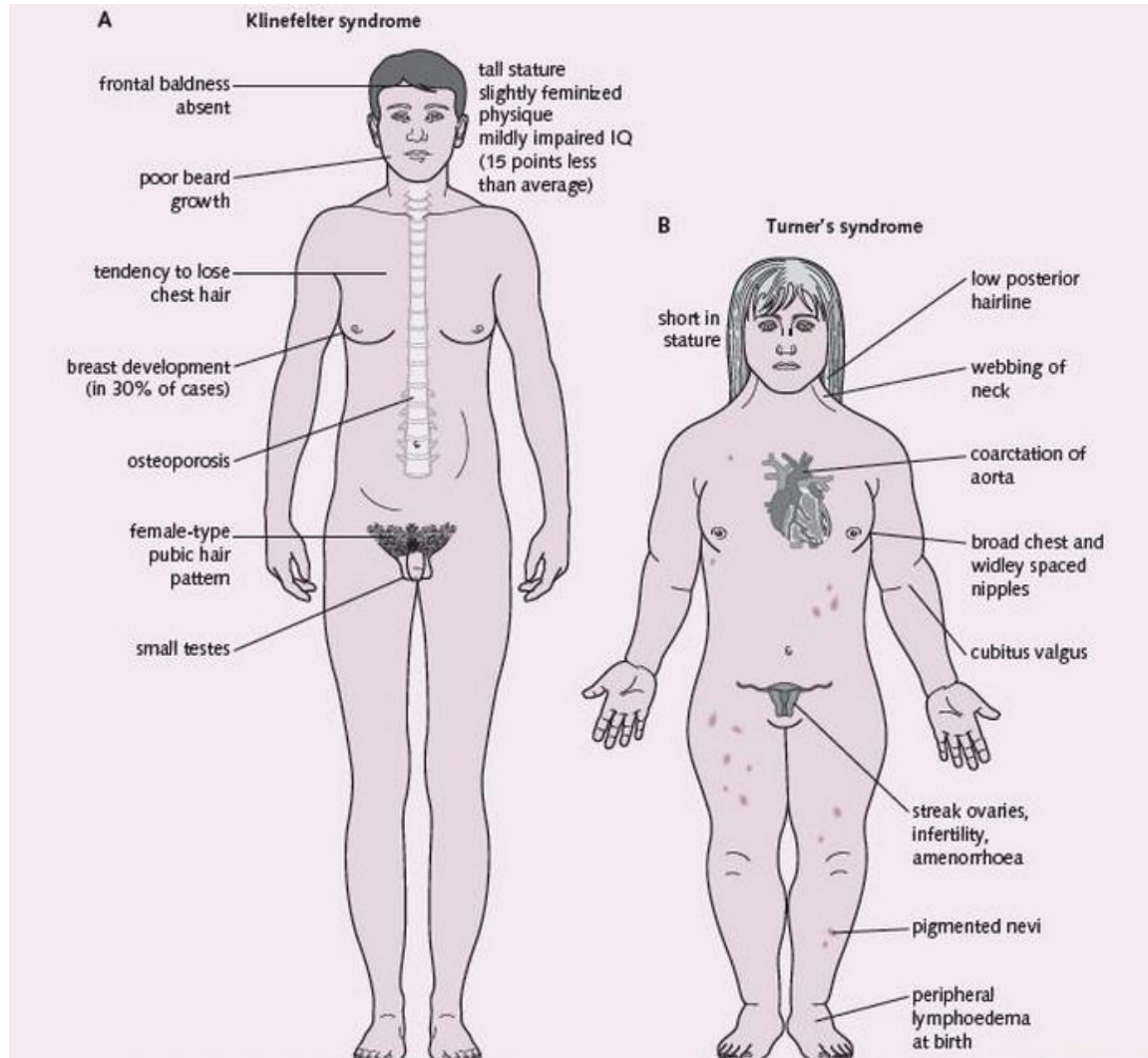
single palmer crease, short fifth finger that curves inward



