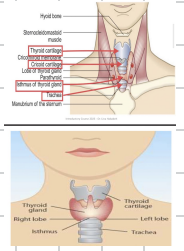


Made by : Mahmoud Alhalawani

Thyroid

Anatomy & physiology

- thyroid is a butterfly shaped gland
 - 2 symmetrical lobes
 - + isthmus :- 1.5cm wide, covering 2-4 tracheal rings.
- Lies
 - inferior to cricoid cartilage
 - 4cm below superior notch of thyroid cartilage.
- may extend into
 - superior mediastinum & be entirely retrosternal
 - at the back of tongue :- visible with open mouth.
 - rarely along the line of thyroglossal duct.
- Volume :- < 20mL
- normally palpable
 - F :- 50%
 - M :- 25%
- embryo :- Base of tongue.
- Thyroglossal cyst
 - arise from thyroglossal duct, hyoid bone Lvl.
 - moves upwards with tongue protrusion.
- moves superiorly on swallowing or neck extension as it is attached to pretracheal fascia.



Hyperthyroidism

- Dyspnea, palpitation & ankle swelling
- Tachycardia, Afib, systolic HTN, Angina, midsystolic murmur.
- oligo-menorrhoea & amenorrhoea.
- Sweaty tremulous warm Hands (Hyperhidrosis).
- proximal myopathy :- ↑ catabolic energy.
- weight loss, ↑ appetite, Diarrhea, fecal frequency.
- Heat intolerance
- fine tremor, brisk deep tendon reflex
- Anxiety & irritability, emotional lability.
- Fatigue, poor sleep.
- pruritis, onycholysis, Hair Loss.
- eye symptoms (autoimmune)
 - grittiness
 - ↑ tearing
 - retro-orbital pain
 - eyelid swelling or erythema.
 - Blurred vision or diplopia.

Causes

- Graves disease (MC)
- Toxic multi-nodular goiter
- Solitary toxic nodule
- Thyroiditis
- ↑ thyroid hormone ingestion

Thyroid Dysfunction

Hyperthyroidism (Thyrotoxicosis)

Goitre

Hypothyroidism

Hypothyroidism

- Fatigue & goiter
- Husky (hoarse) voice.
- Carpal tunnel syndrome
- Constipation & weight gain
- Depression & mental impairment.
- Lethargy or apathy
- cold intolerance
- cold dry skin & dry hair
- Delayed DTR
- delayed ankle reflex
- slow movement
- periorbital edema
- Bradycardia, HTN
- menorrhagia.

Causes

- Hashimoto thyroiditis (MC) :- autoimmune, x6 females.
- iatrogenic
 - Radio-iodine therapy.
 - surgery for graves disease.

Signs and Symptoms

Hyperthyroidism

- Exophthalmos, ophthalmoplegia (in Graves' disease)
- Goitre (with bruit in Graves' disease)
- Tachycardia, angina, atrial fibrillation
- Systolic hypertension
- Oligomenorrhoea
- Diarrhoea
- Sweaty, tremulous, warm hands
- Proximal myopathy
- Pretibial myxoedema (in Graves' disease)
- Ankle swelling (in heart failure)

- General**
- Weight loss despite increased appetite
 - Heat intolerance
 - Anxiety, irritability
 - Fast, fine tremor

Hypothyroidism

- Periorbital oedema
- Husky voice
- Goitre
- Bradycardia
- Carpal tunnel syndrome
- Menorrhagia
- Constipation

- General**
- Low metabolic rate, weight gain
 - Dry skin and hair loss
 - Sensitivity to cold
 - Lethargy, mental impairment, depression

Introductory Course 2023 - Dr. Lina Hababeh

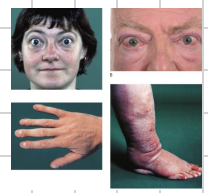
History	
•	Female sex
•	Prior episode of hyperthyroidism requiring treatment
•	Family history of thyroid or other autoimmune disease
•	Ocular symptoms (grittiness, redness, pain, periorbital swelling)
Physical examination	
•	Vitiligo
•	Thyroid acropachy
•	Diffuse thyroid enlargement (can be nodular)
•	Thyroid bruit
•	Pre-tibial myxoedema
•	Signs of Graves' ophthalmopathy (proptosis, redness, oedema)

- **Graves disease**
 - most common cause of hyperthyroidism
 - autoimmune with familial component
 - females, 20-50y.

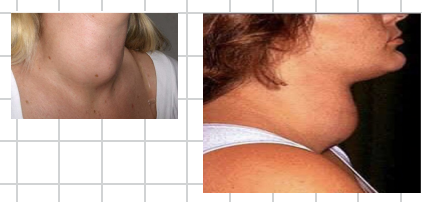
specific extrathyroidal features



- **Graves ophthalmopathy (exophthalmos or proptosis)**
 - 20% by inflammation of soft tissues & extraocular muscles.
 - Lead to
 - corneal ulceration
 - diplopia
 - ophthalmoplegia
 - Compressive optic neuropathy
- infiltrative dermopathy → pretibial myxedema:- pink or brown, anterior shin
- **Thyroid Acropachy**
 - soft-tissue swelling.
 - periosteal hypertrophy of distal phalanges.
 - mimics finger clubbing.
- **Thyroid bruit**:- sometimes thrills, ↑ blood flow.



