

# ADRENAL DISORDERS

## PART 2

### اعتلالات الغده الكظريه

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# Disorders of Adrenal Glands

## 1) Over Production (Hyperadrenalism)=

Excessive secretion (Isolated or Combined) of:

1. Adrenal Cortisol
2. Mineralocorticoids
3. Androgens

The most common type is known as

Cushing's Syndrome

# *Cushing Disease Versus Cushing Syndrome*

## *1. Cushing's disease=*

**More serious but less common**

**Usually caused by Pituitary Tumors**

## *2. Cushing's syndrome=*

**Usually caused by Steroid**

**Medications**

# Cushing's Syndrome

# 1.. (Exogenous Cushing's Syndrome):

Most Common Cause:

*Iatrogenic* علاجى المنشأ

Excessive activation of glucocorticoid  
receptors

due to prolonged administration of  
synthetic glucocorticoids

# 2.. Endogenous Cushing's Syndrome

## Classification:

### 1. ACTH-Dependent – 80% ( Cushing disease )

- 1) Pituitary adenoma secreting ACTH

### 2. Non-ACTH-Dependent – 20%

- 1) Adrenal adenoma
- 2) Adrenal carcinoma

# 3. (Pseudo-Cushing's Syndrome)=

Other causes Hyper

Cortisolemia

1) Alcohol excess

2) Depression

3) Obesity

# What Are the Symptoms of Cushing Syndrome?



**A red, round face.**



**Easy bruising and poor wound healing.**



**Fat pad between shoulders. (hump)**



**General weakness and tiredness. (fatigue)**



**High blood pressure. (hypertension)**



**Excessive hair growth. (face, neck, chest, abdomen, breasts and thighs, or balding)**



**Blurry vision and dizziness.**



**Weak muscles and thinner arms and legs.**



**Diabetes.**



**Purple stretch marks over abdomen.**



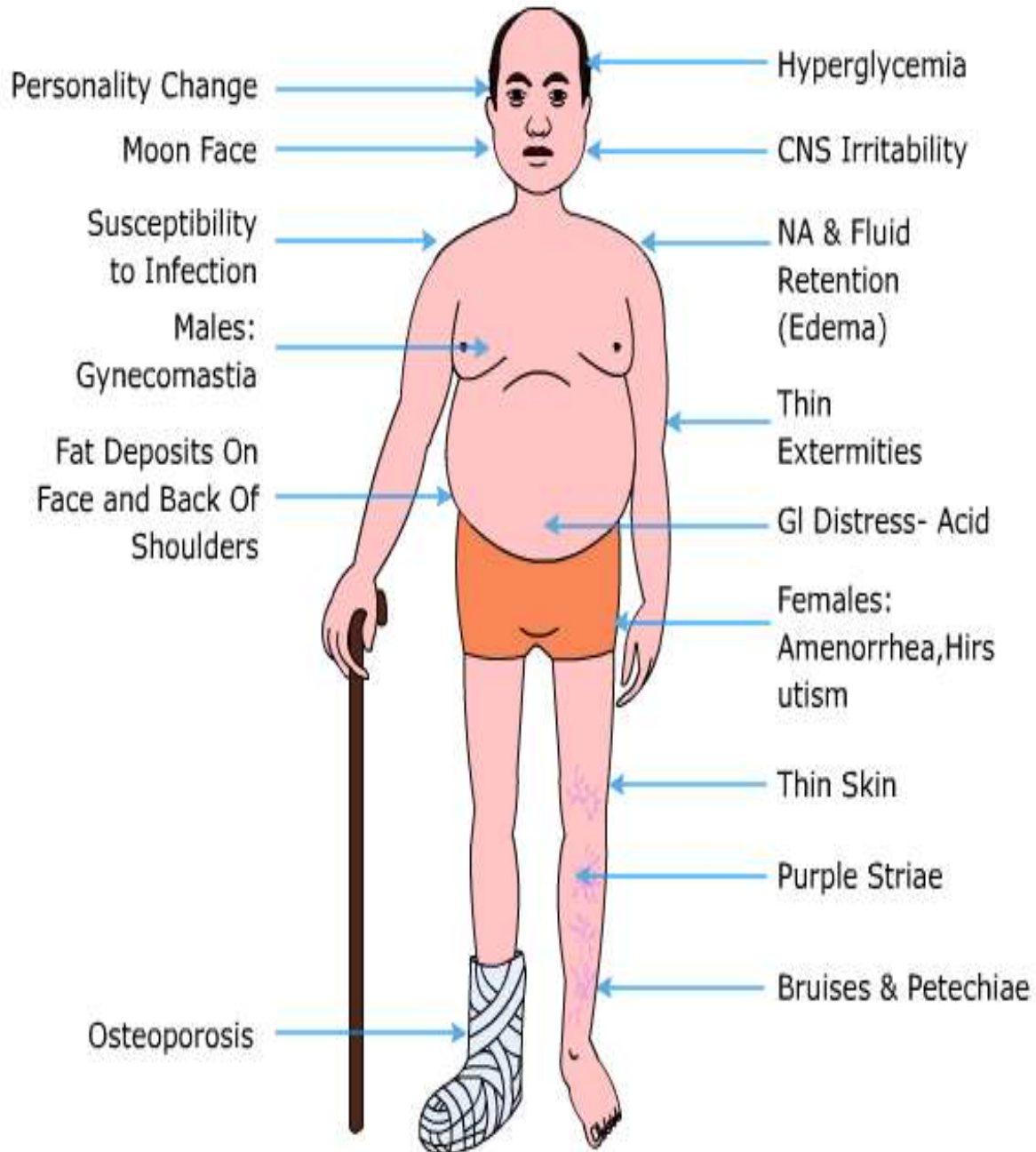
**Libido changes (sex drive) & erectile dysfunction.**



