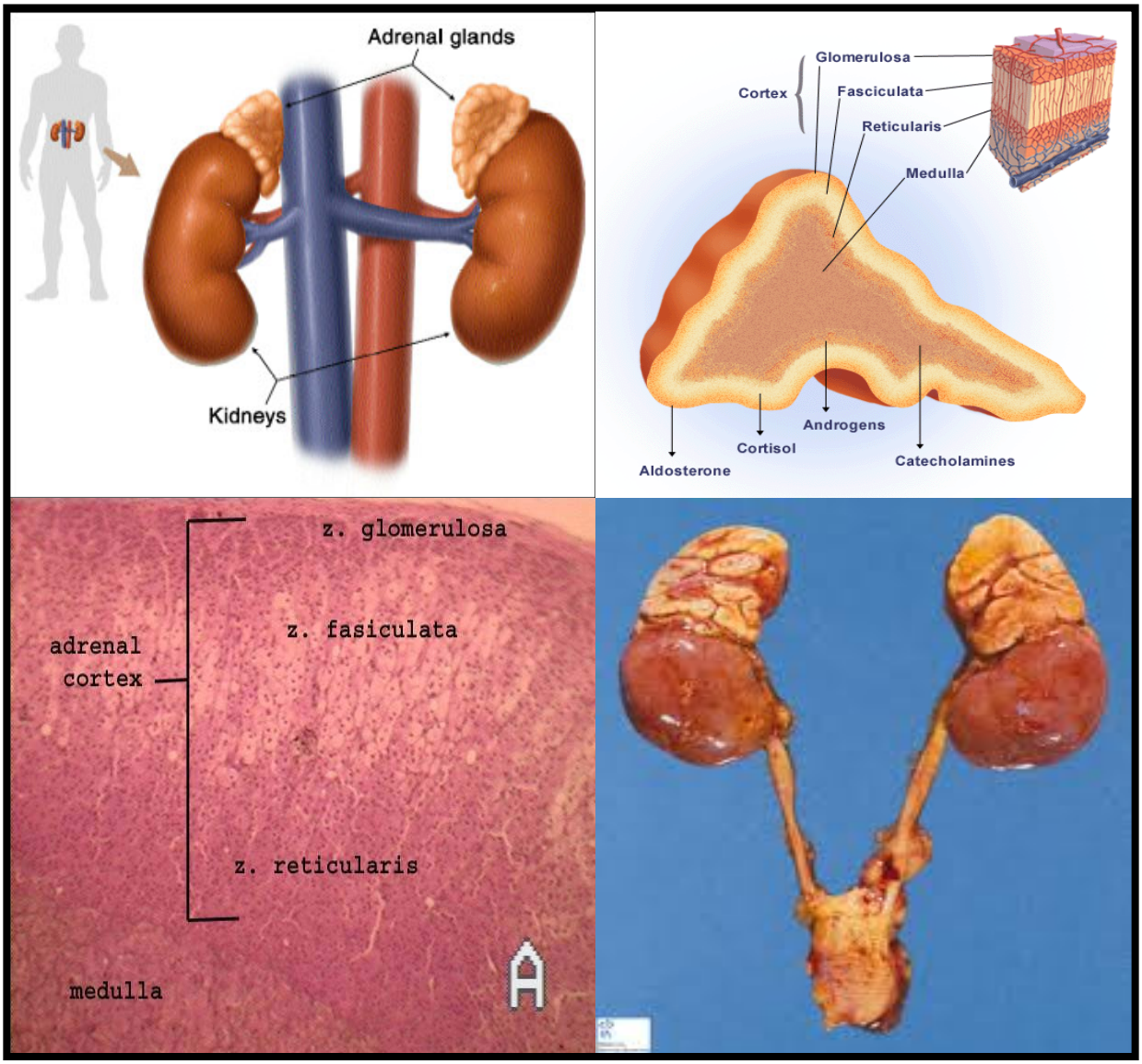
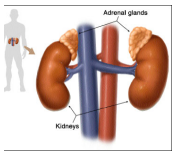
ENDOCRINE BLOCK FOURTH WEEK



Done by: Norah Alajmi, Noor Alzahrani, Lulu Alobaid, Khalid Alosaimi, Atheer Aluaij

Design by: Lulu Alobaid

Table of Content



Anatomy

Q1) Suprarenal Glands are separated from the kidneys by ?