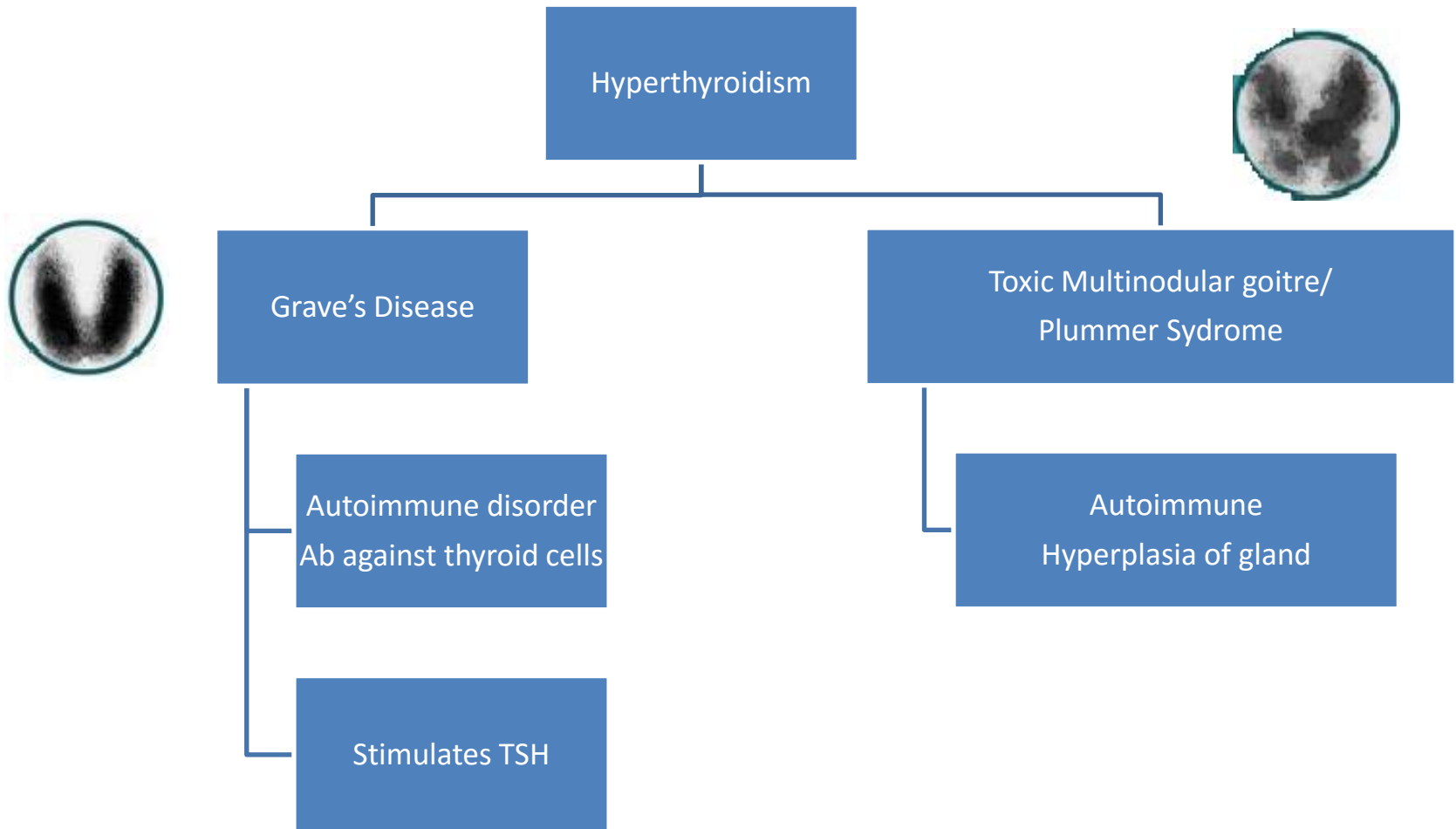
widely separated first and second toes and increased skin creases



Turner Syndrome and Klinefelter Syndrome



Hyperthyroidism classification



C/F of Hyperthyroidism

- anxiety
- emotional lability
- weakness
- tremor
- Palpitations (\uparrow HR)
- heat intolerance
- increased perspiration
- weight loss despite a normal or increased appetite.
- hyperactivity and rapid speech
- Thinning of Hair
- Thyroid gland enlargement
- Hyperreflexia

Grave's Disease

- Exophthalmos
- Periorbital and conjunctival edema, limitation of eye movement
- Infiltrative dermopathy (pretibial myxedema) occur only in patients with Graves' disease.



