**Initial investigation done in STN is thyroid function test (TFT)³.**

**Investigation of choice in STN for diagnosis is FNAC⁵.**

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**SOLITARY THYROID NODULE**

- Initial investigation done in STN is thyroid function test (TFT)³.
- If TFT is raised, next investigation is thyroid scan. (For hot nodules, RAI ablation or surgery is done; For warm or cold nodules, follow-up or surgery)⁶.
- If TFT is normal, USG is done (Aspiration in cystic lesions. FNAC for solid or heterogenous lesions)⁶.
- Investigation of choice in STN for diagnosis is FNAC⁵.

98. Ans. d. FNAC

99. Ans. c. Right hemithyroidectomy

100. Ans. c. Collloid degenerations

101. Ans. c. Cold nodule on thyroid scan is diagnostic of malignancy (Ref: Schwartz 9/e p1358; Sabiston 19/e p899; Bailey 25/e p783; Chandrasoma Taylor 3/e p849-850; Harrison 18/e p2938-2939, 17/e p2122-2123)
**Solitary Thyroid Nodule**

- **MC solitary thyroid nodule** is the **benign colloid nodule**, which accounts for 60% of cases of solitary thyroid nodule.
- The **2nd MC cause** of solitary thyroid nodule is the **follicular adenoma (30%)**.

**History**

- Details regarding the nodule, such as time of onset, change in size, and associated symptoms like pain, dysphagia, dyspnea, or choking, should be elicited.
- **Risk factors for malignancy**, such as exposure to ionizing radiation and family history of thyroid and other malignancies, are associated with thyroid cancer.

**External Beam Radiation**

- **Low-dose therapeutic radiation** has been used to treat conditions such as lumps, thymic enlargement, enlarged tonsils, and adenoids, acne vulgaris, and other conditions such as hemangioma and scrofula.
- **History of exposure to low-dose ionizing radiation to the thyroid gland places the patient at increased risk for developing papillary thyroid cancer**.
- Risk is maximum 20 to 30 years after exposure.

**Physical Examination**

- Thyroid gland is best palpated from behind the patient and with the neck in mild extension.
- Nodules that are hard, gritty, or fixed to surrounding structures such as the trachea or strap muscles are more likely to be malignant.

**Diagnostic Investigations**

**Laboratory Studies**

- Most patients with thyroid nodules are euthyroid.
- Determining the blood TSH level is helpful.
- **Risk of malignancy**: 1% in hyperthyroid nodules.
- Tg levels in patients who have undergone total thyroidectomy for thyroid cancer and for serial evaluation of patients undergoing nonoperative management of thyroid nodules.
- Serum calcitonin in patients with MTC or a family history of MTC or MEN2.

- **FNAC**
  - Single most important test in the evaluation of thyroid masses.
  - Ultrasound guidance is recommended for nodules that are difficult to palpate and for cystic or solid-cystic nodules that recur after the initial aspiration.
  - A 23-gauge needle is used.
  - If a FNAC is reported as nondiagnostic, it generally should be repeated.
  - Benign lesions include cysts and colloid nodules. The risk of malignancy in this setting is <3%.
  - When FNAC is used in complex nodules, the solid portion should be sampled.
  - The risk of malignancy in the setting of a suspicious cytology is about 20%. Most of these lesions are follicular or Hurthle cell neoplasms. In this situation, diagnosis of malignancy relies on demonstrating capsular or vascular invasion, features that cannot be determined via FNAC.
  - FNAC also is less reliable in patients who have a history of head and neck irradiation or a family history of thyroid cancer, due to higher likelihood of multifocal lesions and occult cancer.
Fit for secondary thyrotoxic

Generally middle or elderly
with cardiac damage

If anaesthesia possible
and good cond.

Subtotal thyroidectomy

If not then
Radioiodine

Antithyroid drugs
are given afterwards
and continued till
6 weeks

Solitary toxic nodule
(Tertiary thyrotoxicosis)

A part of solitary nodule entity

on I\(^{131}\) scan or \(^{99m}\)Tc scan - Hot nodule

FNAC confirmation

Carbimazole + PRL symptom control

from Hemithyroidectomy or I\(^{131}\)
Solitary Nodule of Thyroid:

- Single palpable nodule in thyroid with no other part palpable.
- MC surgically correctable cause of thyroid:
  - As part of multinodular goiter (MNG)
  - Toxic nodule
  - Adenoma
  - Cystic change
  - Thyroid cancer
- High risk nodule
  - Male patient with solid nodule
  - Rapid growth
  - Restricted mobility
  - Jugular venous reflux
  - Hard nodule
  - Hoarseness of voice

