

Endocrine surgery



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Endocrine surgery

- Parathyroid glands.
- Adrenal glands.
- Pancreas (endocrine part).
- Thyroid gland.
- Pituitary gland.



Parathyroid glands

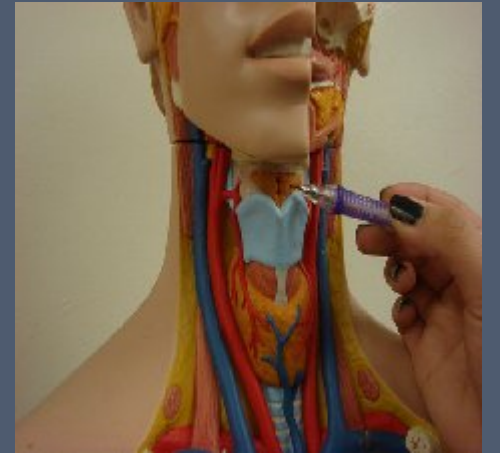
Anatomy

- Numbers

- 4 glands in 90 % of the patients.
- 5-6 glands in 10 % of the patients (supernumerary).

- Embryology

- Superior PT glands arise from 4th branchial pouch with the thyroid.
- Inferior PT glands arise from 3rd branchial pouch with the thymus.



Parathyroid glands

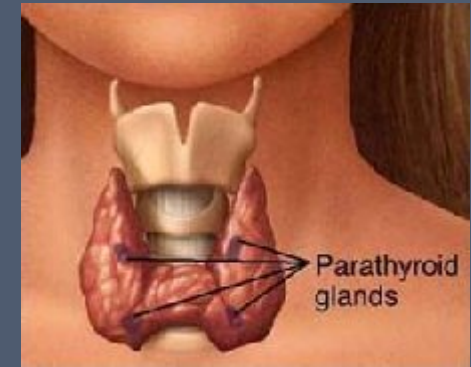
Anatomy

- **Location**

- Superior PT glands : almost always on the dorsal aspect of the thyroid at level of cricoid cartilage.
- Inferior PT glands : 50% at lateral surface of the lower pole of the thyroid , 50% associated with the thymus (ectopic in the neck or the superior mediastinum)

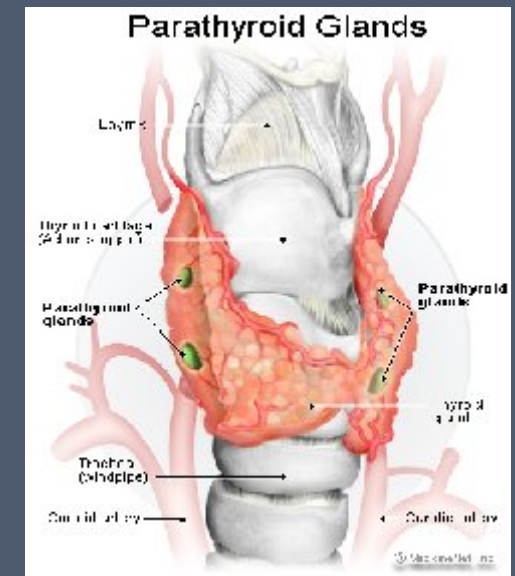
- **Physiology**

- PTH principal mediator of CA homeostasis
- Direct feedback , no pituitary control
- Direct effects on bone and kidneys , indirect effects on the gut



Parathyroid glands diseases

- Hyperparathyroidism
 - Primary, secondary, tertiary
 - Adenoma, hyperplasia, malignancy
- Hypoparathyroidism
 - Secondary to thyroidectomy
 - Due to ischemia, accidental removal
 - Asymptomatic, symptomatic (mild, moderate, severe)