- **Goiter**
 - enlarged thyroid gland
 - euthyroid (mostly)
 - compressive symptoms (large, retrosternal)
 - stridor.
 - Breathlessness.
 - dysphagia.



● **History**

- patient profile:- name, age, occupation
- chief complaint - Neck Lump or symptoms of hypo/hyper.
- HPI
 - Duration
 - SS (site, size, shape)
 - 3P (progression, persistence, previously?)
 - other (dysphasia, dyspnea, pain, hoarseness).
- Drug Hx
 - Amiodarone → Hypo or Hyper
 - Lithium → Hypo
 - Antithyroid & radioiodine.
- family :- thyroid or autoimmune disease
- Social
 - postpartum thyroiditis within 12 m.
 - area of iodine (Andes, Himalayas, central Africa) → goiter, rarely hypo.
 - Smoking:- ↑ risk of Graves ophthalmopathy.
 - prior neck irradiation:- ↑ Risk of thyroid malignancy.
- **Thyroid nodules**
 - Solitary
 - dominant nodule within a multinodular gland.
 - palpable:- >2cm in diameter, 5% of females.
 - occult:- 50%, incidentally on neck or chest imaging.
- **Neck pain (uncommon)**
 - Sudden + enlargement → bleeding into thyroid nodule
 - viral subacute (de Quervian's) thyroiditis.

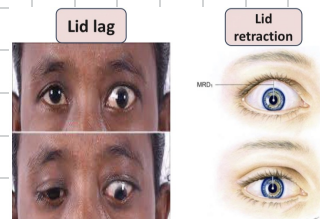
• physical examination

- 1 General**
- position & exposure :- Neck, superior mediastinum, Lower Limbs.
 - conscious, alert, oriented.
 - Agitated, restless, depressed, apathy, slow motion.
 - Heat/cold intolerance
 - weight loss/gain (BMI).
 - speech
 - pressure of speech :- hyper
 - slow & deep speech :- hypo.
 - hoarseness :- malignancy.
 - vitals
 - BP :- HTN (Both)
 - pulse :- Brady (hypo), tachy & afib (hyper).

- 2 Hand**
- Temp
 - Dry cold :- hypo
 - Sweaty warm } Hyper.
 - moist }
 - nail
 - onycholysis.
 - clubbing.
 - thyroid acropachy
 - fine tremor :- Hyper
 - palmar erythema :- Hyper
 - vitiligo :- Autoimmune
 - CTS :- Hypo.

- 3 Head, Neck & chest**
- Dry coarse hair :- Hypo
 - Hair loss from distal 1/3 eyebrows :- Hypo.
 - mid systolic murmur :- ↑CO, Hyper

- 4 eye**
- periorbital puffiness (myxoedema) :- Hypo.
 - Graves ophthalmopathy
 - exophthalmos
 - lid swelling or erythema.
 - conjunctival redness or swelling (chemosis).
 - ophthalmoplegia (H).
 - Lid Lag :- delay btw the movement of the eyeball & descent of upper eyelid, exposing the sclera above iris. → Hyper, sympathetic hyperactivity → contraction of levator muscles.
 - Lid retraction :- sclera is visible above iris due to widening of palpebral fissure



- 5 Thyroid exam**
- inspection
 - Symmetry
 - scars
 - masses
 - vein engorgement
 - swallow :- thyroid rises up.
 - protrude his tongue
 - open his mouth :- Lingual thyroid.

- palpation
 - Tenderness
 - Size, consistency, shape, surface.
 - masses or abnormal swelling.
 - thrills
 - swallow
- Neck slightly flexed & relaxed SCN.

- Lymph nodes :- cervical, supraclavicular.
- upper mediastinum :- tracheal tug & deviation, corticosternal distance.

- percussion → on clavicles.
- manubrium :- dull (retrosternal extension of goitre).

- Auscultation → Bruit :- Grave's.
- midsystolic murmur.

- Abnormalities → simple goiters :- relatively symmetrical but may become nodular.
- Grave's :- smooth & diffuse surface.
- viral thyroiditis :- Diffuse tenderness.
- thyroid cyst :- Bleeding → Localised tenderness.
- thyroid malignancy → fixation of thyroid to surrounding structures (don't move in swallowing).
- cervical lymphadenopathy.
- Neck collar scar → partial/full thyroidectomy.
- cystic hygroma
- congenital branchial cyst.
- Ranula.

10.3 Investigations in thyroid disease	
Investigation	Indication/comment
Biochemistry	
Thyroid function tests	To assess thyroid status
Immunology	
Antithyroid peroxidase antibodies	Non-specific, high in autoimmune thyroid disease
Antithyroid stimulating hormone receptor antibodies	Specific for Graves' disease
Imaging	
Ultrasound	Goitre, nodule
Thyroid scintigraphy (¹²³ I, ^{99m} Tc)	To assess areas of hyper-/hypoactivity
Computed tomography	To assess goitre size and aid surgical planning
Invasive/other	
Fine-needle aspiration cytology	Thyroid nodule
Respiratory flow-volume loops	To assess tracheal compression from a large goitre

6 Lower Limb

- coarse dry skin
- prebitial myxedema :- Brown/pink thick scar
- myxedema :- nonpitting edema
- Deep tendon reflex :- delayed → Hypo.
- proximal myopathy.
- Ankle edema in HF.