A. renal fascia
B. perirenal fat
C. Perinephric fat
D. a-c

Ans:B

Q2)At which level Suprarenal Gland sit on?

E. T12
F. L1
G. T10
H. L1,T12

Ans:A

Q3) Which of the following choices are true concerning blood supply of Suprarenal Gland?

A. Superior suprarenal artery arise from abdominal aorta
B. Inferior suprarenal artery arise from inferior phrenic artery
C. Middle suprarenal artery arise from abdominal aorta
D. Superior suprarenal artery arise from inferior phrenic artery
E. Inferior suprarenal artery arise from renal artery
F. C-D-E
G. B-C-E

Ans:F

Q4) Nerve fibers that are supplying the adrenal gland are:

A. Postganglionic sympathetic derived from the splanchnic nerves
B. Postganglionic parasympathetic derived from the vagus nerves
C. Preganglionic parasympathetic derived from the vagus nerves
D. Preganglionic sympathetic derived from the splanchnic nerves

Ans:D

Q5)Medulla of adrenal gland is derived from :

a. Mesoderm celomic epithelium
b. Ectoderm
c. Neural crest cells
d. endoderm

Ans:C
Note: choice “A” is origin of Cortex of adrenal gland

Q6)regarding left suprarenal gland which of the following is wrong :

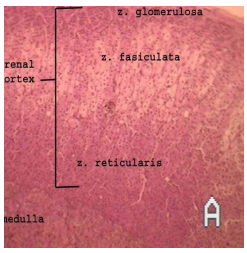
a)it related to the diaphragm posteriorly.
b)it is cresentic in shape.
c)it’s vein drain into the left renal vein.
d) related anteriorly to inferior vena cava.
e)lies posterior to the lesser sac.

Ans:D

Q7)The following statements concerning the left suprarenal gland are correct except which?

A. extend along the medial border of the left kidney from the upper pole to hilus
B. its veins supply drains into the left renal vein
C. is separated from the left kidney by perirenal fat
D. lies behind lesser sac
E. the medulla is innervated by postganglionic sympathetic nerve fibers

Ans:E



Q1)Which of the following is a component of the adrenal medulla?

a. Chromaffin cells
B. Zona glomerulosa
C. Zona fasciculata
D.Zona reticularis
e. All of the above
Ans:A

Q2)Which of the following is the middle layer of the adrenal cortex?

a. Chromaffin cells
B. Zona glomerulosa
C. Zona fasciculata
D.Zona reticularis
e. All of the above

Ans:c

Q3)Which of the following is seen the innermost portion the adrenal gland?

a. Chromaffin cells
B. Zona glomerulosa
C. Zona fasciculata
D.Zona reticularis
e. All of the above

Ans:A

Q4)The following statements concerning the zona glomerulosa Are correct except ?

A. Is formed of clusters of small columnar cells
B. rich in rough endoplasmic reticulum
C. rich in mitochondria
D. Produces mineralocorticoids
Ans:B it's rich in smooth endoplasmic reticulum

Q5) The following statements concerning the zona *fasciculata*
Are correct except?

A. It is the intermediate and the largest layer of the cortex
B. It is formed of columns of large polyhedral cells
C. Its cells are rich in lipids so they appear empty “spongiocytes”
D. Its cells secrete glucocorticoids
E. Its cells are rich only in lipofuscin pigments.
Ans:E
NOTE: it’s also rich in mitochondria (with tubular cristae),SER

Q6) The following statements concerning the zona *reticularis*
Are correct except?

A. It is the innermost layer of adrenal gland
b. It is formed of anastomosing cords of pale acidophilic cells.
c. Its cells contains few lipofuscin and lipid droplets
D. The cells secrete androgens
E. A,B
F. A,C
Ans:E NOTE: IT’S innermost layer of adrenal CORTEX & deep acidophilic cells

[5] Addison's disease

Q 1 :aldosterone is a major regulator for :

A.Blood glucose level

B.Blood pressure

C. Ca absorption

Answer : B

Q 2 :Renin produce by …… in response to ……?

