



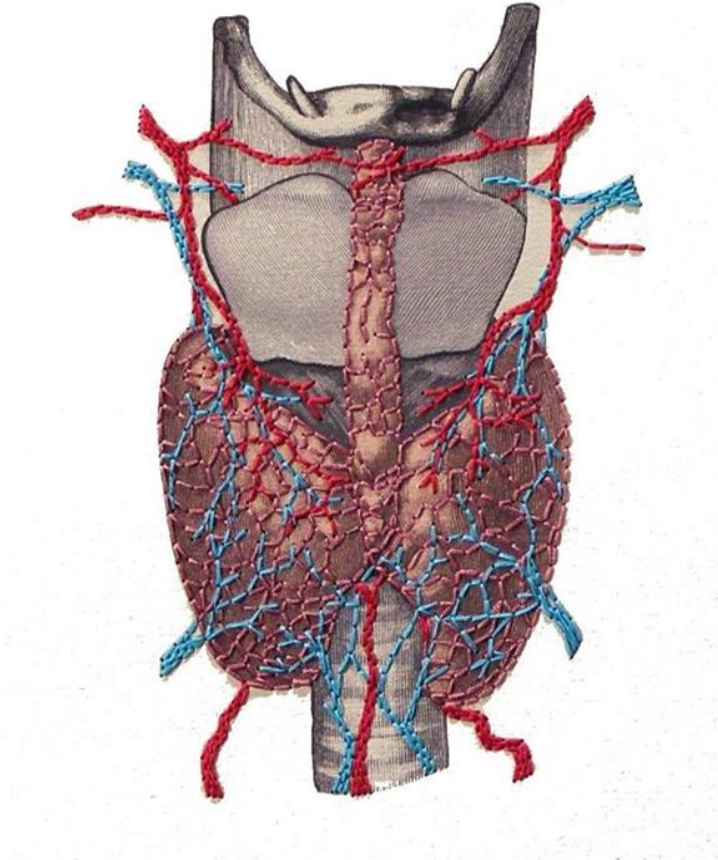
PATHOLOGY
TEAM 436



MEDICINE
KING SAUD UNIVERSITY

Pathology Practical

Endocrine Block



- Important Notes
- Doctors' Notes
- Extra notes
- Only in girls slides

PLEASE NOTE

- فيه بعض الاختلافات بين سلايدز البنات والاولاد :
- المعلومات النظرية الزيادة كلها موجودة بسلايدز البنات فقط.
- الصور الزيادة الموجود بسلايدز البنات عندها علامة.

Case 1: Multinodular Goiter

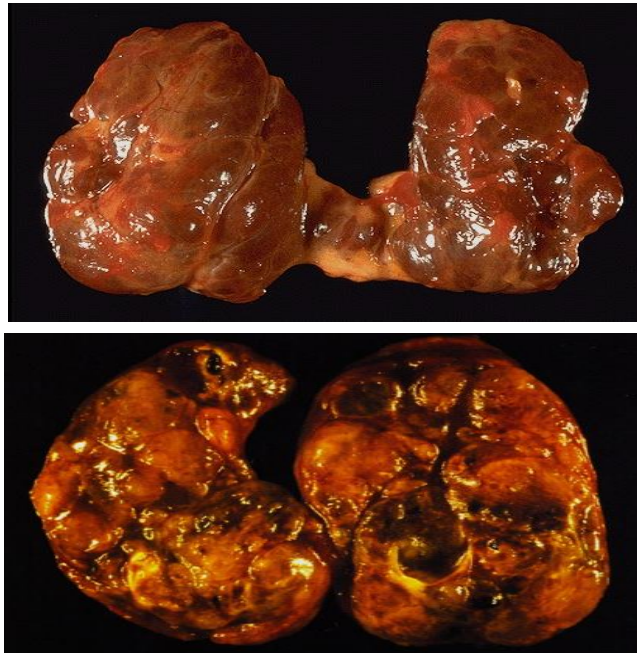
- **Goiter:** enlargement of thyroid gland for any reason; usually euthyroid, but may be hypo- or hyperthyroid.
- Most common disease of thyroid gland
- 90% of those affected are women, develops more frequently during adolescence and pregnancy
- **Causes:** Endemic, sporadic, drug induced, hereditary enzymatic defects.
- **Complications:** Excessive enlargement can lead to Trachea/Esophagus compression

Gross



1. Large multinodular thyroid mass.

Gross



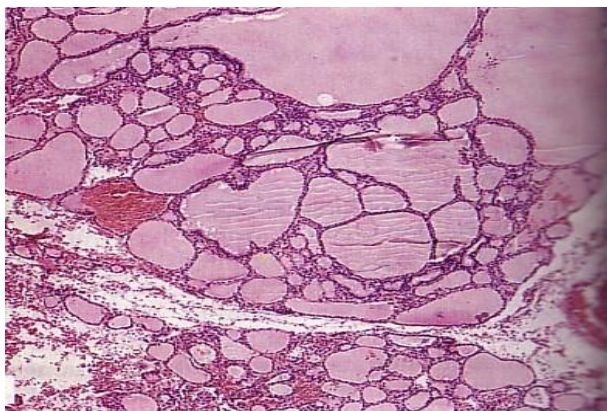
1. **diffusely asymmetric** enlarged thyroid gland that can ach up to 2kg.
2. **capsule usually intact.**

Gross- cut section



1. Various sized colloid nodules.
2. Haemorrhage (**red arrow**).
3. cystic degeneration (**Blue arrow**).
4. Fibrosis and scarring can occur.

