

DISEASES OF THYROID

HYPERTHYROIDISM

↑ of size of thyroid gland to 2-3 times than normal

GRAVE'S DISEASE

THYROID ADENOMA

* Grave's Disease :-

- Most common form of Hyperthyroidism
- Autoimmune disease

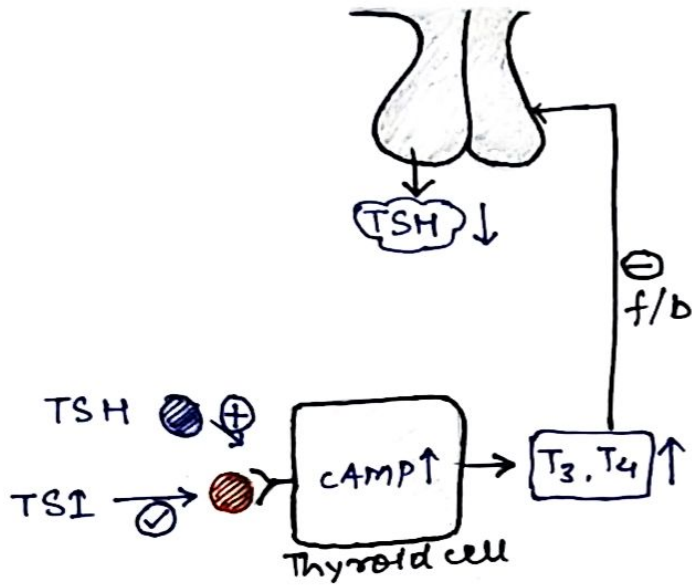


TSI (Thyroid Stimulating Immunoglobulin) antibodies against TSH receptor in gland.

Activation of AMP → T_3, T_4 ↑

→ TSI → Prolonged stimulating effect on thyroid gland (≈ 12 hrs)

TSH → Normal stimulating effect (≈ 1 hr)



→ Effects seen :-

- T₃ & T₄ ↑
- TSH ↓

* Thyroid Adenoma :-

- Occasional cause of hyperthyroidism
- Tumor of thyroid tissue



Symptoms of hyperthyroidism :-

- High state of excitability
- Intolerance to heat
- ↑ sweating
- Extreme fatigue, but inability to sleep
- Mild to extreme weight loss
- ↑ diarrhea
- Muscle weakness
- Tremors of Hand
- ① Most people with hyperthyroidism develops

Better to learn in comparison with hypothyroidism.

Exophthalmos

Exophthalmos :-

→ Some degree of protrusion of eyeball

Due to :-

- Edematous swelling of retroorbital tissue
- Degenerative changes in extraocular muscle

Severe

- * Stretching of optic nerve → vision damage
- * Eyelids don't close completely → Eyes dry, irritated & infected → ulceration of cornea.
(Blinking & sleeping)

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* Diagnostic test for hyperthyroidism :-

- conc. of TSH measured by RadioImmunoAssay
(TSH ↓ in hyperthyroidism)
- BMR :- (+30 to +60 ↑ in hyperthyroidism)
- conc. of TSI measured by RIA.
(Increased in Grave's Disease
Normal in Thyroid Adenoma)

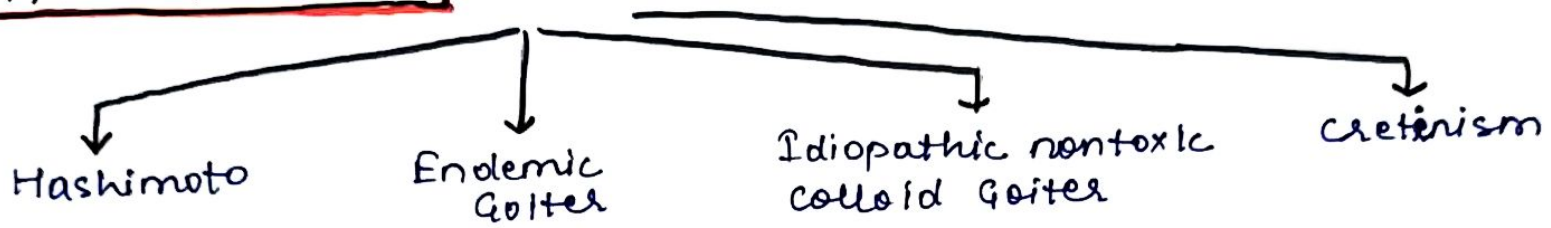
* Treatment of hyperthyroidism :-

- Surgical removal of most of thyroid gland.



- propylthiouracil → BMR normal
(for several weeks)
- Iodide intake ↑ → size & Blood supply of gland ↓
(1-2 weeks)

HYPOTHYROIDISM



* Hashimoto Disease :-

Antibody against thyroid gland



Autoimmune thyroiditis
(Thyroid inflammation)



Progressive Detariation &
finally fibrosis of gland



↓ OR ⊖ of Thyroid hormones
(T₃ & T₄)

* Endemic Goiter :-

Iodine Absence (In certain Regions)



T₃ & T₄ decreased



No negative feedback to TSH



TSH ↑



But absence of I leads to no production of T₃ + T₄.



Thyroglobulins ↑ by follicular cells



Glands enlargement
(10-20 times)

Dietary intake of Iodine:
Normal Requirement :-

50 mgm of Iodine
per year.

* Idiopathic Nontoxic Colloid Goiter :-

Idiopathic Reasons (No Iodine def.)



Thyroid gland enlargement.

Idiopathic Reasons may be :-

- Defective Iodide Trapping mechanism
- Defect in peroxidase system
- Defect in coupling
- Defect in deiodinase enzyme
- Goiterogenic substances intake in food.

↳ substances having propylthiouracil type antithyroid activity.

* Cretinism :-

→ Extreme hypothyroidism during fetal life / infancy / childhood.

→ Body growth & Mental growth retarded.

→ Types → Congenital Cretinism :- congenital absence of thyroid gland.

→ Failure of thyroid gland to produce thyroid horm. due to genetic defect of gland.

→ Endemic Cretinism :- Lack of iodine in diet.

→ Birth (Normal appearance)

↳ D/t already present thyroid hormone of mother.

↓
After few weeks (sluggishness, phys. & mental growth ↓)

→ Skeletal growth more inhibited than soft tissue growth

↓
Obese, stocky & short appearance

→ Sometimes tongue enlargement → Difficulty in swallowing ⇒ Choking & Breathing

Symptoms of Hypothyroidism :-

- Sluggishness (inactiveness)
- Intolerance to cold
- ↓ sweating
- ↑ sleep
- weight gain
- Constipation
- Muscle sluggishness

- ⊙ Myxedema
- ⊙ Atherosclerosis

Better to learn in comparison with hyperthyroidism.

Myxedema :- D/t total lack of Thyroid hormone.

- ⇒ Baggy under eyes
- ⇒ Swelling of face

Reason

Hyaluronic acid ↑
Chondroitin sulfate ↑

→ in Tissue gel ⇒ in Interstitial space
∴ cell nature ⇒ immobile
• Non pitting edema.

Atherosclerosis in hypothyroidism :-

Thyroid hormone $\xrightarrow{\ominus}$ cholesterol, phospholipid

∴ Decrease in thyroid hormone \rightarrow \uparrow in cholesterol \rightarrow Atherosclerosis.

* Diagnostic test for hypothyroidism :-

\rightarrow conc. of Thyroid hormone is low.

\rightarrow BMR :- (-30 to -50 \downarrow in hypothyroidism).

* Treatment of hypothyroidism :-

\rightarrow Oral ingestion of thyroxine tablets.