

Thyroid Summary

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Summary of Thyroid Lecture

Topics we'll talk about at this summary :))

- Thyroid Anatomy
- Thyroid Dysfunction Symptoms and Signs
- History Taking
- Physical Examination

Thyroid Anatomy

- **Shape & Location:**
 - Butterfly-shaped gland, Normal thyroid volume is <20 mL
 - Two symmetrical lobes joined by the isthmus (central isthmus is approximately 1.5 cm wide)
 - Covers 2nd to 4th tracheal rings
 - Lies inferior to cricoid cartilage (~4 cm below the superior notch of thyroid cartilage)
- **Variants:**
 - May extend into the superior mediastinum and be retrosternal
 - May lie at the back of the tongue and be visible with mouth opening
- **Palpability:**
 - Normally palpable in 50% of women and 25% of men
- **Embryological Remnants:**
 - Thyroglossal cyst may arise at the level of the hyoid bone
 - Moves upward with tongue protrusion
- **Mobility:**

○ Thyroid gland moves superiorly on swallowing or neck extension due to attachment to pretracheal fascia, a thyroid swelling that is hard, fixed, and does not move with swallowing should raise suspicion for malignancy

10.1 Common clinical features in endocrine disease	
Symptom, sign or problem	Differential diagnoses
Tiredness	Hypothyroidism, hyperthyroidism, diabetes mellitus, hypopituitarism
Weight gain	Hypothyroidism, PCOS, Cushing's syndrome
Weight loss	Hyperthyroidism, diabetes mellitus, adrenal insufficiency
Diarrhoea	Hyperthyroidism, gastrin-producing tumour, carcinoid
Diffuse neck swelling	Simple goitre, Graves' disease, Hashimoto's thyroiditis
Polyuria and excessive thirst	Diabetes mellitus, diabetes insipidus, hyperparathyroidism, Conn's syndrome
Hirsutism	Idiopathic, PCOS, congenital adrenal hyperplasia, Cushing's syndrome
'Funny turns'	Hypoglycaemia, pheochromocytoma, neuroendocrine tumour
Sweating	Hyperthyroidism, hypogonadism, acromegaly, pheochromocytoma
Flushing	Hypogonadism (especially menopause), carcinoid syndrome
Resistant hypertension	Conn's syndrome, Cushing's syndrome, pheochromocytoma, acromegaly
Amenorrhoea/oligomenorrhoea	PCOS, hyperprolactinaemia, thyroid dysfunction
Erectile dysfunction	Primary or secondary hypogonadism, diabetes mellitus, non-endocrine systemic disease, medication-induced (e.g. beta-blockers, opiates)
Muscle weakness	Cushing's syndrome, hyperthyroidism, hyperparathyroidism, osteomalacia
Bone fragility and fractures	Hypogonadism, hyperthyroidism, Cushing's syndrome, primary hyperparathyroidism
PCOS, Polycystic ovary syndrome.	

Thyroid Dysfunction

Signs and Symptoms 📋

Hyperthyroidism	Hypothyroidism
Dyspnea, palpitation, ankle swelling	Bradycardia
Tachycardia	Periorbital edema
Atrial fibrillation	Hoarse (husky) voice
Systolic hypertension	Diastolic hypertension
Angina	Carpal tunnel syndrome
Oligomenorrhea or amenorrhea	Menorrhagia
Sweaty(hyperhidrosis), tremulous warm hands	Constipation
Proximal myopathy(can be in both)	Weight gain
Weight loss, increased appetite	Depression
Diarrhea	Mental impairment
Heat intolerance & pruritus	Lethargy or apathy
Fine tremor	Cold intolerance
Anxiety and irritability& Brisk deep tendon reflexes	Cold dry skin
Eye symptoms	Delayed deep tendon reflexes (DTR)
Pressure of speech	Slow/deep speech

Causes:

Hyperthyroidism:

- Graves Disease (most common)
- Toxic multinodular goiter
- Solitary toxic nodule
- Thyroiditis
- Excessive thyroid hormone ingestion

Hypothyroidism:

- Hashimoto's Thyroiditis (autoimmune, most common, more in females)