Multinodular Goiter – LPF



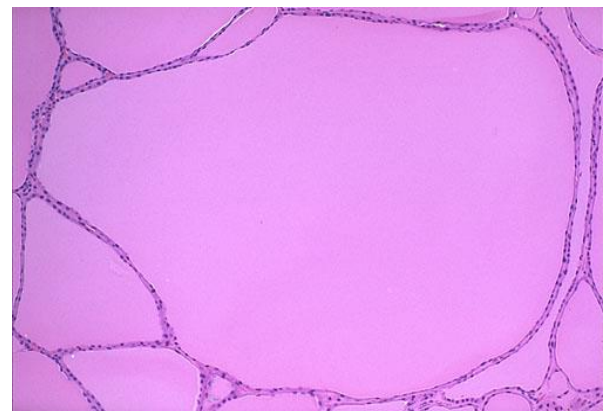
1. Numerous follicles varying in size filled with colloid
2. NO Vascular invasion at periphery of nodule
3. Haemorrhage.
4. Hemosiderin.
5. Calcification .
6. Cystic degeneration.

Girls' slides only



The nodules may undergo 2ry changes (**Degenerative changes**):

1. Scarring
2. Hemorrhage
3. hemosiderin laden macrophages
4. Calcifications cysts
5. cholesterol clefts



1. The follicles are irregularly enlarged containing colloid material.
2. lined by flattened epithelium, consistent with inactivity.

Case 2: Hyperthyroidism & Grave's Disease

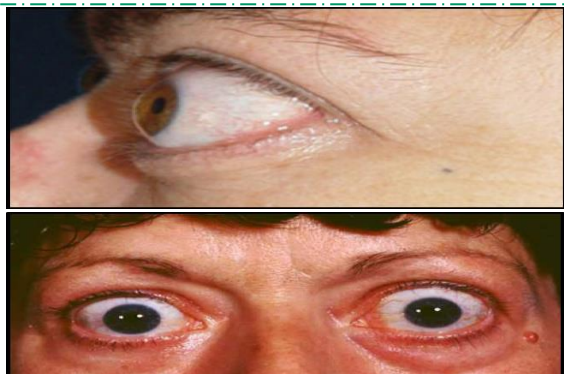
- Autoimmune disease characterized by triad of clinical finding:

1. **Hyperthyroidism** 2. **Ophthalmology**; exophthalmos 3. **dermopathy**, called **peritibial myxedema** (rare complication of Graves' disease)

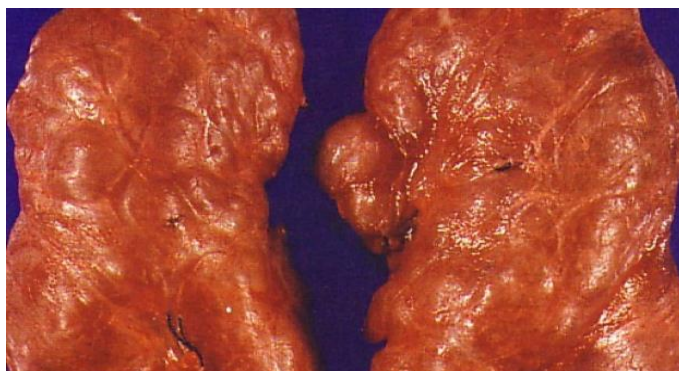
- **Clinical presentations of hyperthyroidism:**

Hypermetabolism, Tachycardia, palpitations, Increased T3, T4, Goiter, Exophthalmos, Tremor, GIT hypermotility, Thyroid "storm" (life threatening condition).

Gross



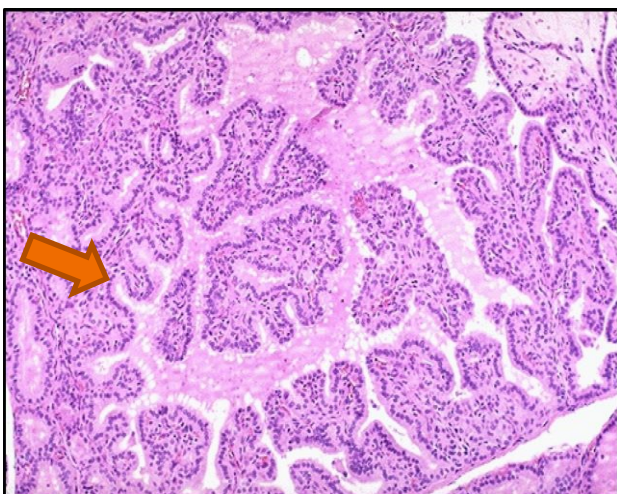
1. Proptosis.
2. Lid lag.
3. Lid retraction.
4. Peri-ocular fat deposition.
5. Scleral rim above the iris.



