Thyroid Nodules

[Disclaimer]

Contents

Background

About thyroid nodules

Thyroid nodules are a common finding. They may be detected by palpation in 10% of women and 2% of men, with only 5% of these being malignant.

With sensitive imaging, such as ultrasound, CT, or MRI, the prevalence of thyroid nodules may be as high as 50%. Only a small minority of these lesions are malignant and imaging cannot reliably identify those that are benign.

The optimal management of thyroid nodules continues to be argued and varies in different centres and within different countries.

A flow chart or pathway for the management of thyroid nodules cannot accurately exclude or diagnose malignancy in 100% of cases.[1] There will always be occasional patients who do not experience the optimal outcome, despite guidelines being followed.

The thyroid nodule pathways on this website represent a broad consensus as recommended by specialist physicians and surgeons in the Geelong region and are based in part on the American Thyroid Association (ATA) guidelines 2009.

Red flags

- Thyroid mass with associated difficulty breathing
- Bleeding from a thyroid nodule
- Rapidly enlarging thyroid mass
- Suspicious dominant nodule or cervical lymph nodes
- Thyroid mass with change in voice quality

Assessment

1. Take a targeted history:
    - ***Symptoms of thyroid dysfunction***

Symptoms of thyroid dysfunction

- *Hyperthyroidism:*
    - *weight loss*
    - *sweats*
    - *anxiety*
    - *tremor*
    - *racing heart*
    - *diarrhoea*
- *Hypothyroidism:*
    - *weight gain*
    - *lethargy*

- *depressed mood*
- *constipation*

- ***Thyroid cancer risk factors*** and nodule duration and growth

Thyroid cancer risk factors[2]

- *History of neck irradiation in childhood*
- *Family history of thyroid cancer*
- *Hashimoto thyroiditis (small but recognised risk of lymphoma)*
- *Familial adenomatous polyposis*
- *MEN syndrome (Multiple Endocrine Neoplasia)*

- ***Compressive symptoms***

Compressive symptoms

- *Hoarseness – may be due to compression or malignant infiltration of the recurrent laryngeal nerve.*
- *Dysphagia.*
- *Plethora – red face, especially when raising arms above head e.g., towel drying hair, hanging washing up.*
- *Airway obstruction:*
  - *Symptoms depend on severity of the compression or narrowing of the trachea.*
  - *Dyspnoea is the most common symptom of tracheal obstruction or narrowing and often aggravated with exertion or posture, especially when leaning forward.*
  - *If severe tracheal compression (luminal diameter < 5 mm), stridor (noisy breathing during inspiration) and/or wheezing (noisy breathing during expiration) occurs at rest.*
  - *Cough or a choking sensation may be symptoms of airways obstruction.*

2. Perform a thyroid examination:

- Examine for ***signs of thyroid dysfunction.***

Signs of thyroid dysfunction

- *Hyperthyroidism:*
  - *tremor*
  - *tachycardia*
  - *weight loss*
  - *exophthalmos (Graves)*
  - *hyperreflexia*
- *Hypothyroidism:*
  - *Bradycardia*
  - *weight gain*
  - *hyporeflexia*

- Palpate the thyroid region:
    - If a lump is palpable, confirm that the lump is likely to be of ***thyroid origin.***

Thyroid origin

- *Lump is located in lower central neck.*
- *Lump moves with swallowing.*

    - If unsure that the lump is of thyroid origin, consider other causes of neck lumps in adults.
- Palpate for cervical lymph nodes.

3. Arrange thyroid-stimulating hormone (TSH) test. See Thyroid Function Tests.

Management

If difficulty breathing or active bleeding, arrange immediate ENT referral or admission. All other thyroid lumps require imaging, determined by TSH result.

Elevated or normal TSH

1. Arrange ultrasound scan of thyroid and neck.

2. Arrange ***fine needle aspiration (FNA)*** based on ***clinical and ultrasound scan features.*** Radionuclide scans are not helpful in assessing thyroid masses with normal or elevated TSH.