- Radio-iodine therapy
- Surgery for Graves Disease

Extra Note:

“Graves' disease = autoimmune stimulation of TSH receptors → thyrotoxicosis”

“Hashimoto's = autoimmune destruction of thyroid tissue”

Graves Disease

- Most common cause of hyperthyroidism
- Autoimmune disease with familial component
- More common in females (Graves' is 5–10× more common in women and typically presents between ages 30–60)

10.2 Features suggestive of Graves' hyperthyroidism
History
<ul style="list-style-type: none"> • Female sex • Family history of thyroid or other autoimmune disease • Ocular symptoms ('grittiness', redness, pain, periorbital swelling)
Physical examination
<ul style="list-style-type: none"> • Vitiligo • Thyroid acropachy • Diffuse thyroid enlargement (can be nodular) • Thyroid bruit • Pretibial myxoedema • Signs of Graves' ophthalmopathy (proptosis, redness, oedema)

Extrathyroidal Symptoms Specific to Graves Disease: مهم جدا

- **Ophthalmopathy (proptosis, lid lag, lid retraction)**
- **Dermopathy (pretibial myxoedema – pink or brown thickened skin)**
- **Thyroid acropachy (digital clubbing with soft tissue swelling)** . It is almost always associated with dermopathy and ophthalmopathy.

Goiter


- Enlarged thyroid gland
- Most patients are *euthyroid*
- Large or retrosternal goiters may cause compressive symptoms: مهم
 - Stridor
 - Breathlessness
 - Dysphagia

Neck pain is uncommon in thyroid disease and, if sudden in onset and associated with thyroid enlargement, may represent bleeding into an existing thyroid nodule.

- **The following is from the book** : “ Localised tenderness may follow bleeding into a thyroid cyst”
 “Thyroid enlargement can be due to diffuse goitre, multinodular goitre or a solitary nodule.”
 “Diffuse goitre: soft, symmetrical, non-tender (e.g. in puberty, pregnancy, or Graves’).”
 “Multinodular goitre: multiple nodules palpable or visible on scan.”
 “Solitary nodule: may be benign or malignant; fixed, hard, or with lymphadenopathy suggests malignancy.

10.3 Causes of thyroid enlargement	
Type of enlargement	Associated clinical features
Diffuse goitre	
Simple/physiological (puberty, pregnancy)	Soft, symmetrical, non-tender
Graves' disease	Hyperthyroidism, ophthalmopathy, pretibial myxoedema
Thyroiditis (Hashimoto's, subacute)	Hypothyroidism with Hashimoto's, tender goitre with hypo- or hyperthyroidism in subacute
Drugs (lithium, amiodarone, iodine)	Relevant drug history
Iodine deficiency (endemic goitre)	Particularly in mountainous regions
Infiltrative (amyloidosis, sarcoidosis, tuberculosis)	May be tender, other features of systemic disease
Dyshormonogenesis (e.g. Pendred's syndrome)	Congenital hypothyroidism, sensorineural deafness (Pendred's)
Multinodular goitre	Multiple nodules palpable or on scan
Solitary nodule	
Dominant nodule in a multinodular goitre	Distinguishing these may require ultrasound and/or fine needle aspiration
Colloid cyst	
Hyperplastic nodule	
Follicular adenoma	
Thyroid carcinoma (papillary, follicular, medullary, anaplastic)	May be fixed, with vocal cord involvement and/or lymph nodes
Lymphoma	Lymphadenopathy
Metastasis	Other clinical evidence of malignancy

History Taking

- **Patient Profile:**
 - Name, Age, Occupation
 - **Chief Complaint:**
 - Neck lump or hypo-/hyperthyroid symptoms
 - **History of Presenting Illness:**
 - For lumps: Duration, **3S** (Site, Size, Shape), **3P** (Progression, Persistence, Previous history)
 - Related symptoms: Dysphagia, Dyspnea, Pain, Hoarseness
 - **Thyroid Dysfunction Symptoms** (Hyper/Hypo as above)
 - **Drug History:** 
 - Amiodarone → hypo-/hyperthyroidism
 - Lithium → hypothyroidism
 - Antithyroid drugs
 - **Family History:**
 - Thyroid or autoimmune disease
 - **Social History:**
 - Living in iodine-deficient areas → goiter and possibly hypothyroidism
 - Smoking “Smoking increases the risk of Graves’ ophthalmopathy”
 - Prior neck irradiation
 - Recent pregnancy (postpartum thyroiditis usually occurs in the first 12 months)
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Physical Examination