**Stunted growth in children.**



# CUSHING'S SYNDROME

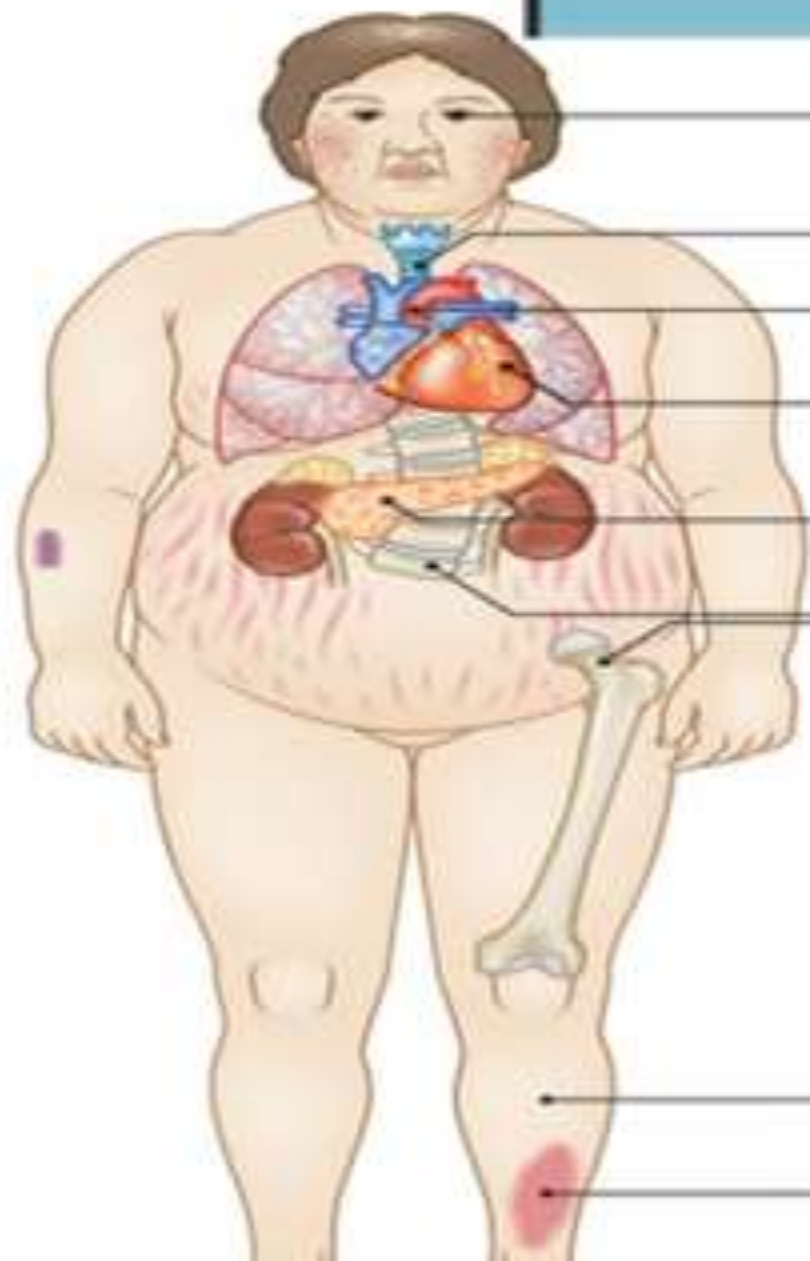


- Upper body obesity with thin arms and legs
- Buffalo Hump
- Red, Round Face
- High Blood Sugar
- High Blood Pressure
- Vertigo
- Blurry Vision
- Acne
- Female Balding
- Water Retention
- Menstrual Irregularities
- Thin Skin and Bruising
- Purple Striae
- Poor Wound Healing
- Hirsutism
- Severe Depression
- Cognitive Difficulties
- Emotional Instability
- Sleep Disorders
- Fatigue





# COMPLICATIONS



Glaucoma/cataracts

Obstructive sleep apnoea

Hypertension

Premature cardiovascular and cerebrovascular disease

Abnormal glycaemic control, type 2 diabetes

Osteoporosis/fracture

Venous thromboembolic disease

Predisposition to infections/sepsis

# **Investigations of Cushing's Syndrome**

- 1) **24-hour urinary cortisol**
- 2) **serum cortisol**
- 3) **Additional tests include plasma electrolytes and glucose**
- 4) **CT/MRI detects most adrenal adenomas**

**Because of the negative feedback mechanism of the HPA axis, the patient's cortisol levels are high and the ACTH levels are low.**

# **Management of Cushing's Syndrome**

- 1) **Most patients are treated surgically (Surgery for tumors of the adrenal and pituitary glands).**
- 2) **Radiation therapy.**
- 3) **Drug therapy.**

## **2) Under Production**

### **Adrenal Insufficiency (Hypoadrenalism)**

# **2 categories:**

- 1) Primary Adrenocortical Insufficiency**
- 2) Secondary Adrenocortical Insufficiency**

# 1....Primary Adrenocortical Insufficiency.

Also known as

*Addison's disease*

=  Destruction of the adrenal cortex

