



Case 2: Looking for hope

Learning issues:



- Structures and functions of the adrenal cortical gland
- Role of the hypothalamic-pituitary adrenal axis in control of glucocorticoids secretion
- Physiology of glucocorticoids
- Pathology and pathogenesis of cushing's syndrome
- Physiological basis for the symptoms and clinical signs of a patient with cushing's syndrome
- Investigations of cushing's syndrome and interpretations of results
- Impact of cushing's syndrome on psychological health

❖ Key information and Presenting problems:

- Amani, female, 27 years old, Lebanese
- **Moon-like face**
- **Acne**
- **Gained body weight**
- **excessive facial hair**



History:

- Acne & hair on her chin and upper lip.
- Gained over 10 kg in body weight.
- Skin bruising after minor trauma.
- Skin is fragile.
- Buffalo hump appearance.
- Difficulty in climbing stairs.
- Menstrual periods are irregular.
- Back pain for about 4 months.
- She worries about her body image.
- Always feels depressed and unhappy
- She has no history of any medical problems in his family.
- NO Tobacco and Alcohol
- NO Medication and Allergy

NEW TERMS

Buffalo hump	is a collection of subcutaneous fat at the base of the neck
Purplish striae	are a form of scarring on the skin with an off-color hue
Fragile	trauma induced erosions in skin

Clinical examination

- Moonlike face, acne and abnormal hair in her face
- She looks depressed
- She has a **buffalo hump** pic1
- Her legs and arms show bruises

Vital signs

- All normal except **Blood pressure 160/90 mmhg** (normal 100/60-120/80mmhg)

Abdominal examination

- Obesity mainly located in **the trunk**
- Skin of the abdomen and upper thighs show a number of **purplish striae** pic2

Lower limbs examinations

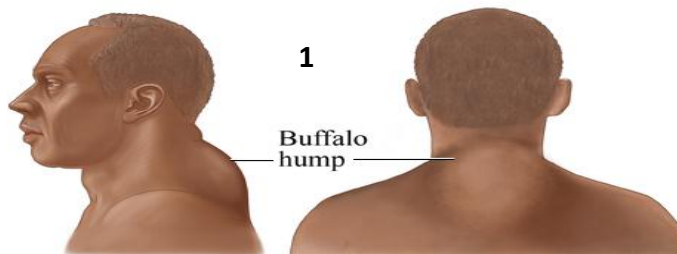
- She has bilateral proximal muscle weakness
- Her thighs are **thin**

Back examination

- Tenderness over L4 & L5

Dipstick urinalysis

- Glucose ++



Buffalo hump is a collection of subcutaneous fat at the base of the neck



Investigations

Blood chemistry

Serum sodium	140	135-145 mmol/L
Serum potassium	3.3 ↓	3.5-5.0 mmol/L
Blood urea	4.8	2.5-8.3 mmol/L
Fasting blood glucose	7.8 ↑	3.6-5.3 mmol/L
Blood cholesterol	6.9 ↑	0.0-5.5 mmol/L
Serum triglycerides	2.5 ↑	0.5-2.0 mmol/L

Hormonal assays

Serum cortisol	8am: 1200 ↑↑↑ 4pm: 1180	140-630 nmol/L
Serum dehydroepinandrosterone (DHEA) sulfate	12.1 ↑↑↑	1.3-6.7 micromol/L
Serum testosterone	5.5 ↑↑	< 3.5 nmol/L
Serum ACTH	< 1 ↓↓↓	<18 pmol/L

Cont. Investigations

X-ray spine	<ul style="list-style-type: none">• Compression fracture between L4 & L5• Osteoporosis of body vertebrae• Bone density recommended
CT scan of upper abdomen	A mass of 3 x 4 x 5 cm is seen in the left adrenal gland. The mass lies anterior & superior to the left kidney. No evidence of enlarged lymph nodes or any masses
Pelvic ultrasound	Normal ovaries, uterus and tubes. No masses shown.

❖ **Diagnosis:**

- ✓ Adrenocortical adenoma

❖ **Management:**

- Surgery (removing of the tumor)