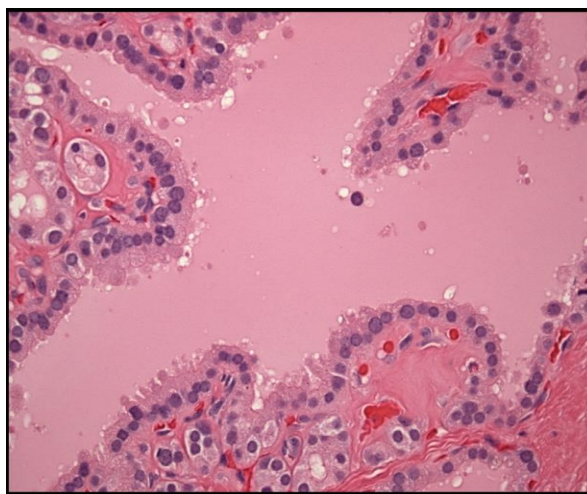
1. Symmetrical enlargement of thyroid gland.
2. Homogenous and soft cut surface with meaty appearance.
3. Hyperplasia and hypertrophy of follicular cells.



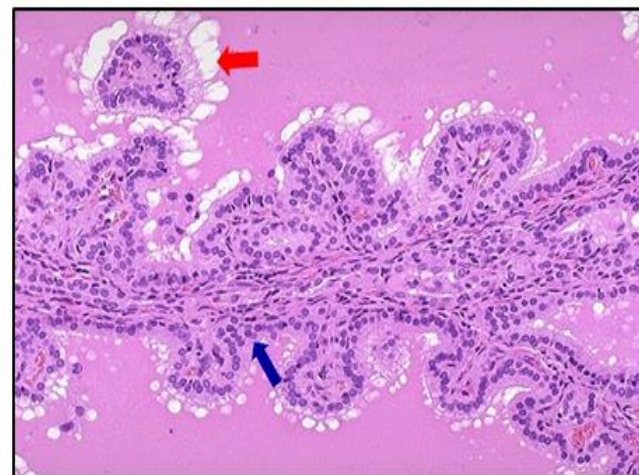
Microscopic-



1. Hyperplastic thyroid follicles
2. Prominent **papillary infolding** with retention of lobular architecture. (arrow)
3. Diffuse hyperplasia and hypertrophy of follicular cells.



1. thyroid follicles lined by columnar and high cuboidal cells.
2. peripheral vacuoles within the intrafollicular colloid material.
3. peripheral smaller thyroid follicles devoid of colloid but lined by similar cells.



1. Tall columnar epithelium.
2. hyperplastic infoldings into the colloid.
3. clear vacuoles in the colloid next to the epithelium (because of the increased activity of the epithelium to produce increased thyroid hormone has led to **scalloping out of the colloid in the follicle**)
4. The papillae usually lack fibrovascular cores.

Case 3: Hashimoto's Thyroiditis

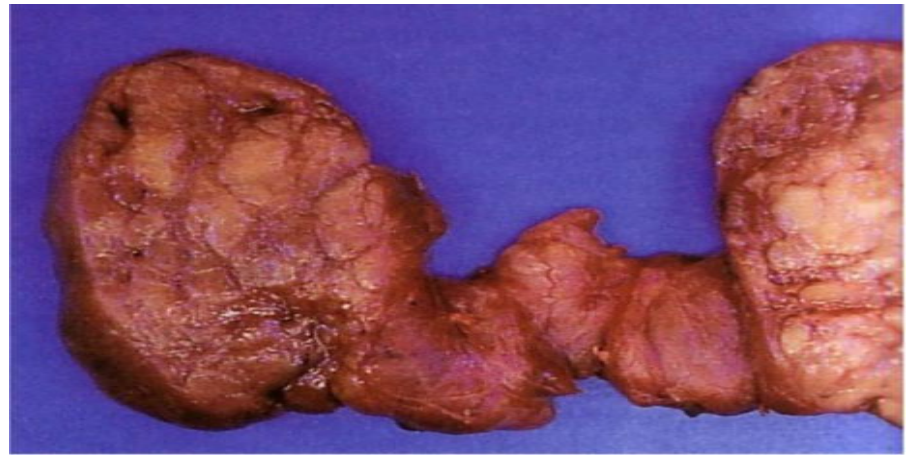
- The most common cause of **hypothyroidism**.
- **Lab Diagnosis** : **elevated circulating antithyroid peroxidase** and **antithyroglobulin antibodies**.
- Individuals with Hashimoto thyroiditis are at increased risk for developing other **autoimmune diseases, lymphoma (non hodgkin B cell lymphoma)** and **carcinoma (papillary carcinoma)**
- 90 - 95% in women.
- **Clinical presentation of Hypothyroidism** : fatigue, loss of energy, bradycardia, weight gain, decreased appetite, cold intolerance, menstrual disturbances.
- Initially, the thyroid is enlarged and there may be transient hyperthyroidism, followed by a euthyroid state and then hypothyroidism with eventual atrophy years.

Gross



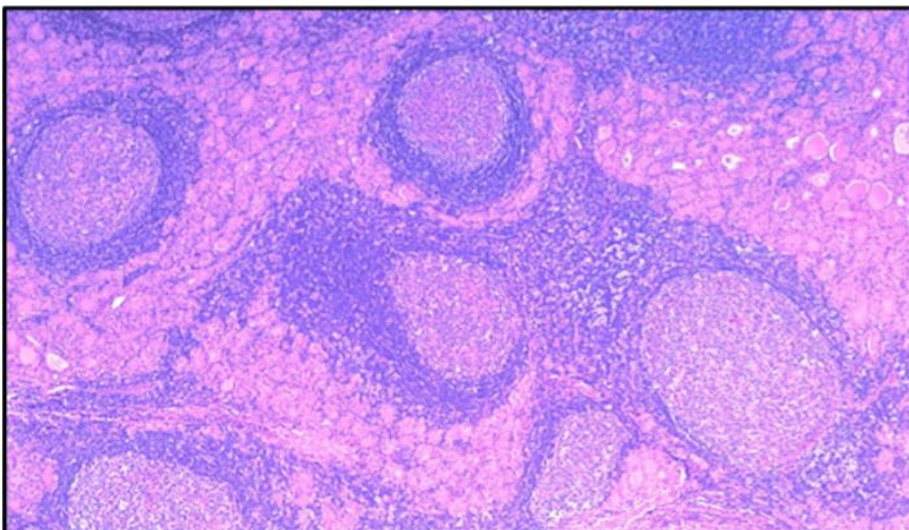
1. symmetrically small thyroid gland **atrophy**
2. This the end result of hashimoto's thyroditis.

