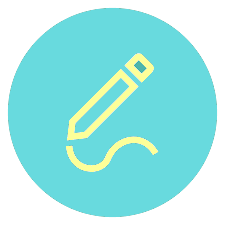
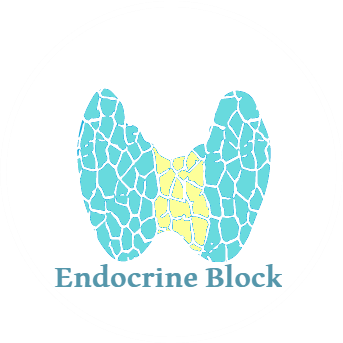
[](https://docs.google.com/presentation/d/115o2qE_lml6sXtf8FF3ksTmcfQ1iW-gmrwpE6MXw9TY)

c

**Objectives:**

" أن اُجاهد في طلب العلم، أسخره لنفع الإنسان "

Please check the editing file before studying

**Anterior Pituitary Disorders**

* + - * To understand basic pathophysiology and feedback for anterior pituitary hormones
      * Know about clinical approach for common anterior pituitary gland disorders:
* Common clinical presentations.
* Main laboratory investigations.
* Radiological investigations
* Describe lines of management for each of these conditions.

**Color index:**

1. **Extra explanation**
2. **Important**
3. **Doctors notes**

The table is very important

Most hormones from hypothalamus are releasing hormones. Most hormone from pituitary are stimulating hormones

What will happen if T4 was low?

TRH and TSH increase and stimulate gland to produce hormone.

it is inappropriate response when T4 low and TSH normal

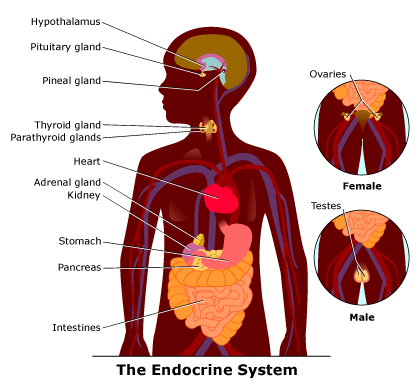
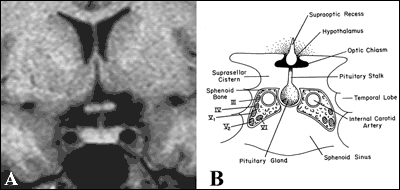
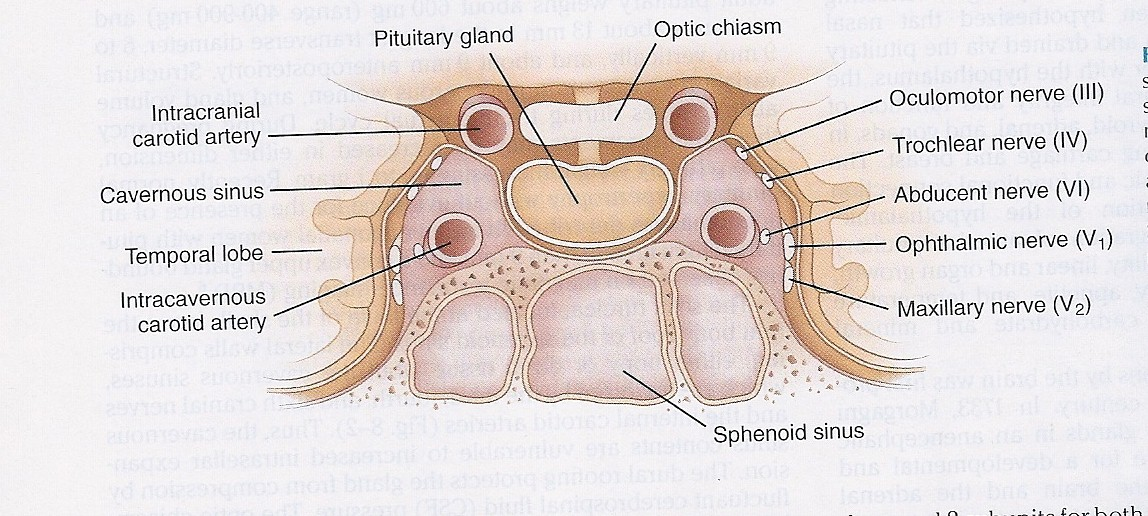
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Corticotroph** | **Gonadotroph** | **Thyrotroph** | **Lactotroph** | **Somatotroph** |
| **Hormone** | **POMC, ACTH** | **FSH, LH** | **TSH** | **Prolactin** | **GH** |
| **Stimulators** | **CRH, AVP, gp-130 cytokines** | **GnRH, Estrogen** | **TRH** | **Estrogen, TRH** | **GHRH, GHS** |
| **Inhibitors** | **Glucocorticoids** | **Sex steroids, inhibin** | **T3, T4, Dopamine, Somatostatin, GH** | **Dopamine** | **Somatostatin, IGF-1, Activins** |
| **Target Gland** | **Adrenals** | **Ovary, Testes** | **Thyroid** | **Breast and other tissues** | **Liver, bone and other tissues** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Target hormone** | **cortisol** | **Testosterone, E2** | **T4** |  | **IGF-1** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Trophic Effects** | **Steroid production** | **Sex Steroid, Follicular growth, Germ Cell maturation** | **T4 synthesis and secretion** | **Milk Production** | **IGF-1 production, Growth induction, Insulin antagonism** |

