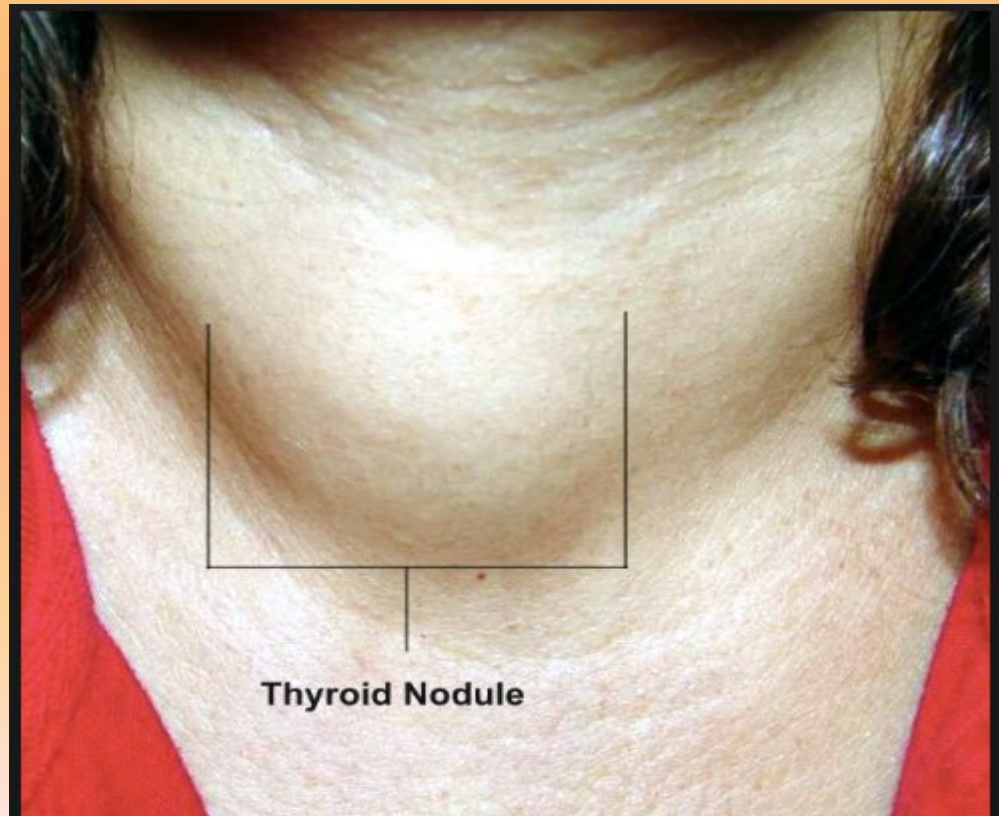


APPROACH TO A CASE OF THYROID NODULE



Case Presentation

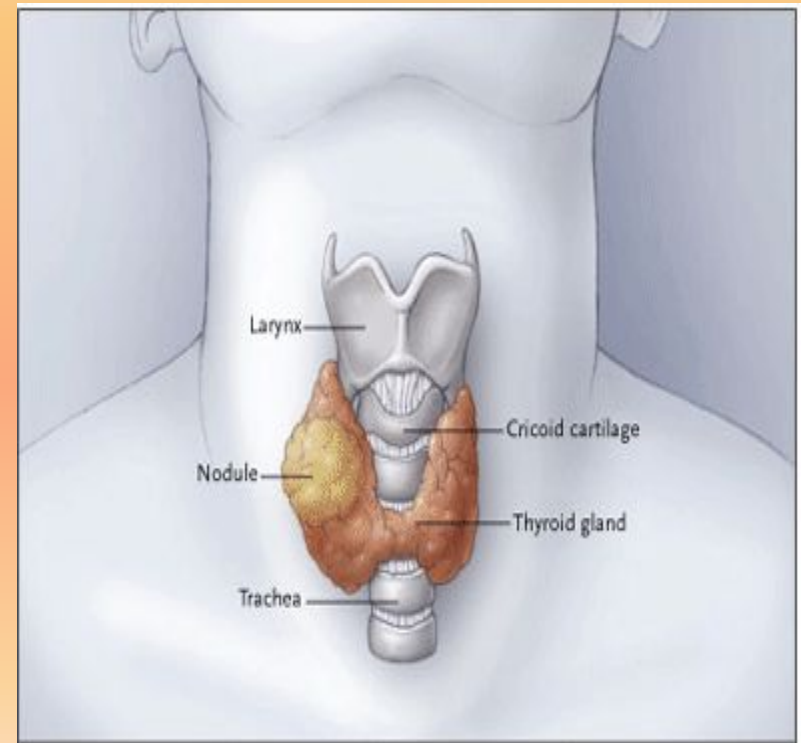
29 year old Female referred to Head & Neck clinic for evaluation of a thyroid nodule. Patient reports this nodule was found incidentally while she was getting ready for work one morning.

