ENDOCRINE SYSTEM

THYROID TUMORS

- Benign
  - Follicular Adenoma (mc benign tumour)
- Malignant
  - Papillary Ca (75-85%)
  - Follicular Ca (10-20%)
  - Medullary Ca (5%)
  - Anaplastic Ca (5%)

Papillary Ca :-

→ Mc type of thyroid Ca.
→ 75-85% of cases
→ 3 times more common in females than in males.
→ Slow growing malignant tumour
→ Presents as asymptomatic solitary nodule.
→ Involvement of regional node - common but distant metastasis to organs are rare.

Morphologic features :-

Gross - papillary Ca may range from microscopic foci to nodules upto 10 cm in diameter.

C/S - grey white, hard, scar like

Sometimes tumour → cyst and is termed papillary cystadeno Ca

Histologically -

1) Papillary pattern - papillae comprised of fibrovascular stalk and covered by single layer of tumour cells.

2) Tumour cells :-

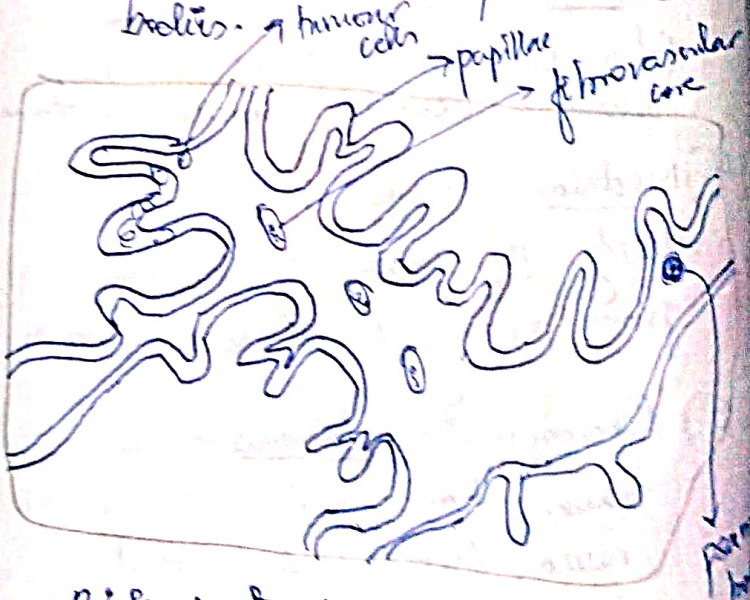
Dispersed nuclear chromatin imparting it ground glass or optically clear appearance.
- Orphan Annie Eye nuclei
- Coffee bean nuclei

3) Invasion :-

The tumour cells invade the capsule and intrathyroid lymphatics ; invasion of blood vessels → rare

4) Psammoma bodies -

Small concentric calcified spherules called psammoma bodies.



Risk factor :-

① Radiation
② Thyroglossal cyst
③ Hashimoto's thyroiditis

Origin - follicular cells
Metastasis - Lymphatic
Genetic - BRAF, RET-PTC

MEDULLARY CARCINOMA:

⇒ Derived from parafollicular or C-cells present in thyroid.

⇒ 5% of thyroid Ca.

⇒ equally common in men & women.

1) Familial occurrence - 10% genetic background with point mutation in RET-proto oncogene located on chromosome 10q.

Associated with pheochromocytoma & parathyroid adenomas (MEN IIA) or MEN IIB (multiple mucosal neuromas).

Sporadic Cases:- 5th & 6th decade, more (80%), unilateral

Familial case - 2-3rd decade → BIL

2) Secretion of calcitonin & other peptides -

Tumour cell - Calcitonin (hypocalcemic hormone), PG, histaminase, somatostatin, VIP, ACTH ⇒ carcinoid syndrome, Cushing syndrome

3.) Amyloid stroma: → Acid.

Amyloid deposits in stroma → stain Orely with CONGO RED → Stored calcitonin

Morphological features -

Gross:- unilateral solitary nodule b/l or multicentric involvement

C/S - firm to hard, greyish to yellow-brown with areas of hemorrhage & necrosis.

Histologically:-

1) Tumour cells:- Well defined organoid pattern forming nests of tumor cells separated by fibrovascular septa.

- They maybe arranged in sheets, ribbons, pseudopapillae or small follicles.