A. Baroreceptor , hypovolemia

B. Juxtaglomerular cells , hyponatremia

C. Juxtaglomerular cells , decrease renal perfusion

D. B & C

Answer : D

Q 3 : in which case hyperpigmentation can be seen ?

A. Primary hypercortisolism

B. Secondary adrenal insufficiency

C. Primary adrenal insufficiency

D. Secondary hypercortisolism

E. C &D

Answer E

Hyperpigmentation associated with high ACTH
A,(cortisol high>> negative feedback ACTH low), B(ACTH low lead to decrease in adrenocortical hormones) C,(destruction of adrenal gland > decreaseadrenocortical hormones > ACTH high) D,(ACTH high>> increase cortisol)

Q 4 : regarding primary adrenal insufficiency which one of the following is true ?

A. High cortisol low ACTH
B. Adrenal autoantibody
C. Short ACTH stimulation test : stepwise increase serum cortisol
D. MRI for pituitary

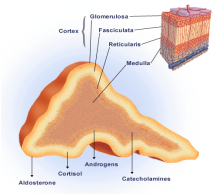
Answer : B

Q 5 : if we inject insulin in order to induce hypoglycemia and we find that cortisol level are not respond and remain low that confirm ?

A. secondary adrenal insufficiency
B. primary adrenal insufficiency
C. insulin resistance

answer : A

Hypoglycemia stimulate ACTH by pituitary gland which act on adrenal gland to increase cortisol to compensate for hypoglycemia and increase blood glucose level



[10] Mineralocorticoids

1) The major regulator for Aldosteron release is :
A- ACTH
B- Ang II
C- High K+ level
Ans: C

2) Decreased Blood Pressure ,which stimulate Ang II , then the result is :
A- increase K+ level in circulation
B- increase Na+ level in circulation
C- Decreased Na+ level in circulation
Ans: B Ang II will stimulate Aldosteron to reabsorb the Na+

3) Addison's disease will manifest with :
A- alkalosis
B- hyperkalemia
C- hypertension
Ans: "B"

4) Hypokalemia and alkalosis are the manifestation of :
A- Addison
B- adrenal insuffeciency
C- Conn's syndrom
Ans: "C"

[11] Glucocorticoids

1) which one will increase the cortisol release :
A- intense physical or mental stress
B- Hyperglycemia
C- High Na+ level
Ans: "A"

2) which one is true regarding the effect of cortisol :
A- anabolic for protein in muscles
B- catabolic for protein in liver

C- Anabolic for protein in liver
Ans: "C"

3) The result of cortisol secretion is :
A- Increase lipids in circulation
B- Increase the amino acids in circulation
C- Increase glucose in circulation
D- all of them
Ans: "D"

4) Cortisol has anti-inflammatory actions by :
A- Increase Ig
B- Increase blood vessel permeability
C- Decrease the migration of WBCs
Ans: "C"

5) Cortisol is needed for :
A- synthesis of protein in muscle
B- developing fetus and surfactant
C- Linear growth of bone
Ans: "B"

[12] adrenal insufficiency

Which one of the following is characteristic for adrenal crisis Hypotension:

A. it can be treated with catecholamine
B. it can be treated with Glucocorticoids
C. it can be treated with intravenous fluid resuscitation

Ans: B

A 40-year-old man complains of nausea, vomiting, diarrhea, and cramping abdominal pain. His temperature is 38°C, blood pressure 90/60 mm Hg, and pulse rate 90 per minute. On physical examination, the patient appears dehydrated, with sunken eyeballs, dry tongue, and poor skin turgor. Hyperpigmentation is noted in the palmar creases and the gingival margins. Laboratory results include hypoglycemia BUN of 27 mg/dL (normal = 11 to 23 mg/dL), Hyponatremia and Hyperkalemia. Which of the following is the most likely cause of this patient's symptoms?
(A) Amyloidosis

(B) Autoimmunity
(C) Metastatic cancer
(D) Sarcoidosis
(E) Tuberculosis

The answer is B: Autoimmunity.