Gross

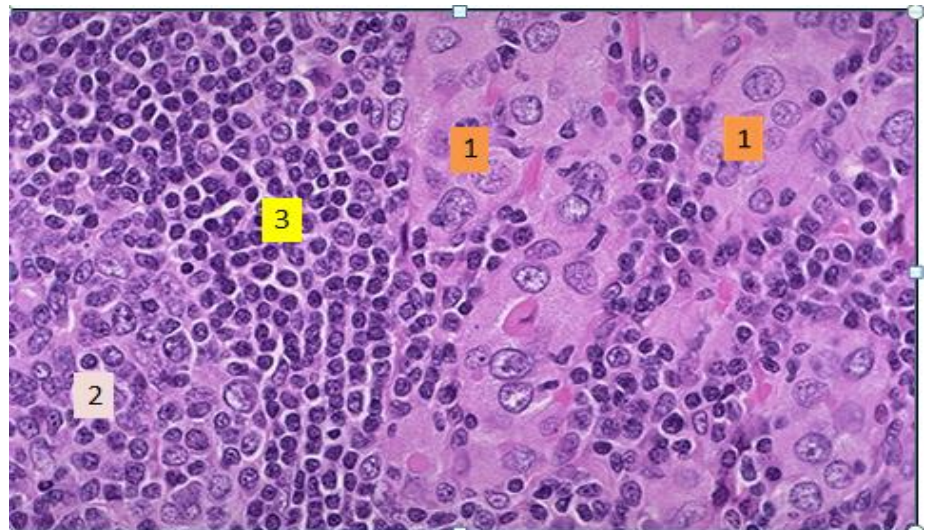


1. Diffuse enlargement.
2. Consistency is firm or rubbery.
3. Pale, yellow-tan, & somewhat nodular cut surface.
4. **The capsule is intact.**

Microscopic



1. Extensive **lymphocytic infiltration** with follicles containing large active **germinal centers**.
2. **Lymphocytes are predominantly T cells and plasma cells.**



1. The thyroid follicles are atrophic and lined by epithelial cells, **Hürthle cells** at the **center** and **right**, have abundant eosinophilic, granular cytoplasm
2. The lymphoid follicle cells is **at the left**.
3. Small lymphocyte infiltration

Case 4: Follicular Adenoma

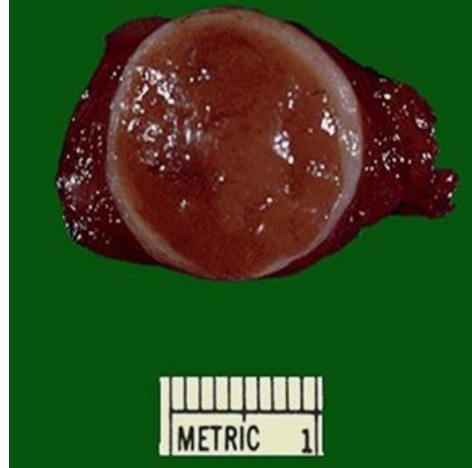
- Clinically, follicular adenomas can be difficult to distinguish from dominant nodules of follicular hyperplasia or from the less common follicular carcinomas.

Gross



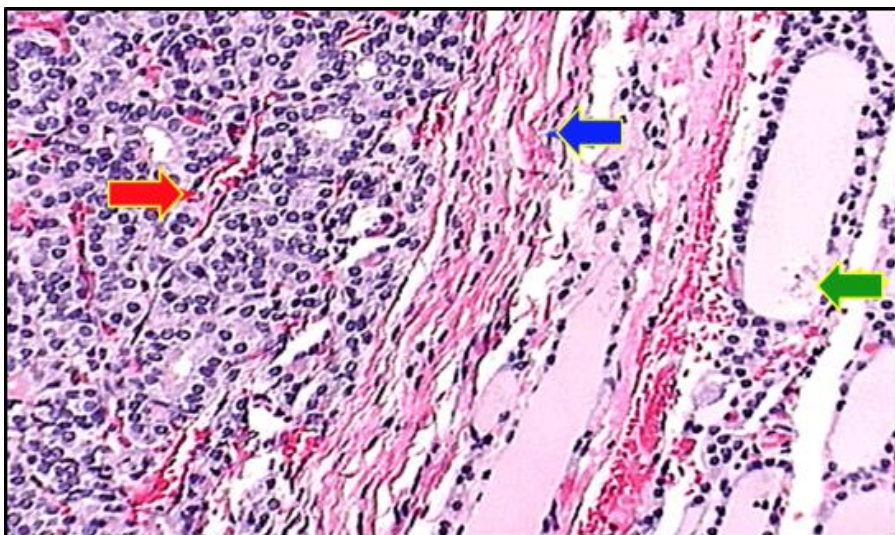
- Palpable solitary thyroid nodule.