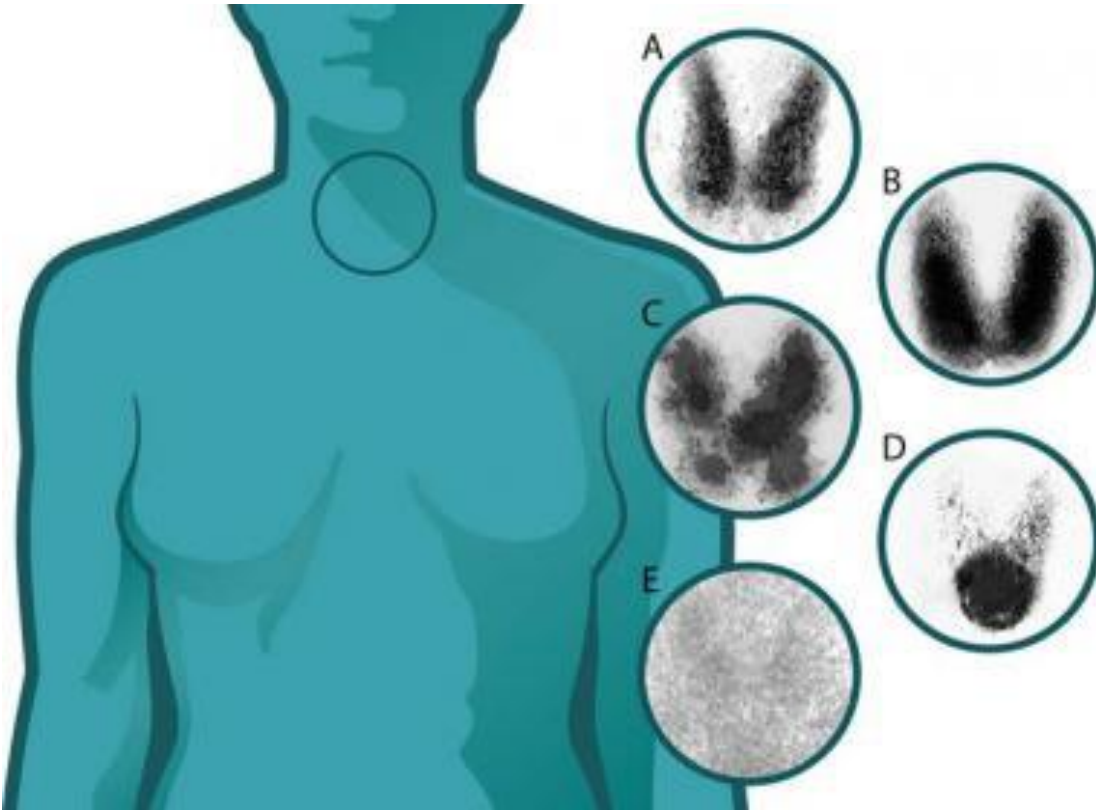
Diagnosing

- serum TSH is the best initial test. If subnormal, serum free T4 and T3 concentrations.
- If serum TSH is low and free T4 and T3 are high, the diagnosis of hyperthyroidism is confirmed.

Other diagnostic testing

- Once the diagnosis of hyperthyroidism has been established, the cause of the hyperthyroidism should be determined.
- However, if the diagnosis is not apparent based on the clinical presentation, diagnostic testing is indicated
- measurement of thyrotropin receptor antibodies (TRAb, also called TSI, TBII, or TBI),
- determination of the radioactive iodine uptake,
- measurement of thyroidal blood flow on ultrasonography

Radioactive Iodine uptake



- A-Normal Thyroid
- B-Graves disease
- C-Toxic Multinodular goitre/Plummer disease
- D-Toxic Adenoma
- E-Thyroiditis (marker ^{99}Tc)

Thyroid profile interpretation

TSH	Free T3	Free T4	Condition
↓	N	↑	Hyperthyroidism with concurrent non thyroid illness Amiodarone therapy Levothyroxine ingestion
↓	N	N	Sub-clinical hyperthyroidism Early pregnancy Central Hyperthyroidism
↓	T3=↑	T4=N	Grave's disease/ Autonomously functioning thyroid adenoma
N or ↑	↑	↑	?TSH secreting Adenoma/ Pituitary Mass

Rx of hyperthyroidism

- Propylthiouracil (Decreases conversion of T4 to T3)
- Methimazole (Contraindicated in Pregnancy)
- Carbimazole
- Adverse effects of Thioamides: Agranulocytosis
- Aspirin & Ibuprofen are C/I in patients with treatment for Hyperthyroidism.
- Use PCM instead.

C/F of Hypothyroidism

- Generalized slowing of metabolic processes
- depression,
- decreased hearing
- Wt gain
- Constipation
- Cold intolerance
- Bradycardia (↓HR)
- Facial puffiness
- Hair loss (as hair becomes brittle)
- diastolic hypertension, and
- pleural and pericardial effusions.
- A variety of metabolic abnormalities can occur: ↓ Na, hyperlipidemia, ↓Hb,
- The clearance of many drugs, including antiepileptic, anticoagulant, hypnotic and opioid drugs, is decreased in hypothyroidism.

Rx of Hypothyroidism

- The treatment of choice for correction of hypothyroidism is synthetic thyroxine (T4, **levothyroxine**)
- The initial dose for young adults (1.6 mcg/kg/day), For older patients (25 to 50 mcg daily).
- L-thyroxine should be taken on an empty stomach, ideally 1 hr before breakfast.
- Reevaluate TSH levels in **6 weeks**, and the dose adjusted accordingly.
- Symptoms may begin to resolve after 2-3 weeks, but steady-state TSH concentrations are not achieved for at least six weeks.
- The goals of therapy are relieve of symptoms and normalization of TSH secretion.
- keep TSH within the normal reference range (0.5 to 5.0 mU/L).
- There is an age-related shift towards higher TSH concentrations in older patients, with an upper limit of normal of about 7.5 mU/L in 80 year olds.

Thank You