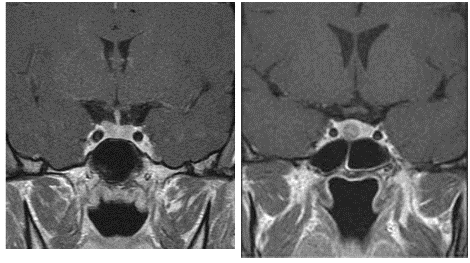
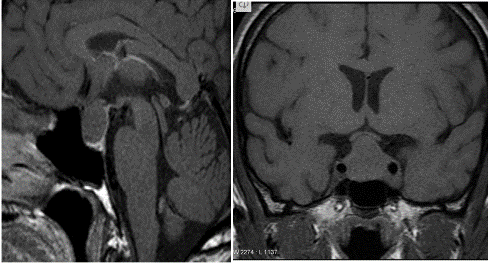
**Pituitary Development:**

Posterior pituitary gland cant produce any hormone just for storage

****

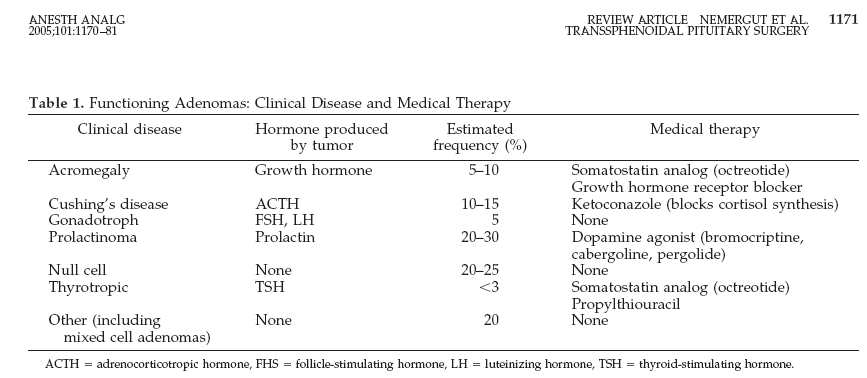
1. Picture shows: Tumor extended upward. Moreover, the aﬀect optic chiasm that will aﬀect visual ﬁeld(bitemporal hemianopia)
2. يسألون المريض اذا يقدر يشوف السيارات اللي جمبه وهو يسوق او المرايا الجانبيه ؟عادة يجاوب لا بكذا يعرفون انه مأثر على optic chiasm
3. . If the mass extend down edit will cause CSF drain from the nose If it aﬀect temporal lobe it will cause seizure

**othalamic Lesions:**

** **

**Disorders of Pituitary Function:**

**Evaluation of Pituitary mass:**



**Non-Functional pituitary lesion:**

(Nonfunctioning means hormone either normal or low)

**Treatment:**

Non-functional pituitary adenoma

|  |  |
| --- | --- |
| C: Clinical | Asymptomtic , incidentaloma by imaging Mass-effect ( mechanical pressure, hypopituitarism, visual ( bitemproal hemianopia) Gonadal hypersecretion |
| B: Biochemical | GH,LH,FSH,TSH,ACTH: not high PRL : low ,high, normal |
| A: Anatomical | MRI |
| Treatment | Surgery if indicated Observation Adjunctive therapy:  - Radiation therapy - Dopamine agonist - Somatostatin analogue |

**Functional pituitary mass:**

Prolactin is the only hormone has no direct

Releasing hormone comes from hypothalmus .

