Thyroid Status Assessment

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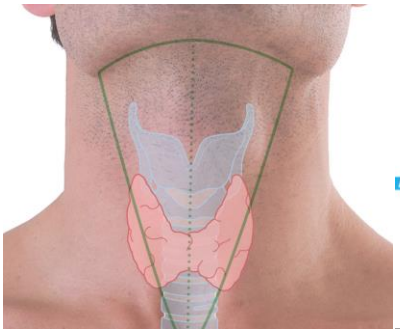
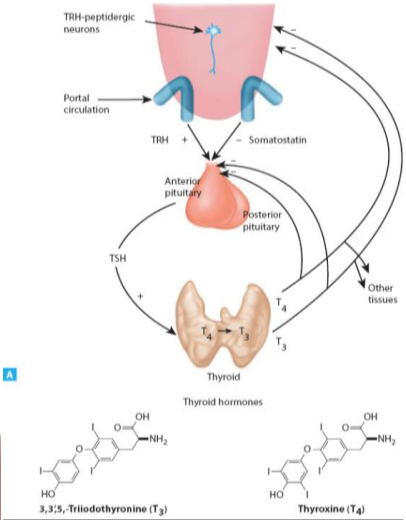
Anatomy and Physiology





The thyroid gland is located anterior to the trachea, just inferior to the larynx. It can be located just inferior to the cricoid cartilage. The thyroid gland consists of three parts (left lobe, right lobe, isthmus in the medial region). The thyroid releases hormones (T4, and T3, with T3 being the active form) under control by the Hypothalamic-Pituitary-Thyroid (HPT) axis. TRH from the hypothalamus stimulates release of TSH from the anterior pituitary, this in turn, acts on a receptor in the thyroid gland to prompt release of T4 and T3. By virtue of negative feedback in normal physiology, T4 and T3 inhibit the axis at the TRH and TSH levels, thus achieving homeostasis.

Focused history taking

Ask about changes in:	Hypothyrodism	Hyperthyroidism
Weight	Gain	Loss
Appetite	Reduced	Increased
Bowel Habit	Constipated	Loose
Temperature tolerance	Generally, feels cold	Generally, feels hot
Skin, hair	Dry skin with hair/eyebrow thinning	Increased sweating
Mood	Depressed	Anxiety
Exercise tolerance	SOB	SOB or palpitations
Energy Level	Fatigue	Fatigue
Menstrual pattern	Heavy	Scanty or absent
Family History	"Underactive thyroid"	"Graves' disease"

(Keats clinical guide)

- Additional questions when considering red-flag features which would warrant more urgent referral:
    - Difficulty breathing (severe stridor at rest) → same day emergency referral
    - Hoarseness (unexplained voice change) → 2 week wait urgent referral
    - Painless neck lump, that has **rapidly** increased in size → 2 week wait urgent referral (rare, but need to rule out anaplastic thyroid cancer or thyroid lymphoma)
- Smoking history (risk factor)

The examination

Introduction

- WIPER: wash hands, introduce self & gain consent (no need to undress)

End of bed

- General Observations
  - Body: is the patient thin or overweight?
  - Dress: appropriate for the temperature?
  - Agitation?
  - Face: swollen? Expression?
  - Eyes: exophthalmos (hyper)
  - Voice: note hoarse or croakiness (hypo)
  - Hair: dry thin brittle hair? (hypo)
  - Neck: any obvious goitre or swelling?
- MMM
  - medication, mobility aids, monitoring devices

Head

- Skin
  - Puffy, pale, dry, flaky (hypo)
  - Facial myxoedema (rare)
  - Loss of lateral third of eyebrow (hypo)
- Eyes
  - Xanthelasma, arcus, periorbital oedema (hypo)
  - Exophthalmos, lid retraction - look from front, top, sides (Graves)
  - Lid lag - move finger down to track eyelid (Graves)
  - Ophthalmoplegia - pain on movement, follow H shape (Graves)

Neck

- Inspection
  - From front and sides, have glass of water ready
  - Scars? (previous surgery)
  - Swelling? Goitres? (part or whole gland?)
  - Obvious lymphadenopathy
  - Pulsation
  - Tongue protrusion
    - Thyroglossal cyst moves up
  - Swallow test
    - Thyroid gland moves
- Palpation
  - From the front (tracheal deviation) & back
  - Describe thyroid or any masses
    - Size
    - Shape (nodular vs uniform swelling)
    - Surface (smooth - Graves, multinodular)

        - Consistency (soft - normal, firm - Graves, rubber hard - Hashimoto's, stony hard - carcinoma)
        - Tenderness (viral thyroiditis)
        - Mobility (tethered?)
        - Any lymphadenopathy? Map out
    - Palpate while sticking tongue out, and swallowing
- Percussion
    - Dull - retrosternal goitre
- Auscultation
    - Bruit - hyperthyroidism

<u>Arms and Hands</u>

- Observation
    - Clubbing (acropachy - Graves), onycholysis (hyper)
    - Muscle wasting, palmar erythema (hyper), vitiligo (either)
    - Fine tremor (hyper), Pemberton's sign (congestion, cyanosis - large retrosternal goitre)
- Palpation
    - Temperature (hot and sweaty vs cold and clammy)
    - Pulse
    - Tenderness (carpal tunnel)

<u>Legs</u>

- Muscle wasting
    - Stand up without using your arms
- Pretibial myxoedema
- Knee reflexes

<u>Conclusion</u>

- Do they need help getting dressed?
- Any questions? Thank patient and explain you'll present now
- Wash hands

Presenting

It's important you sell yourself well, take a moment to gather your thoughts before speaking

- Thank you for letting me assess Mr/Ms….
- They presented with a history of …
- On general inspection they appeared...
- My key positives include …
- My key negatives include …

THEREFORE, my top differentials would be ….