Primary chronic adrenal insufficiency (Addison disease) most often refl ects autoimmune destruction of the adrenal gland If untreated, Addison disease is characterized by weakness, weight loss, gastrointestinal symptoms, hypotension, electrolyte disturbances, and hyperpigmentation. Less common causes of Addison disease include tuberculosis (choice E), metastatic carcinoma (choice C), amyloidosis (choice D), sarcoidosis, adrenoleukodystrophy, and congenital adrenal hypoplasia.
Diagnosis: Addison disease

[13] adrenal androgen

Q1 :Which one of the following is true regarding androgen ?

A. It is present only in male
B. Adrenal androgen is the most is the major active form
C. Testosterone is the major active androgen

Answer C

Q2 :androgen are produce by ?

A. Zonaglomerulosa
B. Zonafasiculata
C. Zonareticularis
D. B&C

Answer D

Q3 : testosterone could be convert to estrogen by ?

A. Aromatase enzyme
B. 21 hydroxylase
C. 17-a- hydroxylase

Answer A

Q4 : which of the following is not true regarding Dehydroepiandrosterone (DHEA)?

A. the most abundant adrenal androgen
B. estrogen precursor

C. non steroid hormone

Answer C

Q5 :adrenogenital syndrome are caused by deficiency of which enzyme ?

A. Aromatase enzyme
B. 21 hydroxylase
C. 17-a- hydroxylase

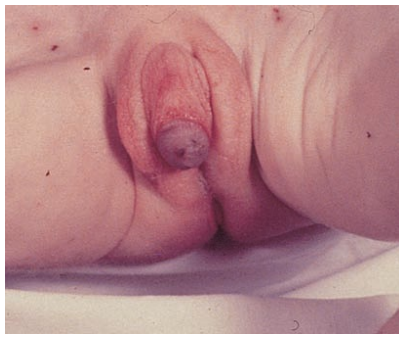
Answer B

Q6: in case of adrenogenitalsyndrome :

A. It Cause slow development of secondary male characters
B. Cortisol and aldosterone are low and androgen will be high
C. Cortisol and aldosterone are high and androgen will be low

Answer B

Physical examination of a neonate shows peculiar genitalia (shown in the image). Cytogenetic studies reveal a 46, XX karyotype. Laboratory studies will most likely reveal a deficiency of which of the following?



(A) Androstenedione
(B) Corticotropin
(C) 21-Hydroxylase
(D) Progesterone
(E) Prolactin

The answer is C: 21-Hydroxylase.

The photograph shows a markedly virilized and hypertrophic clitoris and partial fusion of labioscrotal folds in a genetic female.
Male infants show normal external genitalia.
Levels of adrenal androgens (choice A) and progesterone (choice D) increase in this disorder.
Diagnosis: Congenital adrenal hyperplasia, adrenogenital syndrome

The infant described in the previous question is shown to have an autosomal recessive genetic disorder. The infant is expected to manifest which of the following developmental anomalies?

(A) Adrenal hyperplasia
(B) Bladder diverticulum
(C) Cystic renal dysplasia
(D) Empty sella turcica
(E) Polycystic ovaries

The answer is A: Adrenal hyperplasia.
Congenital adrenal hyperplasia (CAH) is a syndrome that results from a number of autosomal recessive, enzymatic defects in the biosynthesis of cortisol from cholesterol. Most cases of CAH (>90%) represent an inborn defi ciency of 21-hydroxylase. Defi ciency in the synthesis of corticosteroids in the adrenal cortex results in the continuous secretion of ACTH by the anterior pituitary, resulting in congenital adrenal hyperplasia. The adrenal glands are greatly enlarged, weighing as much as 30 g (normal = 4 g). Polycystic ovary syndrome (choice E) occurs in adult women.
Diagnosis: Congenital adrenal hyperplasia, adrenogenital Syndrome

[14] Adrenal medulla and pheochromocytoma

patient have chronic liver failure and developed hypoglycaemia which one of the following will take the upper hand to maintain the blood sugar ?

A. - growth hormone هذا خطأ لان الكبد ماتشتغل فما يقدر يرفع السكر
B. - Adrenaline
C. -tyrosine
D. -normetanephrine
E. -dopamine

Ans: B

in the previous question what is the manifestation you'll see in case of this patient ?

A-Sever seating
B - bradychardia
C - vomiting

D - abdominal pain

Ans: A

Which of the following metabolite is important to detect Pheochromocytoma?