Gross

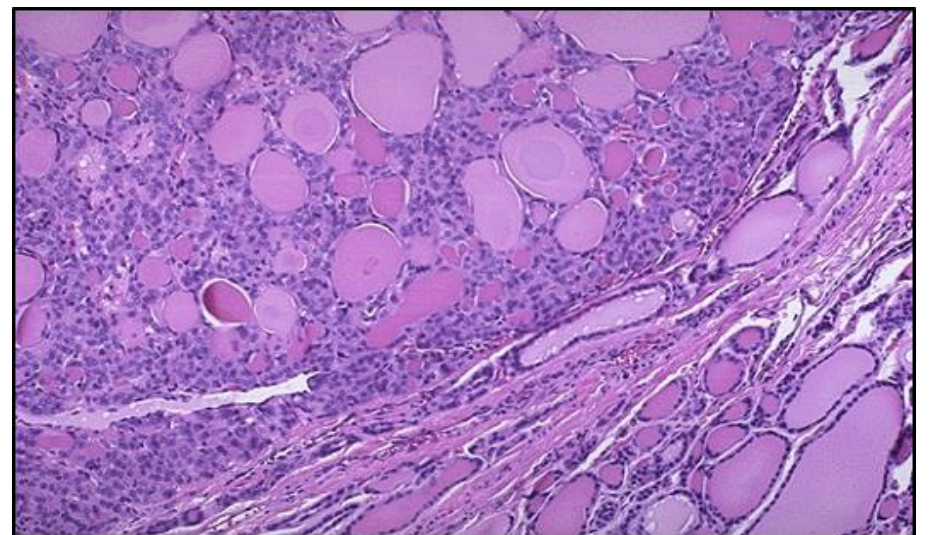


- A well circumscribed light brown and circular tumor nodule.
- surrounded by a thick and whitish capsule
- The surrounding thyroid tissue is unremarkable (normal).

Microscopic



- Red arrow is located within the adenoma. Although composed of follicular cells, little colloid is seen.
- Blue arrow points to the capsule of the adenoma, a few strands of connective tissue.
- Green arrow points to colloid within a large normal follicle.



- At the lower Right: Normal thyroid follicles
- at the center to upper Left : The follicular adenoma.
- well- differentiated neoplasm because it closely resemble normal tissue.
- The follicles of the adenoma contain colloid,
- greater variability in size than normal.

Case 5: Papillary Thyroid Carcinoma

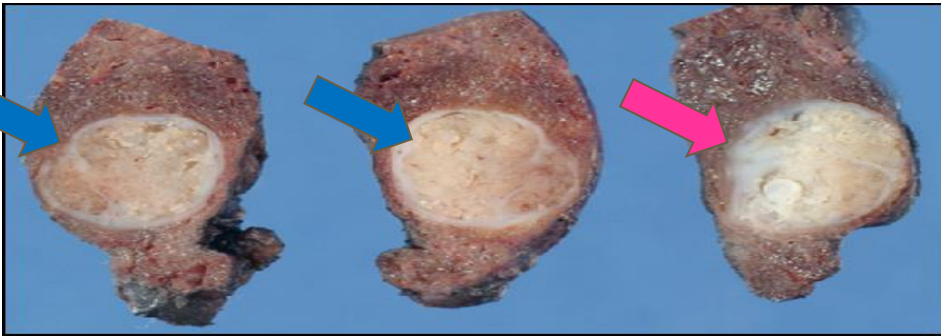
Papillary Thyroid Carcinoma is the most common form of thyroid cancer

Clinical presentation: usually present as painless nodule or mass in neck or cervical node.

1. Huge thyroid swelling due to papillary thyroid carcinoma →



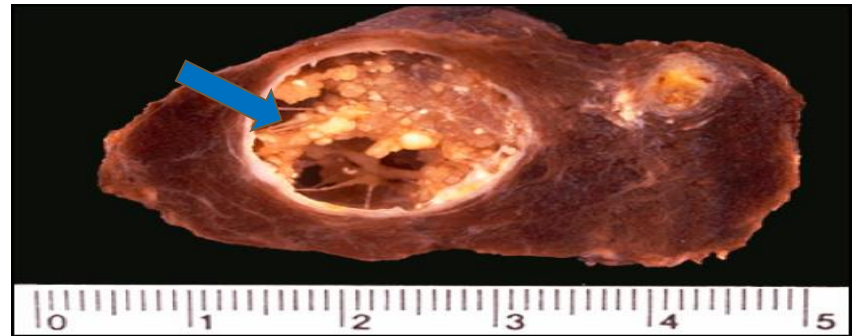
Gross



Some tumors may be well circumscribed and encapsulated; others may infiltrate the adjacent parenchyma with ill-defined margins.