To complete my examination I would like to

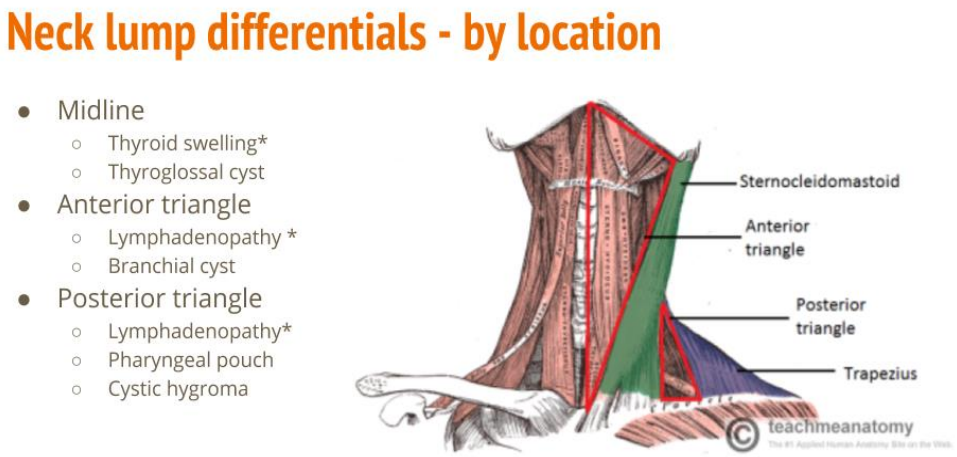
- Hx, exams, bedside tests, investigations, management
- Thyroid specific exams:
    - ENT exam/CVS
    - ECG (?AF)

- TFTs
- CXR (?retrosternal expansion)
- USS
- Aspiration/biopsy (?malignancy)

Differentials

In this station they will likely be looking for ability to identify hyper or hypothyroidism - but OSCE patients should be on treatment so no signs visible, except for EYE SIGNS in Graves, which persist even after normalisation of thyroid status.

In terms of neck masses remember the most common thing is a reactive lymphadenopathy - don't just assume it's a thyroid mass because it's in the neck. Think of your neck triangles, and of the age of the patient to form a reasonable differential



From PassMedicine:

Reactive lymphadenopathy	By far the most common cause of neck swellings. There may be a history of local infection or a generalised viral illness
Lymphoma	Rubbery, painless lymphadenopathy The phenomenon of pain whilst drinking alcohol is very uncommon There may be associated night sweats and splenomegaly
Thyroid swelling	May be hypo-, eu- or hyperthyroid symptomatically Moves upwards on swallowing
Thyroglossal cyst	More common in patients < 20 years old Usually midline, between the isthmus of the thyroid and the hyoid bone Moves upwards with protrusion of the tongue May be painful if infected
Pharyngeal pouch	More common in older men Represents a posteromedial herniation between thyropharyngeus and cricopharyngeus muscles Usually not seen but if large then a midline lump in the neck that

	gurgles on palpation Typical symptoms are dysphagia, regurgitation, aspiration and chronic cough
Cystic hygroma	A congenital lymphatic lesion (lymphangioma) typically found in the neck, classically on the left side Most are evident at birth, around 90% present before 2 years of age
Branchial cyst	An oval, mobile cystic mass that develops between the sternocleidomastoid muscle and the pharynx Develop due to failure of obliteration of the second branchial cleft in embryonic development Usually present in early adulthood
Cervical rib	More common in adult females Around 10% develop thoracic outlet syndrome
Carotid aneurysm	Pulsatile lateral neck mass which doesn't move on swallowing

Cases for discussion

Case 1 - female, 40

- Hx
  - Trouble sleeping
  - Diarrhoea 6/52
  - Weight loss 4kg in 4/12
  - Feels shaky, heart racing
- O/E
  - Hands warm and sweaty
  - Pulse irregularly irregular
  - Resting tremor
  - Exophthalmos
  - Visible, palpable diffuse goitre, with bruit
  - Hyperreflexia

Case 2 - female, 47

- Hx
  - Weight gain 5kg in 6/12
  - Tiredness 4/52
  - Slow speech
  - Postural dizziness
  - Constipation
- O/E
  - Obese
  - Wearing warm clothes
  - Pulse 58 bpm and regular
  - Pale, cool, dry, and thick skin
  - No neck masses palpable
  - Hyporeflexia

Case 3 - male, 76

- Hx
  - Patient with COPD admitted with exacerbation
  - Currently treated, painful neck lumps
- O/E
  - Bilateral diffuse swellings in neck, behind mandible
  - Tender, mobile, not transilluminating
- Ix
  - Low T3
  - Low/normal TSH