A-normetanephrine
B- Vanillyl mandelic acid (VMA)
C- Dopamine

Ans: B

Pharmacology

Corticosteroids

Which one of the following drugs is used in case of Addison crisis?

A. Betamethasone
B. Triamcinolone
C. Cortisol
D. Dexamethasone

Ans: C because it's short acting and used for emergency

Which one of the following Glucocorticoids is used as inhalation ?

A. Budesonide
B. Mometasone
C. Betamethasone
D. Triamcinolone

Ans: A

Which one of the following is a potent topical drug?

A. Fluticasone
B. Dexamethasone
C. Hydrocortisone acetate
D. Beclomethasone

Ans: D

Which one of the following is given with cortisol in case of chronic Addison's disease because it has a mineralocorticoid like action:

A. Hydrocortisone acetate
B. Beclomethasone
C. Fludrocortisone
D. Dexamethasone

Ans: C

What would you do if you're treating your patient with Glucocorticoids and you know that he's subjected to stress:

A. You lower the dose
B. You ask the patient to not take the medication while he's in a bad mood
C. You double the dose
D. You change the drug

Ans: C

[3] Adrenal gland

A 60-year-old woman with small cell carcinoma of the lung notes rounding of her face, upper truncal obesity, and muscle weakness. Physical examination reveals thin, wrinkled skin, abdominal striae, and multiple purpuric skin lesions. The patient's blood pressure is 175/95 mm Hg. Laboratory studies will likely show elevated serum levels of which of the following hormones?

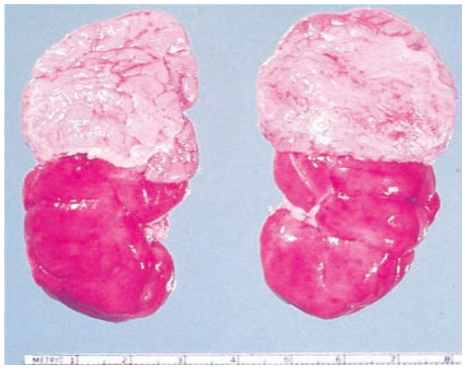
(A) Aldosterone
(B) Corticotropin
(C) Epinephrine
(D) Prolactin
(E) Thyrotropin

The answer is B: Corticotropin.

This patient most likely has a paraneoplastic condition associated with a corticotropin (ACTH)- producing small cell carcinoma of the lung.

Diagnosis: Cushing syndrome, paraneoplastic syndrome

A 7-week-old infant develops severe dehydration and hypotension and expires. The kidneys and adrenal glands at autopsy are shown in the image. Hypovolemic shock in this infant was most likely caused by inadequate synthesis of which of the following hormones?



(A) Aldosterone
(B) Angiotensin
(C) Antidiuretic hormone
(D) Atrial natriuretic factor
(E) Renin

The answer is A: Aldosterone.

The autopsy specimen shows massive bilateral adrenal enlargement characteristic of congenital adrenal hyperplasia (CAH). Congenital 21-hydroxylase deficiencies may be associated with impaired aldosterone synthesis (salt-wasting CAH). Hypoaldosteronism develops within the first few weeks of life in two thirds of

newborns with congenital adrenal hyperplasia, who suffer dehydration and hypotension. Laboratory studies in these neonates show hyponatremia, hyperkalemia, and increased renin secretion (choice E).
Diagnosis: Congenital 21-hydroxylase deficiency

patient with medullary carcinoma of thyroid which has removed, and a section stained with Congo red reveals birefringent amyloid stroma. Genetic studies show that this patient has a familial cancer syndrome. In addition to hyperparathyroidism, the patient is advised that she is at risk of developing which of the following neoplastic diseases?

(A) Craniopharyngioma
(B) Follicular adenoma of thyroid
(C) Neuroblastoma
(D) Pheochromocytoma
(E) Pituitary adenoma

The answer is D: Pheochromocytoma.