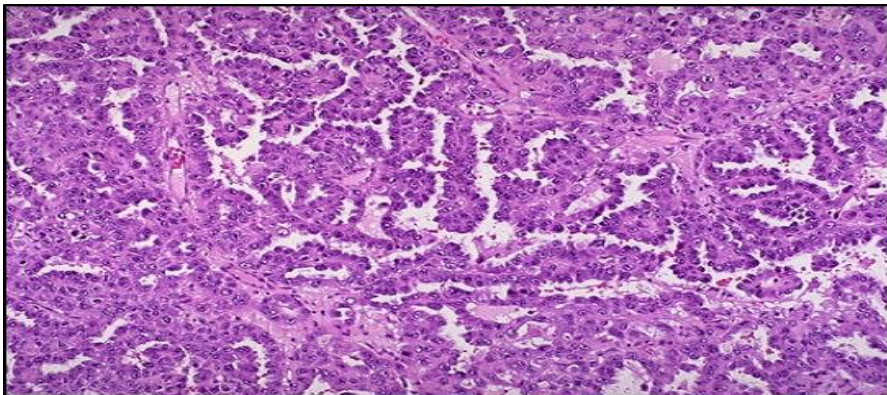
- **blue arrows:** A well circumscribed pale and firm nodule showing a whitish cut surface with vague scattered papillary areas.
- **Pink arrow:** infiltrate the adjacent parenchyma with ill-defined margins.

Multifocal Papillary Thyroid Carcinoma



1. Multifocal neoplasm.
2. The neoplasm is invading lymphatics within the thyroid gland.
3. lymph node metastases are also common.
4. The larger mass shown here is cystic containing **papillary excrescences (arrow)**

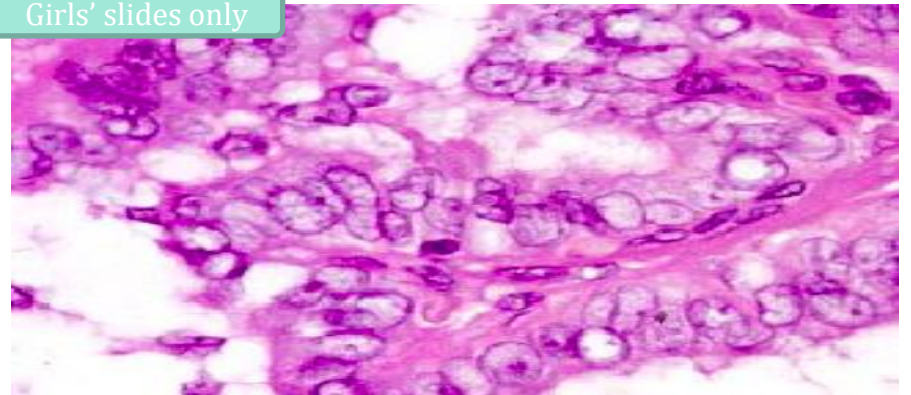
Microscopic - LPF-



1. Branching papillae having fibrovascular stalk, lined by overlapping cuboidal cells.
2. Calcified Psammoma bodies can be also seen
3. Clear nuclei (Orphan Annie nuclei).

Microscopic - HPF-

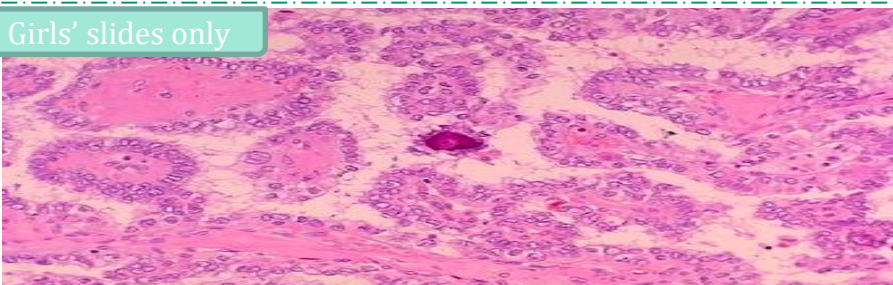
Girls' slides only



1. Papillae lined by cuboidal cells.
2. Nuclei are overlapping with finely dispersed optically clear chromatin (also called: ground glass, **Orphan Annie nuclei**)

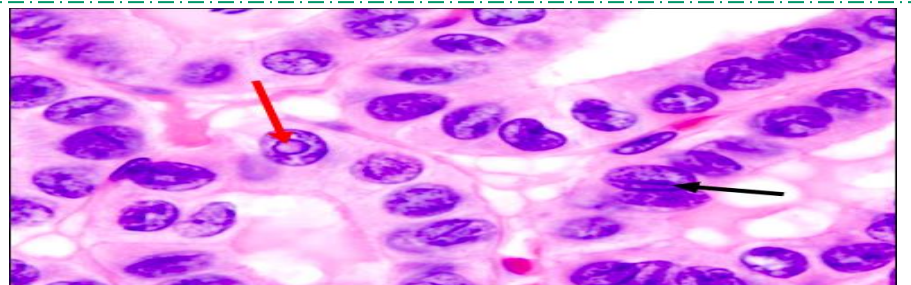
Microscopic - HPF-

Girls' slides only



1. Calcified structures termed **Psammoma bodies** are present in 50% of tumors, within the core of papillae.

Microscopic - HPF-



- Red arrow:** Intracellular inclusions.
Black arrow: Coffee bean nucleus with prominent nuclear grooves.

Case 6: Pheochromocytoma

Type: a neuroendocrine tumor secreting catecholamines.