Flow chart:

- In. Blood: Routine, T3, T4, TSH
- Thyroid Autoantibody: Women Hashimoto's suspected
- Serum Thyroglobulin: N = <1.35
- Residual: >50
- Mets: >100
**Notes of Dr. Ravindra Goswami (IAS-2015, AIR-153)**

**Eckovation App**

**Group Code:** 873541

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**malignant exophthalmus**

- Retroorbital, ocular [impairments]
- Conjunctivitis, chemosis
- 7/10, lateral strabismus
- Orbital decompression
- Guanethidine eye drops

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**Myasthenia gravis**

- Mild weakness of proximal limb muscles
  - Weakness of extraocular mus. (Diplopia)

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**Myasthenic myopathy**

- Pretibial myoedema
  - Due to lymphatic obliteration

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**MNX**

- Pretibial myoedema, myopathy and malignant exophthalmus not seen in secondary myasthenia

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**MNX Inv.**

- Blood: CBC, T3, T4, TSH, or TSH antibody
- Flexible laryngoscopy
- Sleep study
Thyroid of Primary Thyrotoxicosis

**Antityroid Indications**
- Not really first
- Sx postponed
- Reccurrence after Sx

**Advantages**
- Economical
- Sx avoided
- Disadvantages
- Long duration
- Ageonucleosis
- Relapse

**Propranolol**
- Subtotal/total thyroidecetomy

**Sx**

**Radioactive Iodine 150 mcg**
- Yes
  - Large goitre
  - Pregnancy
  - Pt. T Cardiac symptoms
  - Small to moderate Culexegem

**Dis**
- Pregnancy lactation
- Permanent hypothyroidism
- Exacerbation of acne/burns
Toxic Goitre - Thyrotoxicosis

**Causes**
- Primary: Graves, Exophthalmic goitre, diffuse
- Secondary: Secondary to MNG
- Solitary: Solitary nodule independent of TSH

- Other Causes:
  - Thyrotoxic facies
  - Jod basedow thyrotoxicosis
  - Neonatal thyrotoxicosis
  - Pituitary tumour
  - Struma ovarii
  - Drugs - Propranolol

Graves:

\[
CI F = \frac{F}{M}
\]

Appearance of Symptom, sign, Swelly simultaneously

Oligomenorrhea

**Signs of Primary Thyrotoxicosis**

1. Local:
   - Uniform enlargement
   - Smooth surface
   - Soft or firm in consistency
   - Waste, Vascular
   - Bruit is heard.
CNS - Tremor of outstretched hands and tongue within oral cavity
- Hyperkinetic movement
- Moist secretion

CNS - Pulse rate raised
- Palpitation and extrasystoles

Eye sign = Prominent eye and eyelid retraction
due to spasm of muller's muscle and STII ne. sympathetic fibres.

A) Exopthalmos = B) Dacryomile's
Sclera seen above limbus

B) Moebius = Loss of eyeball convergence

C) Stellwag's = Infrequent blink

D) Jeffrey's = Absence of forehead wrinkles

E) Von Graefe's = lid lag

F) Eweth = Edema of eyelids/conjunctiva

G) Gifford = Difficulty in eye lid eversion
MN6
-A type of simple goiter and result of increased metabolic demand leading to enlargement
-CHF: F>M, Long duration of swelling and pressure symptoms
-Complication: Calcification, Haemorrhage, Pellecular

Max

MRI-PET (T3, TSH, T4- If toxic suspected)

Radio: X-ray neck = To look for Tracheomala or Retrosternal extension

USG = For FNAC
- For Lymph nodes
- For Clueful, or Retrosternal

Flexible laryngoscopy/Direct laryngoscopy
- To check vocal cord mobility

FNAC = only in clueful cases
MNG

- Early cases
  - Asymptomatic
    - Follow up
    - Tab. Eloxatin 0.1-0.2 mg/day
    - No improvement

- MNG C pressure
  - or cosmetic symptoms
  - or pt. disability
  - Retrasternal extension
    - If toxic
      - Penicillin's sign
      - No radiological

3 Options

- Total
  - Surgeon
    - Experienced
    - Good center
    - No chance of recurrence
    - Avoid post surgery
    - MRI shows CA

- Subtotal
  - Avoid permanent hypoparathyroid
  - Avoid CRN palsy
  - Incidence of recurrence very less

- Dunhill Procedure
  - Total on one side
  - Subtotal on other