Objectives

- **Definition**
- **Causes of Thyroid Nodularity**
- **Approach History & physical exam. of patients with thyroid gland pathology**
- **History Questions to Find High Risk Patients**
- **Investigations.**
- **What is the *Radionuclide Scanning* ?**

Definition

**Thyroid nodule :-
discrete lesion
within the thyroid
gland that is distinct
from
the surrounding
thyroid
parenchyma**



Causes of Thyroid Nodularity

- Benign
 - Follicular Adenomas
 - Multinodular goiter
 - Hashimoto's thyroiditis
 - Cysts (colloid, simple, hemorrhagic)



- Malignant

- Papillary Carcinoma
- Follicular Carcinoma
- Medullary Carcinoma
- Anaplastic and poorly differentiated carcinoma
- Primary lymphoma of the thyroid
- Metastatic carcinoma

Clinical features

- Most thyroid nodules are asymptomatic
- Nodules that produce thyroid hormones in excess
 - palpitation
 - anxiety
 - clammy skin
 - increased appetite
 - weight loss
 - heat intolerance
- Nodules can press adjacent structures in neck causing
 - hoarseness of voice(recurrent laryngeal N compression)
 - dysphagia
 - dyspnoea
 - pain in neck

- Nodules sometimes found in hashimoto's thyroiditis, which may cause symptoms of an underactive thyroid gland
 - dry skin
 - face swelling
 - intolerance to cold
 - weight gain
 - decreased appetite
 - hair loss

Important Points in Patients History

- **Family history of thyroid disease or thyroid cancer?**
 - **Familial syndromes (MEN)**
- **Personal history of radiation to head/neck**
 - **Increased risk of thyroid cancer**
- **Hoarseness, SOB, difficulty swallowing**
 - **Compressive symptoms of thyroid goiter**

Physical Exam

- **What components of the physical exam are critical for this patient?**
- **Full Head and neck exam to look for any “lumps or bumps”**
- **Location, consistency, and size of nodule(s)!**
- **Neck tenderness or pain !**
- **Cervical lymphadenopathy!**
- **Vocal fold paresis on laryngoscopy**

INVESTIGATIONS

- **HORMONAL ASSAY**
- **ULTRASONOGRAPHY**
- **FNAC**
- **THYROID SCAN**

TSH

- It is important to first establish the patient's thyroid function. This will help determine if the known thyroid nodule is hyperfunctioning, hypofunctioning, or nonfunctioning.
- If TSH levels abnormal, free T3 & T4 should be measured to confirm the diagnosis.

TPOAb

- Thyroid peroxidase antibody
- Though characteristically observed in hypothyroidism, can also be seen in patients of hyperthyroidism and subacute thyroiditis

Serum Tg

- Correlates with iodine intake and the size of the thyroid gland rather than with the nature or function of the nodule
- Seldom used in nodule diagnosis
- Extremely elevated levels of Tg may suggest thyroid metastasis.

Serum Calcitonin

- Good marker for medullary carcinoma and correlates well with tumor burden

Ultrasonography

- Most sensitive test to detect lesions in the thyroid
- Indicated in all patients who have a nodular thyroid, with a palpable solitary nodule or a multinodular goiter, be evaluated by US
- Not as screening test in general population

USG findings

- Number
- Size
- Extracapsular growth
- Cystic lesions
- Cervical LN

Findings suggestive of malignancy:

- Irregular border
- Presence of cystic components
- Presence of calcifications
- Heterogeneous echo pattern
- Extrathyroidal extension

Radionuclide Scanning

Is a way of imaging bones, organs and other parts of the body by using a small dose of a radioactive chemical. There are different types of radionuclide chemical. The one used depends on which organ or part of the body is to be scanned.

Radionuclide Scanning

- **Used to identify whether a nodule is functioning or not.**
- **Functioning nodules are nearly always benign**
- **Approximately 90 percent of nodules are nonfunctioning**
- **5 percent of nonfunctioning nodules are malignant**
- **However even with suppressed level of serum TSH patient can have both functioning and non functioning nodules. Thus, even suppressed level of serum TSH may obviate the need for biopsy.**

- Usually either Technetium(Tc^{99}) or Radioiodine(I^{123}) used.
- Normal follicular cells will trap both but only radioiodine is added to tyrosine and stored in the colloid space
- Both benign and almost all malignant neoplastic tissue concentrate both radioisotopes less than normal thyroid tissue