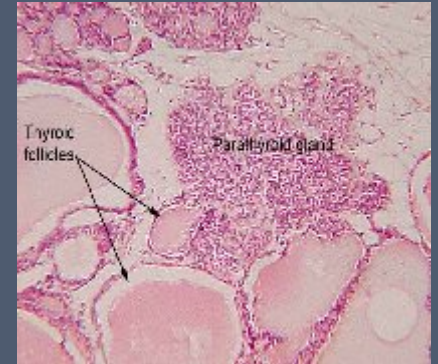
Hyperparathyroidism

- **Primary :**

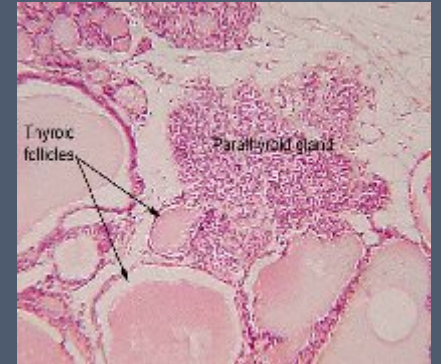
- One or more PH glands autonomously functioning
- High CA, high PTH
- Most commonly adenoma, rarely hyperplasia or malignancy
- MEN 1, MEN 2 A
- Treatment : surgical

- **Secondary :**

- Compensatory response to hypocalcemia
- Renal disease as CRF , or intestinal malabsorption syndromes
- lower-normal CA, high PTH
- Treatment is medical by calcium, vitamin D, phosphate binding
- Indication of surgery , renal osteodystrophy
- Subtotal or total parathyroidectomy



Hyperparathyroidism



- Tertiary

- Long standing hypocalcemia lead to autonomous hyperfunction of the glands.
- High-normal to high CA, high PTH
- Usually asymptomatic
- 10 % required surgery
- Indication of surgery : persistent hypercalcemia
- Subtotal or total parathyroidectomy



Adrenal glands

Anatomy

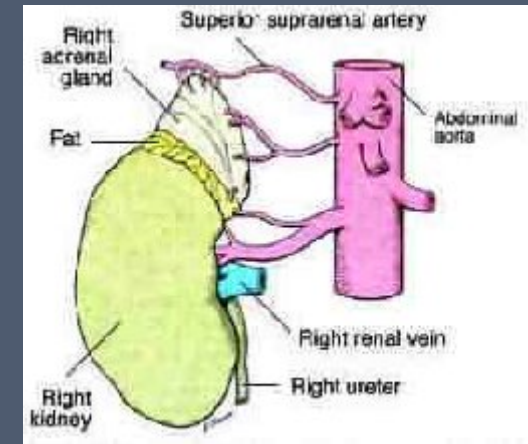
- Cortex
 - 90 % of the gland
 - Arise from mesoderm (urogenital ridge)
 - GFR (G : aldosterone mineralocorticoid, F : cortisol glucocorticoid , R : androgen)
 - Under ACTH control except aldosterone.



Adrenal glands

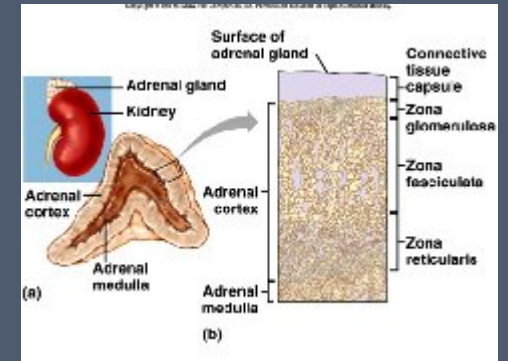
Anatomy

- Medulla
 - 10% of the gland
 - Arise from ectoderm (neural crest)
 - Extra adrenal medullary tissue (organ of Zuckermandl, at aorta bifurcation)
 - Secret adrenaline and noradrenaline
- Blood supply
 - Superior adrenal artery : inferior pherinc
 - Middle : aorta
 - Inferior : renal artery
 - Venous drainage : RT side to inferior vena cava, left side to left renal vein.



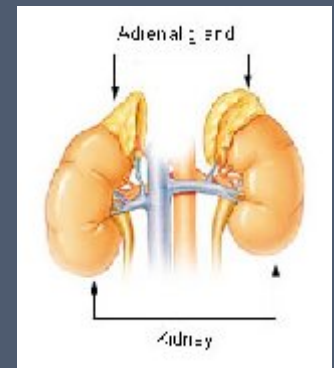
Adrenal glands diseases

- **Hyper functioning**
 - Cortisol : Cushing syndrome
 - Aldosteron : Conn`s disease
 - Androgen : adreno- genital syndrome
 - Adrenaline and noreadrenaline : pheochromocytoma
- **Hypo functioning**
 - Addison`s disease
- **Incidental adrenal mass** (incidenteloma)