General Appearance

- Conscious, alert, oriented
- Agitated, restless, depressed, apathy, slow motion
- Heat/cold intolerance
- Weight loss/gain (check BMI) → u could say that clothes are suitable for the weather
- Speech: pressure of speech -in hyperthyroidism- or hoarseness (Hoarseness suggests vocal cord paralysis and should raise suspicion of thyroid malignancy.)

Vital Signs

- Blood pressure (systolic/diastolic hypertension)
 - Pulse (bradycardia, tachycardia, atrial fibrillation)
 - BMI
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Hand Examination

- Temperature (dry cold or sweaty warm/moist)
 - Nail changes (onycholysis, clubbing, thyroid acropachy)
 - Fine tremor (Hint: Laying a sheet of paper over the patient's fingers may improve detection.)
 - Palmar erythema
 - Vitiligo
 - Carpal Tunnel Syndrome signs
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Head, Neck, and Chest

- Dry coarse hair
 - Hair loss from distal third of eyebrows
 - Auscultate heart: midsystolic murmur due to increased cardiac output (in hyperthyroidism)
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Eye Examination:

Finding	Description
Exophthalmos	Observed from above and behind the patient
Chemosis	Conjunctival redness
Ophthalmoplegia	Test in H pattern
Periorbital puffiness	Swelling around eyes
Lid lag	Upper eyelid lags when looking down
Lid retraction	Sclera visible above iris

-Ophthalmoplegia in Graves' is typically due to restriction of upgaze from extraocular muscle inflammation, it affects around **20%** of patients with Graves' disease

- Inflammation in Graves' ophthalmopathy may cause spontaneous or gaze-evoked eye pain, redness or swelling of the eyelids or conjunctiva."

- **Lid lag**: delay in upper eyelid following the eye downwards

- **Lid retraction**: visible sclera above iris at rest (staring appearance)

* **Severe complications In Grave's:** 'grittiness', excessive tearing, retroorbital pain, lid swelling, blurred vision or diplopia, corneal ulceration, ophthalmoplegia and compressive optic neuropathy

Thyroid Examination

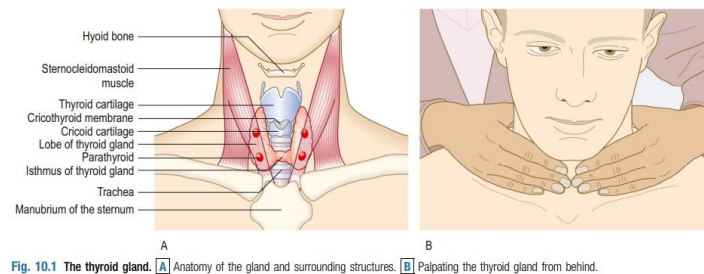
1. Inspection (Neck Hyperextended)

- Symmetry
- Scars
- Masses
- Ask patient to:
 - Swallow & Protrude tongue

Pemberton's sign: Ask the pt. to raise his arms above the head, notice any facial congestion and cyanosis. Just mention

2. Palpation (Neck Slightly Flexed)

- Tenderness
- Note the Size, consistency, shape, surface for any goiter
- Masses or abnormal swellings
- Thrills
- Lymph nodes (cervical, supraclavicular)
- Ask patient to Swallow again and feel it



* Note from the book: "Fixation of the thyroid to surrounding structures (such that it does not move on swallowing) and associated cervical lymphadenopathy increase the likelihood of thyroid malignancy."

3. Percussion:

- Percuss over the manubrium to assess for dullness, which may indicate retrosternal extension of a goitre.