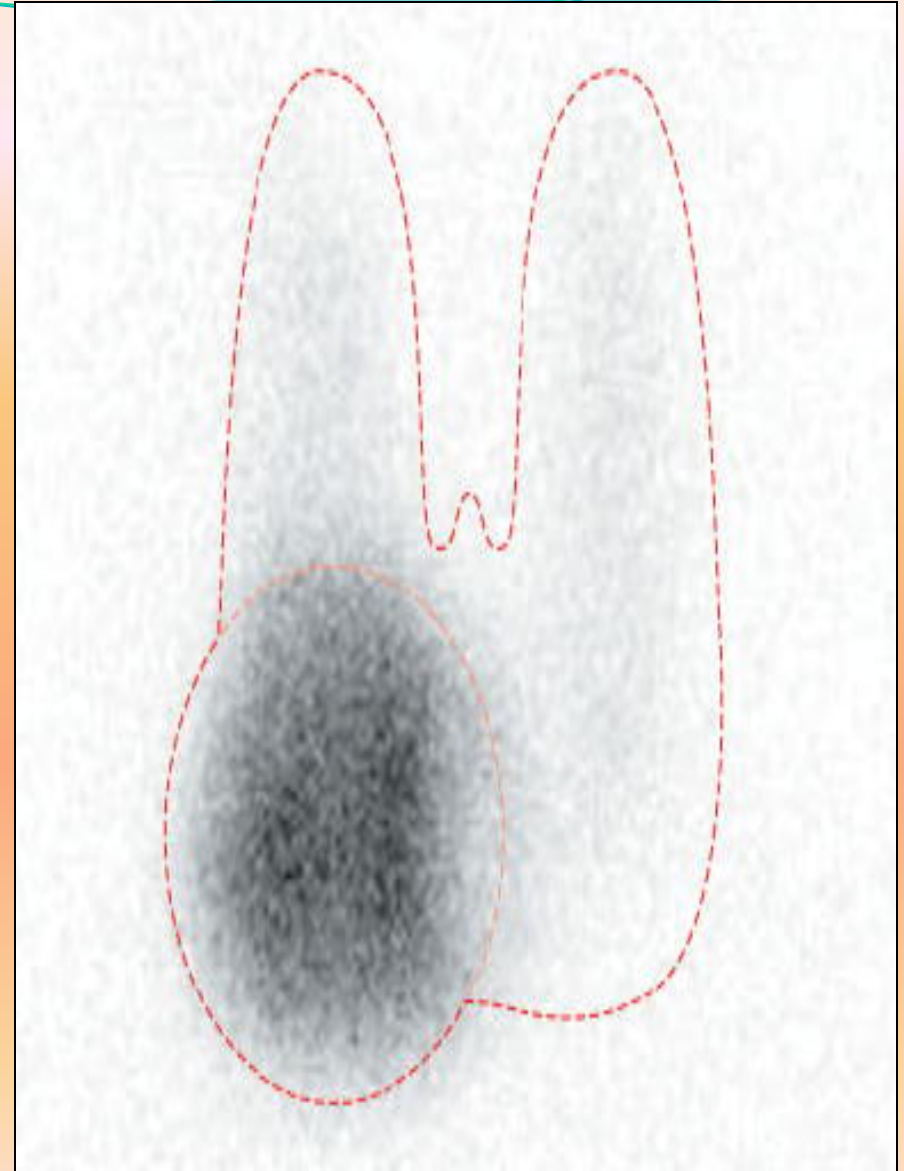
Cold Nodules

- Cyst
- Non-functioning Adenoma
- Malignancy



Hot Nodules

- Functioning Adenoma
- Thyroiditis
- Multinodular goiter

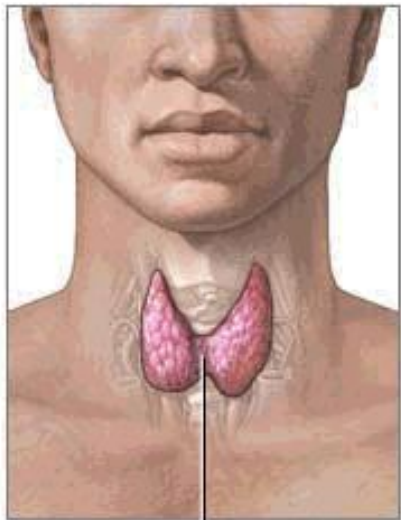


Limitations of Thyroid scan

- Two dimensional scanning technique
- Inability to measure the size of a nodule accurately
- Missed malignant thyroid nodules

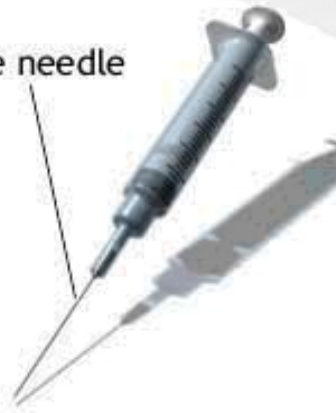
Other imaging tech

- CT and MRI
 - not as routine.
 - Can assess size, retrosternal extension, position and relation to the surrounding structure.



Thyroid gland

Fine needle



ADAM.

USG guided FNAC

- Indicated if:
 - Palpation-guided FNAC non-diagnostic
 - Complex (solid/cystic) nodule
 - Palpable small nodule (<1.5 cm)
 - Impalpable nodule
 - Abnormal cervical nodes
 - Nodule with suspicious US features
- FNAC results are: 70% Benign, 10% Malignant or suspicious of malignancy, and 20% Unsatisfactory

FNAC Limitations

- The absence of malignant cells in an acellular or hypocellular specimen does not exclude malignancy
- Inability to reliably distinguish a benign follicular adenoma from a follicular malignant tumour