Cushing syndrome

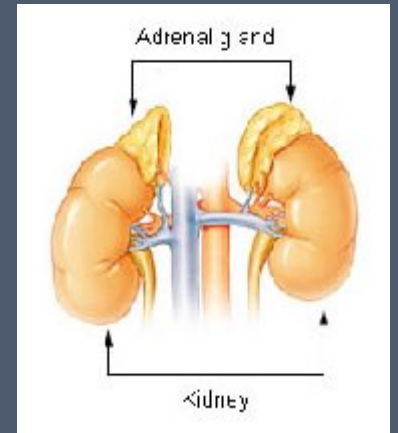
- Clinical manifestation of excess glucocorticoids
- 90 % exogenous administration of cortisol
- 10 % endogenous excess of cortisol
 - 70% pituitary adenoma , Cushing`s disease
 - 25 % adrenal disease (90% adenoma , hyperplasia, adrenocortical carcinoma)
 - 5 % ectopic ACTH- production as carcinoma of the lung.



Cushing syndrome

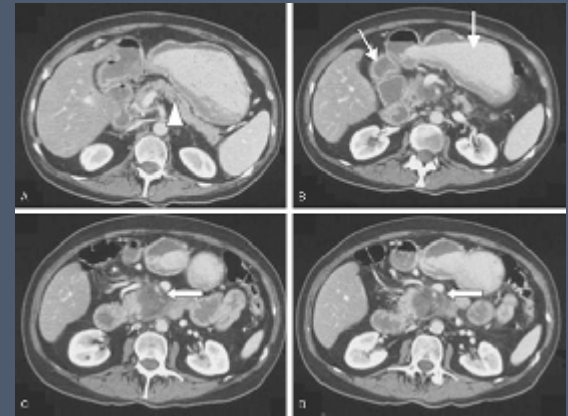
Investigation and management

- To confirm the diagnosis
 - 24 h urine collection for free cortisol
 - Low dose dexamethasone suppression test
- To determine the cause
 - Plasma ACTH level
 - High dose dexamethasone suppression test
- If the cause is adrenal : **laparoscopic adrenalectomy**



Conn`s disease

- Primary hyperaldosteronism
- Hypertension and hypokalemia
- Most common due to adrenal adenoma , rarely due to adrenal hyperplasia
- **Diagnosis**
 - Plasma aldosterone level high, plasma renin activity low, CT-abdomin for adrenal gland
- **Treatment**
 - If due to adenoma : laparoscopic adrenalectomy
 - If due to hperplasia : medically by spironolactone



Pheochromocytoma

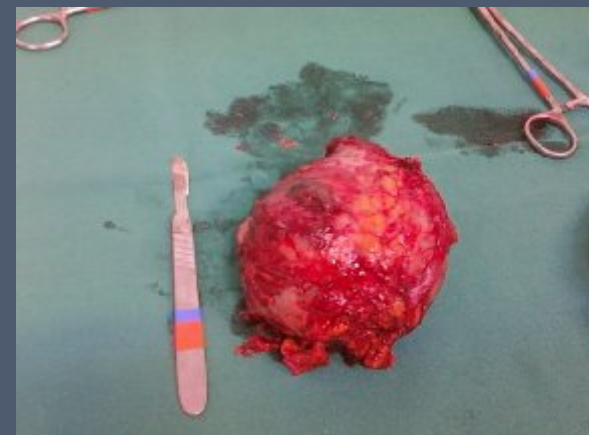
- It a tumor which arise from chromaffine cells of the adrenal medulla .
- Tumor of 10 %
 - 10% malignant
 - 10% bilateral
 - 10% extra adrenal
 - 10% younger than 20 years of age
 - 10% familial MEN 2 A,B



Pheochromocytoma

Diagnosis and management

- 24 h urinary collection for catecholamines and its metabolites (metanephrines and VMA)
- CT-scan Abdomine
- Isotop scan MIBG
- **Treatment**
 - Preoperative preparation for 3 weeks by alpha blockers as phenoxybenzamine, prazosin
 - ? Beta blocker after starting alpha blocker
 - Good hydration
 - Adrenalectomy