=  Deficiency of all adrenocortical hormones

## 2....Secondary Adrenocortical Insufficiency

□ More common than primary cause

□ Causes:

1) Diseases cause total absence of ACTH= Because of destruction of either the hypothalamus or pituitary gland

– hypothalamus tumors

– pituitary genetic diseases, tumors, some inflammatory diseases and infections, bleeding, cysts

– surgical removal of the pituitary to remove a tumor or to treat other conditions

– radiation therapy to the pituitary tumor

2) Diseases cause suppression of ACTH production= Because of using exogenous steroids to treat a large variety of illnesses =When pituitary recognize any steroids, its sense =cortisol present = therefore produce less ACTH = Because pituitary producing ACTH in response to body need to cortisol.

□ Diagnosis = clinical +laboratory= low ACTH + low cortisol.

# Causes of Addison's Disease:

1. Autoimmune or idiopathic atrophy of the adrenal glands =responsible for 80% - 90%

2. Surgical removal of both adrenal glands.

3. Infection of the adrenal glands:

(Tuberculosis التدرن/السل and Histoplasmosis= فطر

Histoplasma) أسمه =most common infections = destroy adrenal gland tissue.



# *Signs and Symptoms of Addison's Disease:*

- 1) Tiredness + Weakness + Muscle aches
- 2) Appetite loss + Gastrointestinal disturbances.
- 3) Weight loss
- 4) Dizziness on standing
- 5) Abnormal hair distribution
- 6) Pigmentation on sun-exposed skin + Oral mucosa
- 7) Depression
- 8) Addisonian Crisis = sudden lower back penetrating pain, abdomen or leg pain, severe vomiting, diarrhea lead to dehydration, low blood pressure and loss of consciousness.