**Prolactin**

**(**REMEMBER: **Not all hyperprolactinemia is due to a prolactinoma):**

**Low prolactin:**

* No clinical significant if there is no mass invading the hypothalamus. N.B.: PRL is the only pituitary hormone that is inhibited by hypothalamus.

**Causes of Hyperprolactinemia:**

|  |  |  |  |
| --- | --- | --- | --- |
| Hypothalamic Dopamine Deficiency | Defective Transport Mechanisms | Lactotroph Insensitivity to Dopamine | Stimulation of Lactotrophs |
| Diseases of the hypothalamus( including tumors, arterio-venous malformations, and inflammatory processes  Drugs (e.g. alpha-methyldopa and reserpine) | Section of the pituitary stalk  Pituitary or stalk tumors | Dopamine-receptor-blocking agents: phenothiazines (e.g. chlorpromazine), butyrophenones (haloperidol), and benzamides (metoclopramide, sulpiride, and domperidone) | Hypothyroidism- increased TRH production (acts as a PRF)  Estrogens: stimulate lactotrophs  Injury to the chest wall: abnormal stimulation of the reflex associated with the rise in prolactin that is seen normally in lactating women during suckling |

when adenoma produce prolactin in high level, what will happen? In female, galactorrhea, infertility and amenorrhea (irregular cycle). in male, hypogonadism and gynecomastia, lebedo.

**Clinical Features of Hyperprolactinemia/Prolactinoma:**

45 years old with headache and amenorrhea prolactin is high. what is the treatment? Medical treatment (dopamine) in the same case, if the mass affects visual field we do not do surgery because the medical treatment causes the mass to shrink. Surgical treatment if there was no response to medical treatment for 1 year.

Normally prolactin increased during pregnancy, so the first thing should be done for lady with high prolactin level is pregnancy test.

**Work up of Patient with Hyperprolactinemia:**

**Prolactinomas:**

**Growth hormone:**

when the Mass cause

compression, the first

hormone will be released is

GH

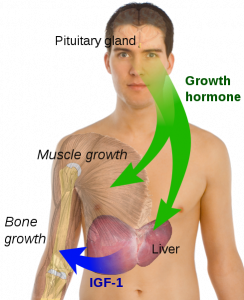
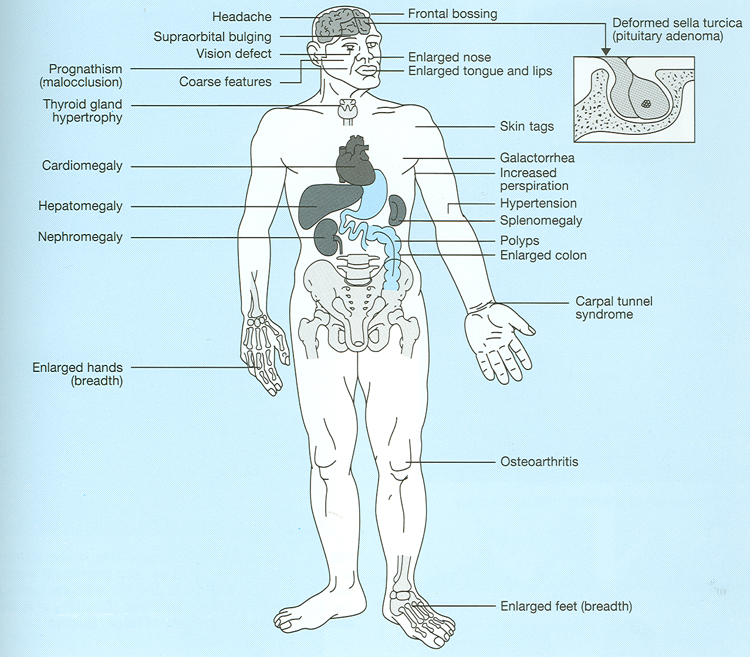
what is the most important

hormone for life?

Cortisol.

Disease:

* Children: Short stature
* Adult: ??



نعطي انسولين لشخص قصير

فبيصير عندنا بهذي الحالة GH وشاكين ان عنده نقص ب

والطبيعي ان hypoglycemia

نظرا لقلة السكر بالدم فلو ما افرز هذي دلالة على نقص هرمون النموGH

↑GH:

↑hand size,مايقدر يلبس gloves>called acral enlargement

↑feet size, يتغير مقاس الرجل >called acral enlargement

Knee pain

↑mandible size(jaw malocclusion), peace between teeth

Hypertrophy of frontal bones

↑risk of colon cancer

Headache

Seizures

hyperglycemia (DM in children)

↑cholesterol

↑visceral size

Cardiomegaly> heart failure >death

catecholamine, cortisol, GH and glucagon normally increase the glucose.