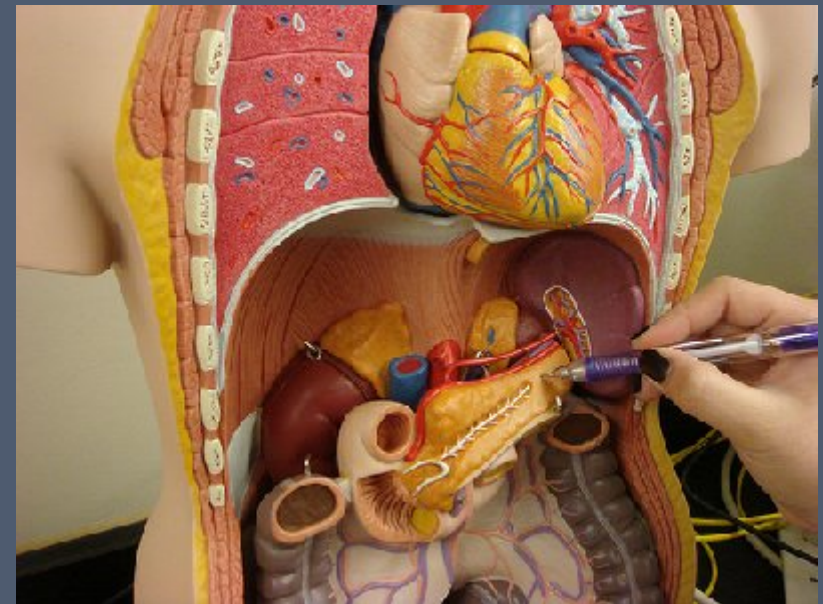




Pancreas

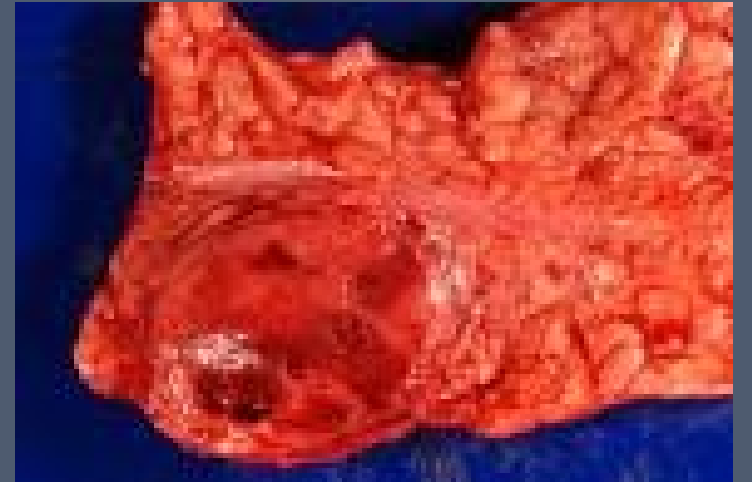
Endocrine disease

- Insulinoma
- Glucagonoma
- somatostatinoma



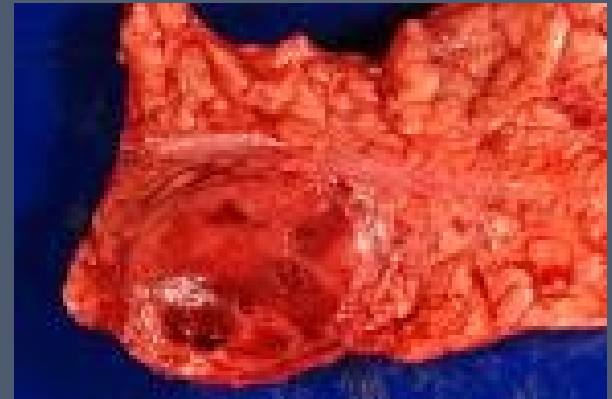
Insulinoma

- 75% solitary and benign
- 15% malignant and metastasis
- Symptoms
 - Whipples' triad
 1. fasting hypoglycemia
 2. Blood glucose level below 50 mg/dl during the attack
 3. Relieve the symptoms by I.V glucose
- Diagnosis : CT- SCAN and MRI
- Treatment :
 - surgical resection
 - Diazoxide to suppress insulin release



Glucagonoma

- **Characterized** by
 - Migratory necrolytic dermatitis
 - Weight loss
 - Stomatitis
 - Anemia
- **Diagnosis** : CT-scan , MRI abdomen
- **Treatment**
 - Surgical resection
 - Heparin because high risk for DVT



THANK YOU