# ADDISON'S DISEASE

Bronze  
Pigmentation  
of Skin

Changes In  
Distribution  
of Body Hair

GI Disturbances

Weakness

Hypoglycemia

Postural  
Hypotension

Weight Loss

## Adrenal Crisis:

Profound Fatigue  
Dehydration  
Vascular Collapse ( $\downarrow$ BP)  
Renal Shut Down  
 $\downarrow$  Serum NA  
 $\uparrow$  Serum K

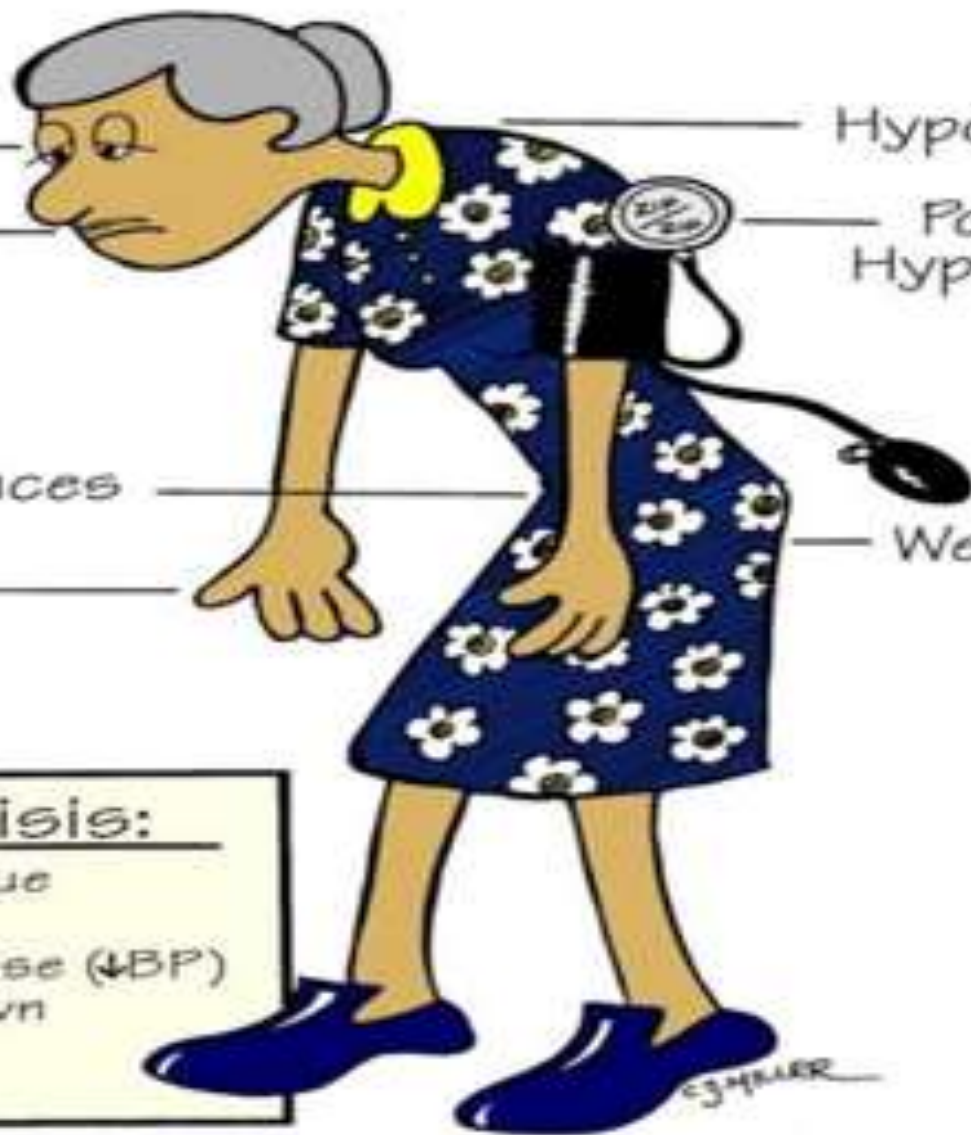




Figure 2. Multiple melanotic macules seen here over the lips are characteristic.



Initial Presentation

Five-month follow-up



# Diagnosis of Addison's Disease:

1. Cortisol levels= LOW = adrenal cortex not responsive

2. ACTH [Adrenocorticotrophic hormone] Stimulation Test =

HIGH ACTH = Pituitary attempt to stimulate hormone production

3. CRH [Corticotropin-releasing Hormone] Stimulation Test =

in response to CRH:

= HIGH ACTH = If the pituitary is not damaged

= NOT make ACTH= but if pituitary is damaged

□ Treatment of Addison's Disease:

Hormone replacement therapy[ which hormone is low ].



***Thank you***