4. Auscultation:

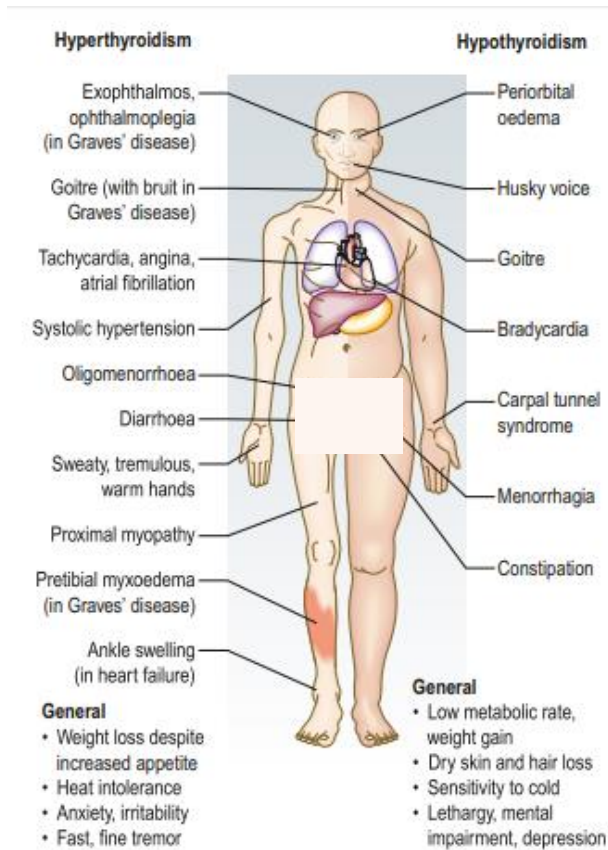
- Bruits (e.g in Graves Disease)

Note from the book: "A thyroid bruit (most common in Graves' disease) may be confused with carotid bruits or murmurs transmitted from the aorta; thyroid bruit is louder over the thyroid."

Lower Limb Examination

- Coarse dry skin
- Pretibial myxedema (brown/pink thick scar)
- Myxedema (in hypothyroidism)
 - =Myxoedema is non-pitting oedema caused by infiltration with mucopolysaccharides, chondroitin, and hyaluronic acid."

- Delayed deep tendon reflexes (hypothyroidism)
- Proximal myopathy (results from a catabolic energy state, we'll talk about it more in CNS)
- Ankle edema (in heart failure)



Some of the most important things to know:

كلهم بااست (ملاحظة: تمت الاستعانة بملف الباست لـ مالك ابو رحمة)

#	Question	Answer
1	What is a clinical feature that is specific to Graves' disease ?	Exophthalmos (Graves ophthalmopathy)
2	Which of the following is not seen in <u>hyper</u>thyroidism ?	Bradycardia
3	What is not found in <u>hypo</u>thyroidism ?	Fine tremor
4	A pt. with low TSH, high T4, and exophthalmos.. what's the dx?	Graves' disease
5	Which of the following produces a diffuse goiter ?	Graves' disease (Hashimoto's also does)
6	What sign is least specific for Graves' disease?	Goiter (can occur in many thyroid conditions)

7	In a case of benign thyroid nodule , which statement is false?	Malignancy always suspected with single nodule
8	A 20-year-old presents with heat intolerance, wt loss, diarrhea, amenorrhea, tremor, HR 105 which symptom does not support <u>hyper</u> thyroidism?	Normal appetite (not exclusive to hyperthyroidism)
9	A woman with a neck swelling , euthyroid labs.. what's expected on physical exam?	Tracheal deviation or compressive symptoms
10	What is wrong about the thyroid gland ?	It doesn't move with swallowing (False – bc it does)
11	Which extrathyroidal signs are seen in Graves'?	Exophthalmos, Pretibial myxedema, Acropachy
12	What drug is known to induce <u>both</u> hypo- and hyperthyroidism ?	Amiodarone
13	What autoimmune condition is the most common cause of <u>hypo</u>thyroidism ?	Hashimoto's thyroiditis

نسألك 
 موجبات رحمتك ،
 وعزائم مغفرتك ،
 والغنيمه من كل بر ،
 والسلامه من كل اثم ،
 والفوز بالجنه ،
 والنجاه من النار .

اللَّهُمَّ