❖ **Prognosis:**

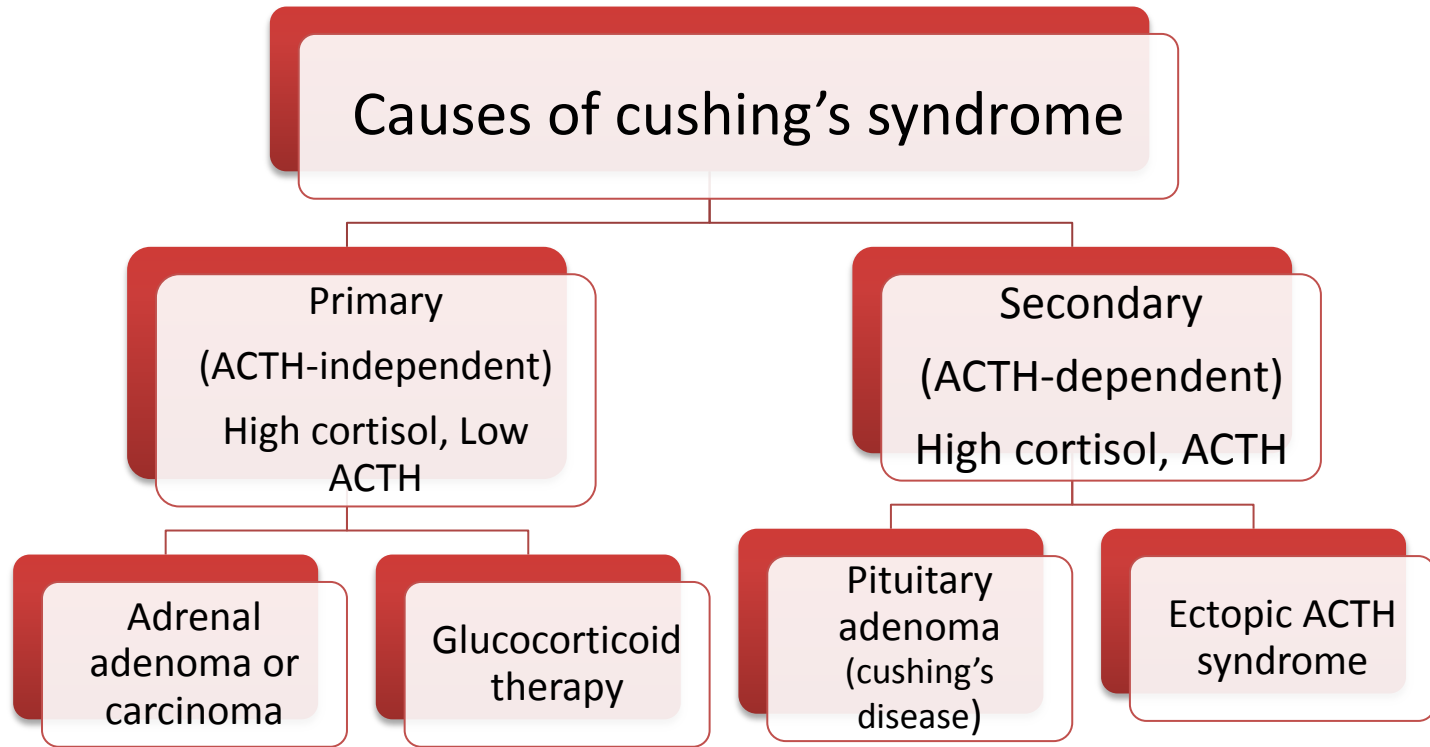
- ✓ Amani underwent the surgery and she recovered well. (all the symptoms disappeared gradually)
- ✓ The cortisol levels and DHES are also back to normal

INTERPRETATIONS OF THE PATIENT'S CLINICAL MANIFESTATION AND INVESTIGATION RESULTS :

Clinical and investigation findings	Interpretation
Increased blood glucose	glucocorticoids interferes with gluconeogenesis
Increased blood cholesterol	Due to increased glucocorticoids secretion
Increased Serum triglycerides	Due to increased glucocorticoids secretion
Increased DHEA	Due to increased secretion of glucocorticoids and androgens
Low serum ACTH	Due to negative feedback effect of increased cortisol
Facial hair and acne	Due to increased secretion of adrenal androgens
Hypertension	Due to increased cortisol and aldosterone secretion
Osteoporosis	elevated cortisol level cause increased bone resorption (anti-vitamin D effect)
Muscle weakness	cortisol increases protein catabolism

End of the case

Cushing's syndrome is defined as hypercortisolism regardless of origin.



SIGNS & SYMPTOMS

Weight gain (truncal obesity & buffalo hump)

Excessive sweating

Hypertension

Hyperglycemia (or diabetes)