Clinical and ultrasound scan features

Nodule features	***Recommended threshold for FNA***
*High risk history**	*FNA required, no size threshold relevant*
Solid nodule	*> 1 cm*
Mixed solid-cystic nodule	*> 1.5 cm if high risk ultrasound features*** *> 2 cm if no high risk ultrasound features***
Purely cystic nodule	*FNA not indicated but may be performed for symptomatic relief.*

**High risk history:*

- *prior history of thyroid cancer*
- *1st degree relative with thyroid cancer*
- *known MEN syndrome (Multiple Endocrine Neoplasia)*
- *PET avid mass (30% risk of malignancy)*
- *pathological lymph nodes on imaging.*

***High risk USS features:*

- *microcalcifications*
- *hypoechoic*
- *increased nodular vascularity*
- *infiltrative margins*
- *cervical lymphadenopathy.*

Fine Needle Aspiration (FNA)

- *The architecture of tumours such as lymphomas cannot be determined from a needle aspirate, and possible sarcoma should not be needled due to risk of tumour spread.*
- *Ensure any previous diagnostic ultrasound images or reports accompany the patient.*
- *Out-of-pocket expenses apply, however patients on a pension or healthcare card are bulk-billed.*
- *Technique is important, so FNA is best performed by specialist radiologists or pathologists.*

- If FNA nondiagnostic, repeat FNA.
- If FNA benign, repeat ultrasound in 12 months. If unchanged then cease observation
- If FNA benign and multinodular goitre with compressive symptoms or cosmetic concerns, refer for ENT or thyroid surgeon assessment.
- For any malignancy, or atypia, refer for ENT or thyroid surgeon assessment.

3. If FNA results are benign and TSH remains high, consider Hypothyroidism.

Lowered TSH

1. Arrange a thyroid radionuclide scan. If the patient is pregnant or scan is contraindicated, discuss with endocrinology.

2. If ***hot nodule,*** which corresponds to the palpable nodule, refer to endocrinology.

   Hot nodule
   High isotope uptake is likely to indicate a benign but functioning thyroid lesion which has low likelihood of cancer.

3. If ***cold nodule,*** which corresponds to the palpable nodule:

   Cold nodule

   Has a low isotope uptake, and may indicate cancer, although most are usually benign.

   - arrange an ultrasound scan of thyroid and neck
   - arrange fine needle aspiration (FNA) based on ***clinical and ultrasound scan features***.
     - If FNA nondiagnostic, repeat FNA.
     - If FNA benign, repeat ultrasound in 12 months. If unchanged then cease observation.
     - If FNA benign and multinodular goitre with compressive symptoms or cosmetic concerns, refer for ENT or thyroid surgeon assessment.
     - For any malignancy, or atypia, refer for ENT or thyroid surgeon assessment.
   - If FNA results are benign and TSH remains low, see Subclinical Hyperthyroidism.

4. If any uncertainty regarding FNA results, discuss with pathologist, endocrinology, or ENT or thyroid surgeon.

Referral

- If thyroid mass associated with difficulty breathing or active bleeding, arrange an immediate ENT referral or admission.
- Refer for an urgent or routine ENT referral if:
    - suspected or confirmed malignancy.
    - compressive symptoms.
    - rapidly enlarging thyroid mass.
    - generalised thyroid enlargement.

Information

Sources

References

1. Haugen BR, Alexander EK, Bible KC, Doherty G, Mandel SJ, Nikiforov YE, et al. 2015 American Thyroid Association Management Guidelines for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer: The American Thyroid Association Guidelines Task Force on Thyroid Nodules and Differentiated Thyroid Cancer. Thyroid. 2016;26(1):1-133.
2. Royal College of Physicians of London. British Thyroid Association Thyroid Cancer Guidelines. 2. [place unknown]: British Thyroid Association; 2014.

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