Prognosis: Good, it's a benign tumor of adrenal medulla." NOT COMMON"

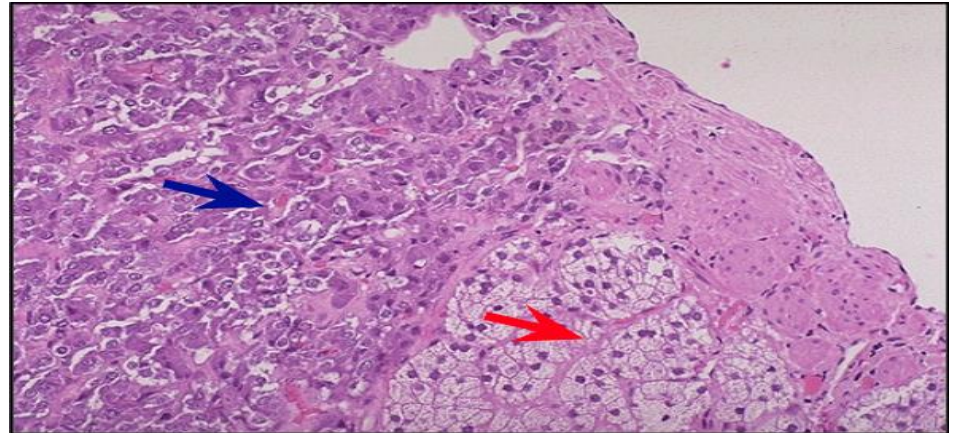
10% rule: 10% familial, 10% malignant, 10% extra-adrenal, 10% bilateral , 10% associated with hypertension.

Gross



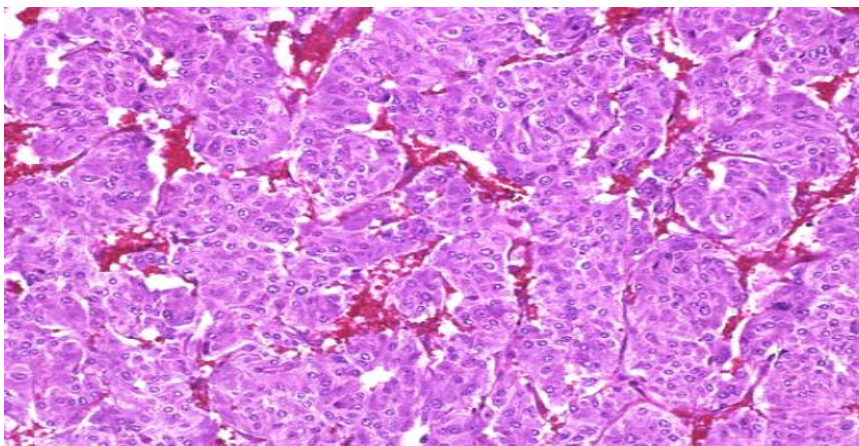
1. A single partly pale and partly hemorrhagic adrenal medullary mass .
2. Grey-tan color of the tumor compared to the yellow cortex stretched around it.
3. A small remnant of remaining adrenal at the lower right (**blue arrow**)

Microscopic- LPF



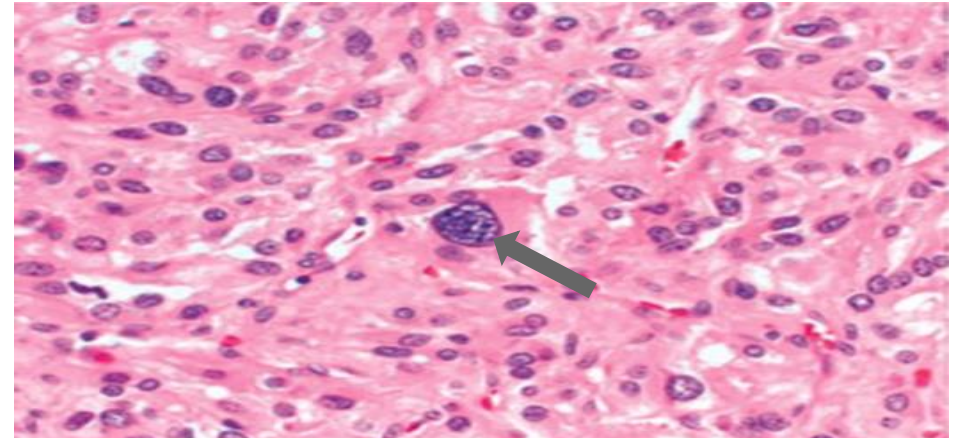
1. **Blue arrow:** darker cells of the pheochromocytoma.
2. **Red arrow:** residual adrenal cortical tissue

Microscopic- LPF



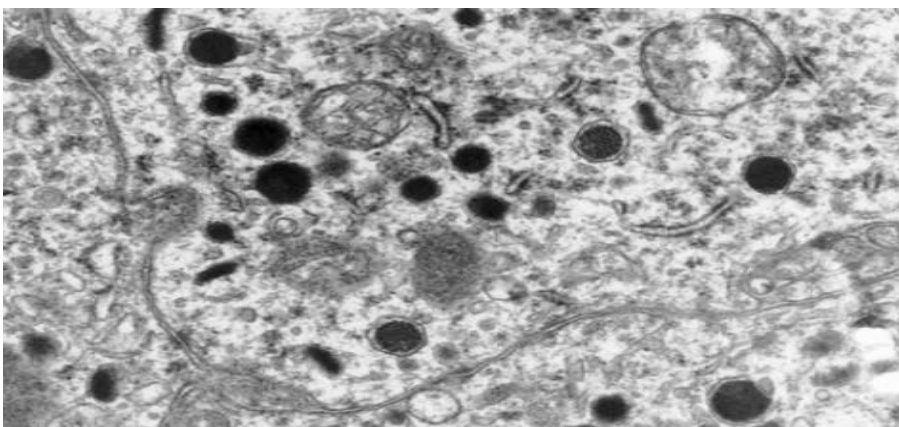
1. Small **nests (circular balls of cells)**.
2. Trabecular or solid patterns of polygonal shaped cells .
3. **Rich vascular network.**