IGF1 is active form in muscle and skeleton.

↓GH:

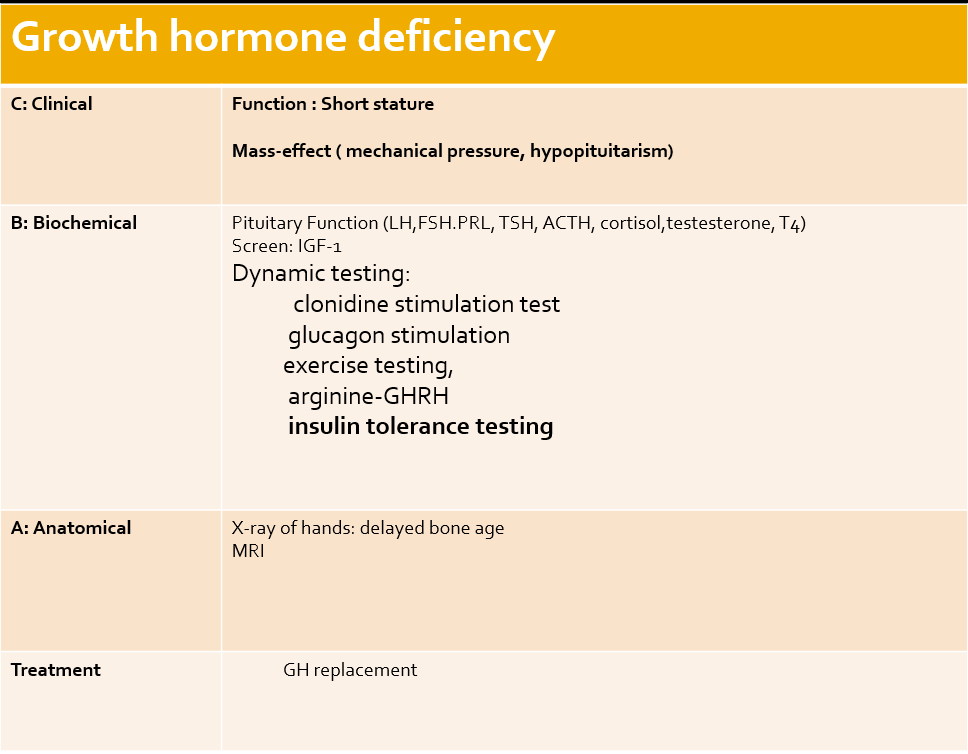
Truncal obesity (in adult)>>because there is NO lipolysis