2) Amyloid stroma:-

Irregular calcification w/o regular laminations seen in psammoma bodies.

3) C-cell hyperplasia -

Tumormarker & IHC marker - Calcitonin

GRAVES' DISEASE :-

Diffuse toxic goitre

Triad of features :-

1) Hyperthyroidism (thyrotoxicosis)
2) Diffuse thyroid enlargement.
3) Opthalmopathy → due to acc. of mucopoly saccharides
   Infiltrative exophthalmy - pretibial myxedema

Age :- 30 - 40 years (F:M ⇒ 5:1)

Etiopathogenesis :- Type II HS.
Autoimmune disease.

1) Genetic factor association -
   → HLA - DR3
   → CTLA - 4
   → PTPN22 (Tcell regulator gene)

2) Autoimmune disease association -
   Graves ds. maybe found in other organ specific autoimmune ds.

3.) Other factors - Women (7 - 10 times)
   Emotional stress
   Smoking

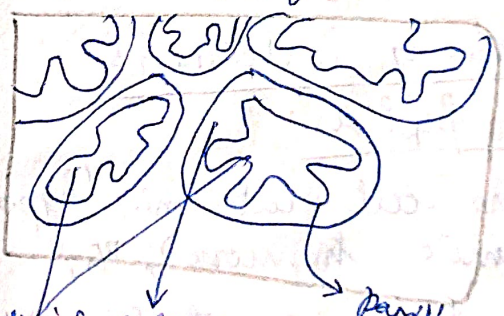
4.) Auto Abs :-
   i) Thyroid stimulating immunoglobulin (TSI) - binds to TSH receptor & stimulates release of thyroid hormones
   ii) Thyroid growth stimulating immunoglobulin (TGI) - stimulates proliferation of follicular epithelium
   iii) TSH - binding inhibitor Immuno globulin (TBII)
   iv) Anti LATS - long acting thyroid stimulator

Morphological features :-

Gross :- moderately, diffusely, symmetrically enlarged
C/S - typically homogenous reddish brown & meaty lacks the normal transluency.

Histologically :-

1) Epithelial hyperplasia & hypertrophy & formation of papillary infoldings. (pseudo)
2) Colloid - markedly diminished & lightly staining - scalloping of colloid over epithelium
3) Stroma - ↑vascularity & accumulation of lymphoid cells.



HASHIMOTOS' THYROIDITIS

Also diffuse lymphocytic thyroiditis.
also struma lymphomatosa

i) diffuse goitrous enlargement of the thyroid.

ii) lymphocytic infiltration of the thyroid gland

iii) Occurrence of thyroid auto Ab.

Age group ⇒ 30 - 50 years
Ratio ⇒ F:M ⇒ 10:1

Etiopathogenesis :- Auto immune ds.

1) Other autoimmune disease associations - Graves, SLE, Sjogren's syndrome, RA, PA, type 1DM

2) Immune destruction of thyroid cells - Activation of CD4+ Thelper cells
↓
Induce infiltration of CD8 + Cytotoxic cells.
Cells → Auto Ab → Immune destruction of thyroid parenchyma

3) Detection of Auto Ab -
i) Thyroid microsomal auto Abs.
ii) Thyroglobulin auto Ab.
iii) TSH receptor auto Ab
→ Anti TPO

4.) Inhibitory TSH receptor Ab.

5.) Genetic basis - 1° relatives + HLA DR3 & DR5.
CTLA4
PTPN22

Morpho :- GROSS - diffuse, symmetric, firm & rubbery enlargement of thyroid ⇒ 100 - 300 gm

Histo :-

1) Extensive infiltration of gland by lymphocytes, plasma cells, immunoblasts & macrophages with formation of lymphoid follicles* having germinal centres.

2) ① no. of thyroid follicles

3) Follicular epithelial cells are transformed into their degenerated state ⇒ HURTHLE CELLS
(Askanazy, Oxyphil cells or oncocytes)

4.) Fibrous thickening of septa

CLF - hypothyroidism

Thyroiditis → Hashimoto's
De Quervain's → painful
Subacute lympho
Riedel's thyroiditis
} painless

Q ↑ risk
↑ risk
↑ risk
} papillary Ca thyroid
non-hodgkin lymphoma
other auto immune disorders like sjogren syndr...