Microscopic- HPF



1. Nest cells (**Zellballen**) with granular nuclear chromatin **containing catecholamine (not visible)** .
2. **Bizarre Large polymorphic cell (Arrow).**

Electron-microscopy



1. small black round **neurosecretory Granules** in the cytoplasm of the cell.
2. The cell nucleus is at the upper left.
3. neurosecretory granules contain **catecholamines** .

Case 7: Cushing Syndrome

- **Clinical features** :Weight gain, Rounded face, Menstrual irregularity, Hirsutism.
- **Causes**:
 1. Exogenous (iatrogenic) Cushing syndrome : exogenous administration of glucocorticoids.
 2. Endogenous : Tumors of anterior pituitary gland, adrenal cortical hyperplasia and paraneoplastic (ACTH secreting tumors e.g: small cell lung carcinoma (**other name Oats cell carcinoma**)

Cushing Syndrome-Clinical Case



1. **classical Moon face appearance**

A child with Cushing syndrome as a result of Long-term corticosteroids treatment.



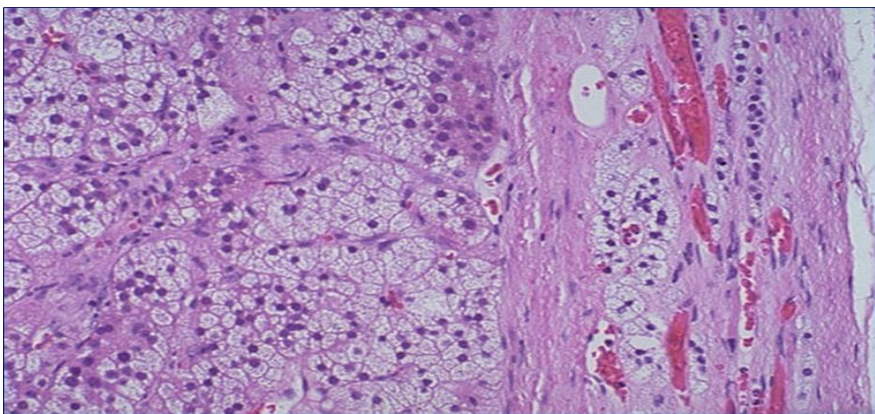
1. **truncal obesity** and **purple striae**.

Cushing syndrome with Cortical adenoma-Gross



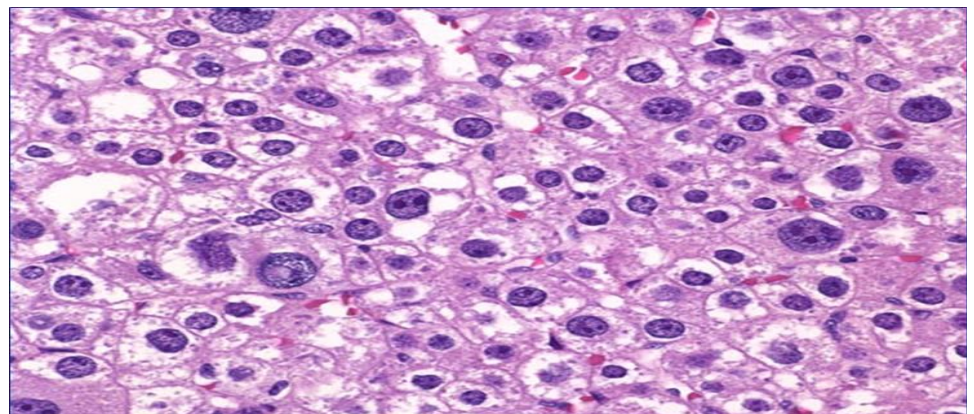
1. Atrophic adrenal gland **on the right**.
2. Adrenal cortical adenoma composed of yellow firm tissue .
3. well circumscribed with areas of hemorrhage.

Cortical Adenoma-MPF



1. The capsule of this benign neoplasm is **at the right**.
2. Adrenal cortical adenoma **at the left**.
3. The adenoma composed of well-differentiated cells resembles normal adrenal zona fasciculata .
4. There may be minimal cellular pleomorphism within adenomas.

Microscopic HPF



1. Enlarged hyperchromatic nuclei with one or more nucleoli .
2. **Neoplastic cells are vacuolated because of intracytoplasmic lipid**.
3. **No mitosis or necrosis**.

Thank you for checking our work & GOOD LUCK !

Done By:


- Ameerah Niazi
- Najed Altheeb
- Yara Aldigi
- Haneen Alsubki
- Heba Alnasser
- Ghada Alskait
- Aseel Badukhon
- Amal Alqarni
- Nada Alsomali
- Shahd Alanzan
- Shahd Alsowaidan
- Nora Alshahli
- Jawaher Alkhayyal


Team leaders:

Ashwaq Almajed
Abdullah Abuamara



Reference: doctors' slides + 435 teamwork

 Pathology.Practical436@gmail.com

 Your Feedback