**Acromegaly:**

**Clinical picture and presentation:**

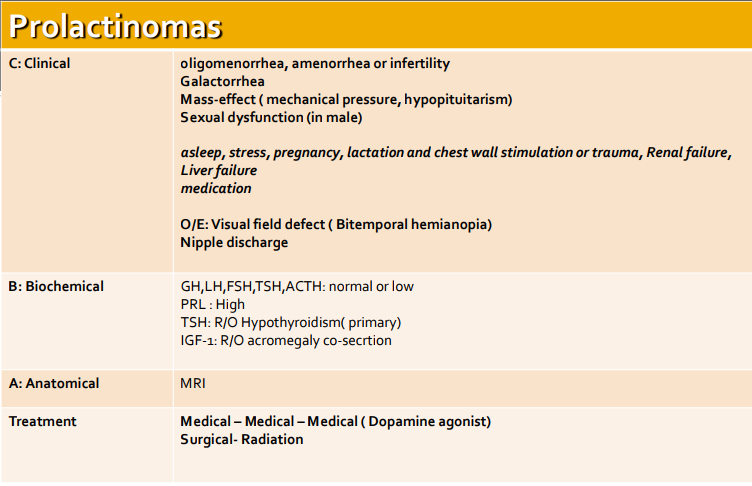
**Medical treatment:**

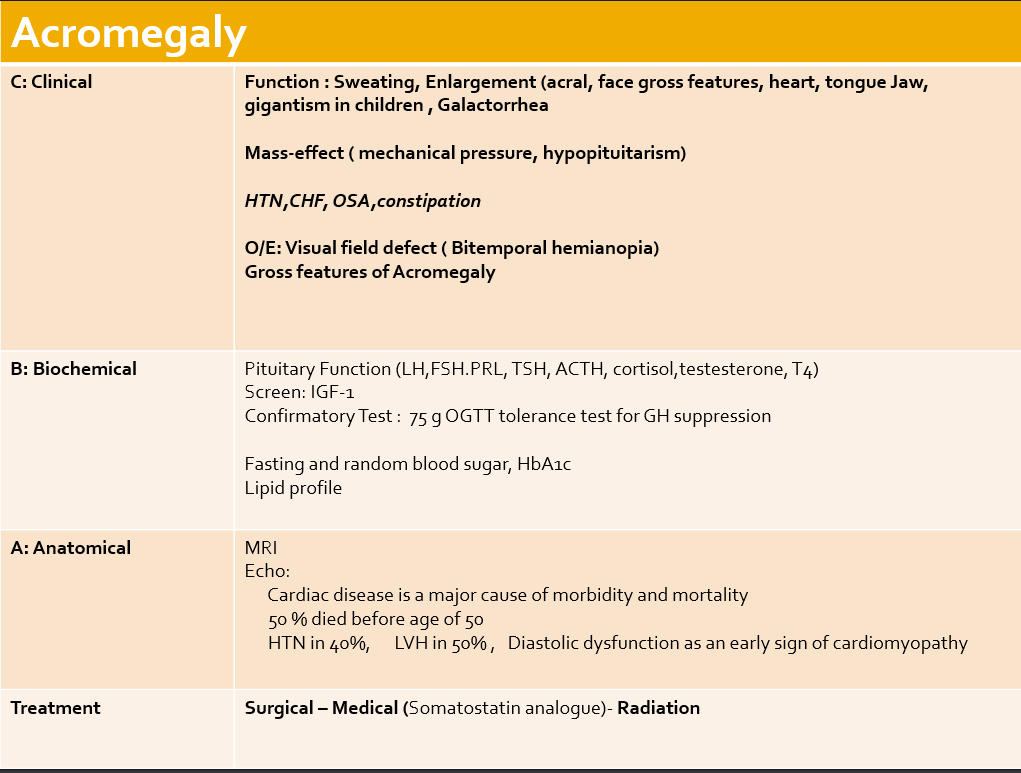
* Somatostatin analogue
* Surgical resection of the tumor



Important table

Very important table







Diagnosis: first step>IGF-1

Why not diagnosed by GH test? BC IGF-1 value is constant during all the day not like GH which fluctuating during all the day

**Growth hormone deficiency:**

Treatment: GH replacement in children

In adult: عادة ما نعطيهم GH الا اذا كان عندهم truncal obesity or psychological problems

**Hypoadrenalism**

Other symptoms:

Moon like face ,Thin skin ,Fat pads (accumulation of fat in the dorsal neck),Truncal obesity,Red cheeks ,Thin arms and legs ,Hypertension ,Acne ,Hair over growth

Remember cortisol is the most

important hormone for life.

What is the difference between staria

in obesity and cushion syndrome.

the color. ACTH will stimulate the

melatonin and cause the color.

ACTH has the same origin of

melatonin.

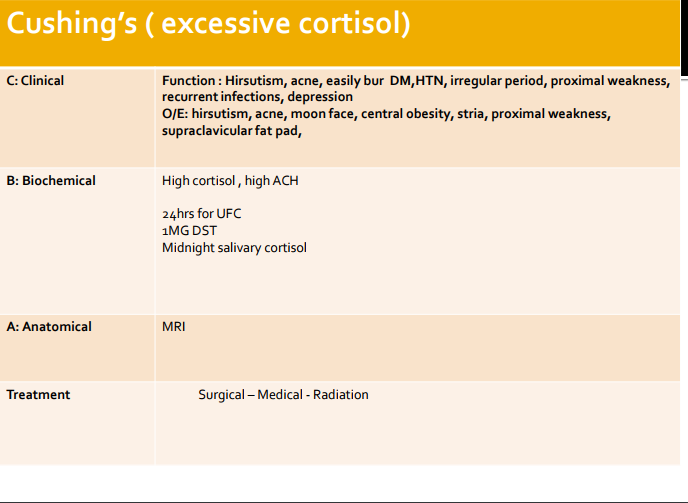
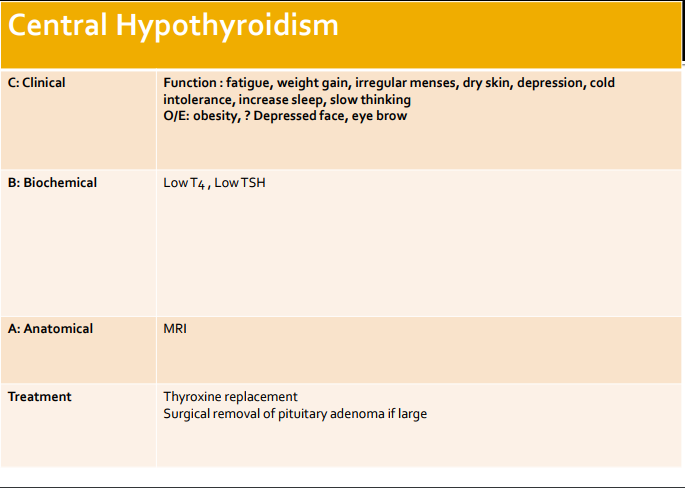
**Management of hypoadrenalism**