Increased protein metabolism

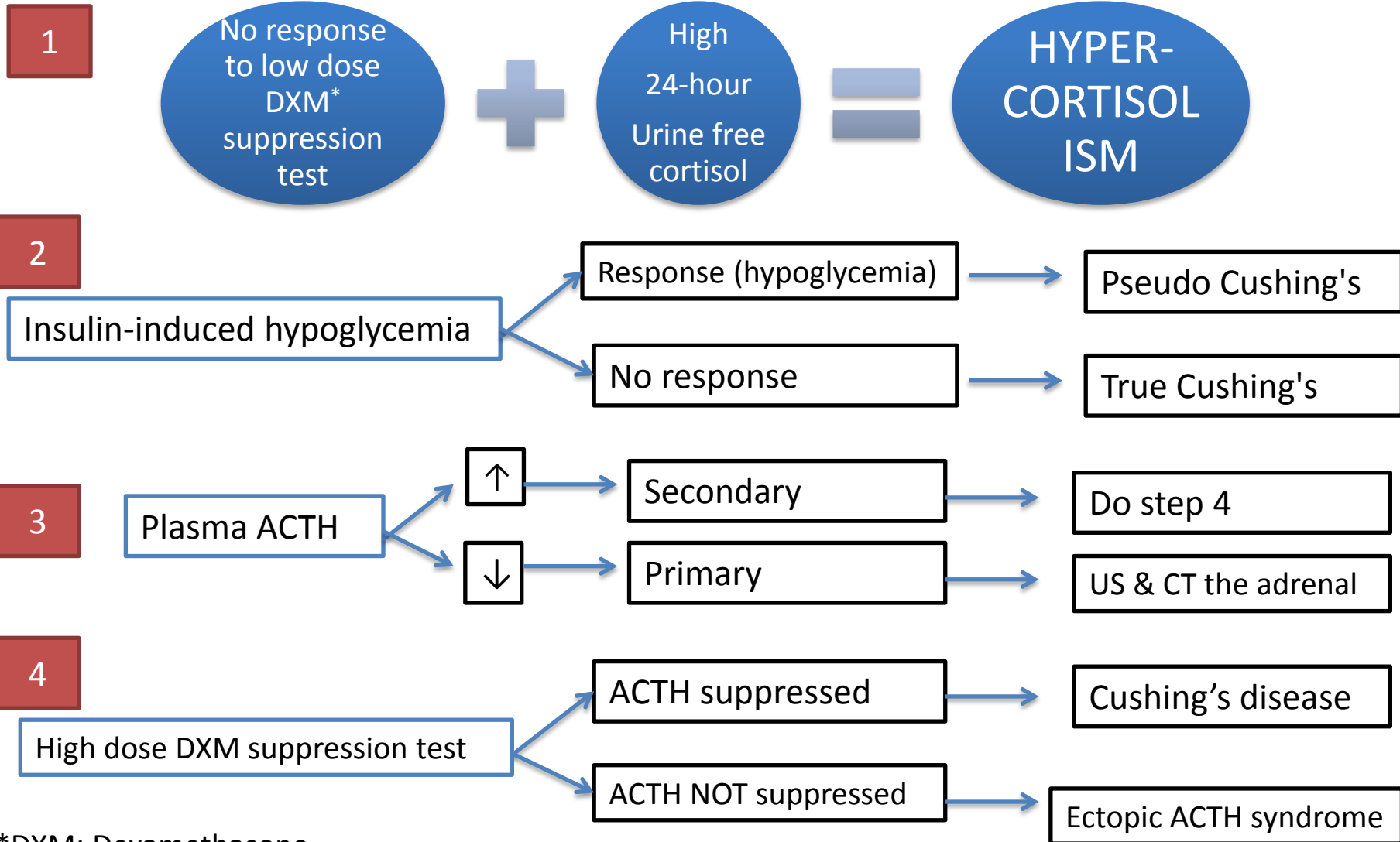
Impaired immunity

Hypokalemic alkalosis

Amenorrhea & infertility

SCREENING & INVESTIGATIONS OF CUSHING'S SYNDROME

The importance of this slide is to know the other investigations only



*DXM: Dexamethasone

Questions

<p>Q1: What is the diagnosis?</p>	<p>Q2: What does buffalo hump mean?</p>
<p>Adrenocortical adenoma which leads to Cushing's syndrome</p>	<p>Buffalo hump is a collection of subcutaneous fat at the base of the neck</p>
<p>Q3: Mention the main causes of Cushing's syndrome?</p>	<p>Q4: Explain the followings:</p>
<p>1-ACTH-dependent: e.g Pituitary adenoma (cushing's disease) 2- ACTH-independent: e.g Adrenal adenoma or carcinoma (the case)</p>	<ul style="list-style-type: none"> • Facial hair and acne: due to elevated androgens • Hypertension: due to elevated cortisol and aldosterone • Osteoporosis: elevated cortisol cause increased bone resorption
<p>Q5: What is the management in this case?</p>	<p>Q6: What are the findings in X-ray spine?</p>
<p>Surgery(resection of tumor)</p>	<ol style="list-style-type: none"> 1. Compression fracture between L4 & L5 2. Osteoporosis of body vertebrae
<p>Q7: Mention other investigation which is not included in this case?</p>	<p>Q8: Why serum ACTH is decreased?</p>
<p>Dexamethasone suppression test</p>	<p>Due to negative feedback effect of increased cortisol</p>

Q9: Why Amani had muscle weakness and thin thigh?

Due to the action of cortisol (**increase protein catabolism**)

Q10: Explain the presence of glucose in her urine?

High blood glucose due to high cortisol level.

Q10: Mention three physiological effects of glucocorticoids?

1. Increase gluconeogenesis
2. Increase lipolysis
3. Increase protein catabolism

Q11: Mention four signs of this patient?

1. Moon-like face
2. Acne and excessive facial hair
3. Buffalo hump
4. Purplish striae



Thank You ...



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