

The ABCs of

Thyroid Cancer

UNDERSTANDING THE FACTS BEHIND



1. Definition

Thyroid lumps are a common presentation occurring in up to 5% of the population and only a small percentage of these are cancerous.

2. Risk factors

- Female gender
- Family history
- Over the age of 40
- History of radiation exposure
- Hereditary conditions
 - Family Adenomatous Polyposis (increased risk of Papillary thyroid ca)
 - Cowden disease → multiple hamartoma syndrome (increased risk of benign growths and thyroid ca)
- Overweight/obese

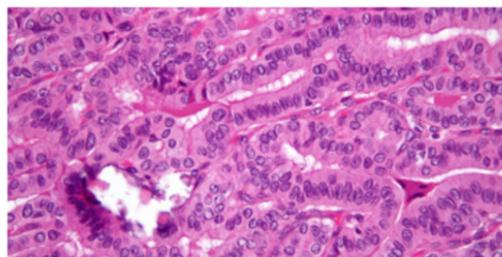
3. Clinical features

- Lump in the front of the neck
- Hoarseness
- Swollen lymph nodes
- Difficulty swallowing
- Difficulty breathing
- Pain in the neck of throat
- Persistent cough, not related to a cold

4. Types of thyroid cancer

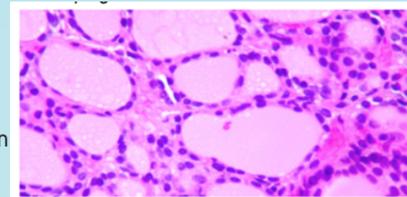
The main types of thyroid cancer can be classified according to the four following groups:

- **Papillary carcinoma**
 - The most commonly occurring type (75%) of those with thyroid ca
 - Commonly seen in women aged 40-50 years old
 - Histologically the cells are a combination of papillary and colloid-filled follicles with papillary projections and pale empty nuclei
 - Spread via lymphatics
 - Good prognosis, 10 year survival → 90%
 - Drops significantly if the tumor has spread beyond the thyroid

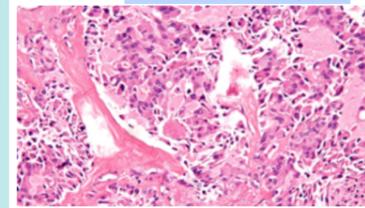


Well differentiated

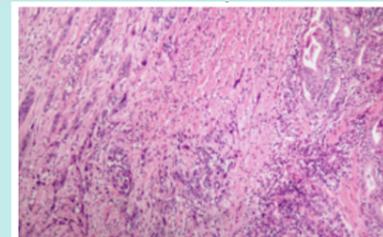
- **Follicular carcinoma**
 - Second most common thyroid cancer (15%),
 - Commonly seen in women aged 40-60 years old
 - Histologically this cancer presents as focal encapsulated lesions with microscopic capsular invasion
 - Metastasis takes place by hematogenous spread primarily to bones and lungs
 - * Hurthle cell tumors are a variant of follicular carcinoma → treated in the same way
 - 10 year survival → 85%, hematogenous spread makes for a reduction in prognosis
- **Medullary carcinoma**
 - Makes up about 3% of thyroid ca
 - Arises in the parafollicular cells (C cells) and consequently cause raised calcitonin levels
 - Is associated with Multiple Endocrine Neoplasia (MEN) 2 syndrome in which the patient may have a hereditary condition associated with:
 - Medullary thyroid ca
 - Parathyroid tumor
 - Pheochromocytoma
 - Spreads by lymphatics, but associated with poor prognosis if there is nodal involvement
 - 10 year survival rate only drops below 90% when there is nodal disease or metastatic spread
- **Anaplastic Thyroid Cancer**
 - Rare type of thyroid cancer making up 1-2% of thyroid cancers
 - Usually presenting in patients over 60 years old
 - May grow quite rapidly with marked compressive symptoms (pain in the neck, hoarseness of voice, difficulty swallowing and breathing)
 - Prognosis is poor and treatment is often just supportive
 - 1 year survival rate of 10-20%



Well differentiated



Poorly differentiated



Poorly differentiated

5. Differentials

- Benign thyroid adenoma
- Thyroid cyst
- Toxic multinodular goitre
- Non-toxic
- Thyroglossal duct cyst

6. Investigations

TSH levels

- Allows differentiation between "functional" and "non-functional" nodules
 - Hyperfunctioning nodules are determined by low TSH. They are often not malignant so further cytologic study is usually not required
 - Additional investigation may be required to rule out other conditions such as Graves
 - Hyperfunctioning nodules can also be determined by carrying out a radio-nucleotide scan to see if it is a hot or cold nodule
 - If TSH levels are normal or elevated a FNA is required for cytologic evaluation

Ultrasound → used to assess the nodule and look for cervical lymphadenopathy

- Red flags on ultrasound:
 - Microcalcifications
 - Hypoechoogenicity
 - Irregular margins

Fine needle aspiration biopsy → done when initial workup suggests a nonfunctional nodule and suspicious features on ultrasound

- Can be performed with palpation or under ultrasound guidance (the latter is usually preferred)
- Also used for tumour staging using the TNM staging

7. Management

Varies depending on type and stage of cancer

- Surgery is first-line therapy for differentiated tumours.
- Total thyroidectomy has been demonstrated to increase survival and decrease recurrence rates
 - It is also considered for patients with tumors >4cm and high risk history for malignancy
 - Neck dissection should be performed along with total thyroidectomy if there is clear lymph node involvement
- For advanced metastatic disease molecular targeted therapies known as Tyrosine Kinase Inhibitors, eg. sorafenib and vandetanib, can control progression
- Other options include radioactive iodine which can be done in conjunction with surgery to remove any possible residual cancer → decreases opportunity for relapse
- External beam radiations is often used as palliative care for advanced inoperable cancer, but can be used as an adjunct therapy to surgery
 - Chemotherapy can also be used in a similar way,