* **Cortisol replacement**

**HPA-axis excessive cortisol**:

excissive cortisol (cushings) stria purple wide >1 cm

excissive cortisol (cushings) ecchymosis



**Central hypothyroidism**

**TSH producing adenoma**

**Gonadotroph adenoma vs. menopause and ovarian failure**

**Gonadotroph adenoma**

* Surgical resection if large
* Radiation therapy

**Assessment of pituitary function**

**Questions**

**Q1-a boy has a pituitary gland disorder, he is 16 years old and looks like he is 10 , what is the hormone that is effected:**

A-TSH. B-GH. C-FSH. D-prolactin.

**Q2-what is the most common functional pituitary adenomas:**

A-prolactinoma. B-hypoadrenalism. C-Cushing. D-gonadotrophs adenoma.

**Q3-a patient come to the ER with severe headache when taking the vital signs ha has a high blood pressure and the doctor noticed that the patient has a moon face with red cheeks, what is the most likely diagnosis:**

A-high amount of cortisol. B-Cushing’s. C-A and B. D-none.

**Q4- a patient come to the ER with severe headache when taking the vital signs ha has a high blood pressure and the doctor noticed that the patient has a moon face with red cheeks, which of the following will be seen in ECG:**

A- low QRS voltage and inverted T wave.

B- - low QRS voltage and erect T wave.

Answers:

1-B

2-A

3-C

4-D

5-C

6-B

C-- high QRS voltage and erect T wave.

D- high QRS voltage and inverted T wave.

**Q5-excess amount of GH will lead to:**

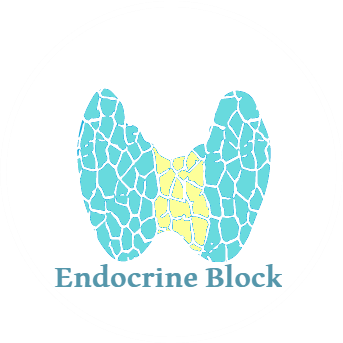
A-dwarfism. B-diabetes. C-acromegaly. D-infertility in women.

**Q6-How to manage a patient with hypoadrenalism:**

A-insulin. B-cortisol replacement. C-dopamine agonist. D-non.

**Videos**

* [Over view of pituitary gland tumor](https://www.youtube.com/watch?v=jUKQFkmBuww)
* [prolactinoma](https://www.youtube.com/watch?v=tP1zVnau-kY)
* [hyperprolactinemia](https://www.youtube.com/watch?v=WsjuwOcfmi8)
* [hyperprolactinemia](https://www.youtube.com/watch?v=1ifjg_uLcm0&index=6&list=PLY33uf2n4e6MGWYAgjkz8P_8cL-VjO0qz) (2)
* [Cushing](https://www.youtube.com/watch?v=ea1sXgd5ui8&index=7&list=PLY33uf2n4e6MGWYAgjkz8P_8cL-VjO0qz)



**قـادة الـفريـق**

جواهر الخيَّـال & ناصر أبو دجين

**أعضاء الـفريـق**

فارس النفيسة

Give us your feedback!

اللهم إني استودعتك ما حفظت وما فهمت، فردّه لي عند حاجتي إليه، إنك على كل شيءٍ قدير

[](https://docs.google.com/forms/d/1U3talrnDrM9dd_odtd5jdtDUEsF0Sc4JROoOz1b3dJ0/edit)

@medicine436

Give us your feedback!

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Girls and boys slides

نجود العنزي

عروب الهذيل

أنوار العجمي

الاء العقيل

سما الحربي