Patients with the familial form of medullary carcinoma are often affected with MEN-2, which includes pheochromocytoma of the adrenal medulla and parathyroid hyperplasia or adenoma.
Diagnosis: Multiple endocrine neoplasia

A 45-year-old man with a recent history of bizarre behavior is seen by a psychiatrist, who recommends evaluation of his endocrine status. On physical examination, the patient appears moderately obese (BMI = 31 kg/m2), with mild hypertension, facial acne, fat accumulation in the supraclavicular fossae, and a protuberant abdomen. Laboratory studies demonstrate a neutrophilic leukocytosis, with a decrease in the percentage of lymphocytes and an absence of eosinophils. The hematocrit and hemoglobin are normal. There is a mild hypokalemia and mild metabolic alkalosis. The fasting serum glucose is within the reference range, but on a 2-hour glucose tolerance test, both the 60- and 120-minute samples had glucose concentrations greater than 200 mg/dL. Laboratory studies show free urinary cortisol of 156 mg per 24 hours (normal = 10 to 100 mg per 24 hours). Which of the following questions would be of most help in establishing a diagnosis?

(A) Are you experiencing muscle weakness?
(B) Are you experiencing shortness of breath?
(C) Are you receiving corticosteroids for some other disease?
(D) Do you have a family history of endocrine neoplasia?
(E) Have you received recent blood transfusions?

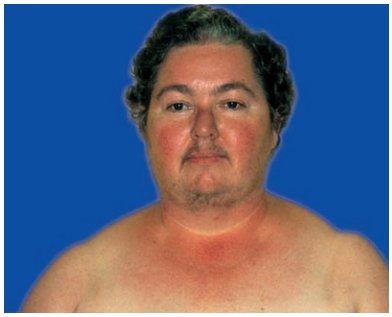
The answer is C: Are you receiving corticosteroids for some

other disease?
The most common cause of Cushing syndrome in the United States is chronic administration of corticosteroids in the treatment of immunologic and infl ammatory disorders. Muscle weakness (choice A) is a feature of Cushing syndrome but is nonspecific.
Diagnosis: Cushing syndrome

A 42-year-old woman presents with amenorrhea and emotional disturbances. You note upper truncal obesity and suspect Cushing syndrome. Laboratory studies reveal elevated serum levels of corticosteroids that can be lowered by administration of dexamethasone. Which of the following is the most likely cause of hypercortisolism in this patient?
(A) Adrenal cortical adenoma
(B) Adrenal cortical carcinoma
(C) Adrenal cortical hyperplasia
(D) Pheochromocytoma
(E) Pituitary adenoma
The answer is E: Pituitary adenoma.

The dexamethasone suppression test is used to distinguish between ACTH-dependent and ACTH-independent forms of Cushing syndrome. Dexamethasone suppresses pituitary secretion of corticotropin and, hence, hypercortisolism.
Adrenal cortical carcinoma (choice B) is often afunctioning tumor but is rare. Adrenal cortical hyperplasia (choice C) usually occurs secondary to a corticotropinsecreting pituitary tumor.
Diagnosis: Cushing disease

A 40-year-old woman with a history of diabetes complains of recent changes in her bodily appearance. A photograph of the patient is shown in the image. Laboratory studies reveal elevated serum corticosteroids and low serum corticotropin. Administration of dexamethasone does not lower serum levels of corticosteroids. This patient most likely has a tumor that originates in which of the following anatomic locations?



(A) Adrenal cortex, zona fasciculata
(B) Adrenal cortex, zona glomerulosa
(C) Adrenal cortex, zona reticularis
(D) Adrenal medulla

(E) Anterior pituitary

The answer is A: Adrenal cortex, zona fasciculata.

The typical adenoma is an encapsulated, firm, yellow, slightly lobulated mass, measuring about 4 cm in diameter, which secretes glucocorticoid hormones.
Diagnosis: Cushing syndrome

A 46-year-old woman with severe asthma presents with increasing weight and back pain for 9 months. The patient is taking corticosteroids for her asthma. An X-ray of the vertebrae will likely reveal which of the following pathologic fi ndings?

(A) Bone infarct
(B) Dislocation
(C) Osteomalacia
(D) Osteomyelitis
(E) Osteoporosis

The answer is E: Osteoporosis.

Long-term administration of corticosteroids causes increased bone resorption and decreased bone formation, thereby leading to osteoporosis.
Diagnosis: Cushing syndrome

A 50-year-old man complains of muscle weakness and dizziness of 3 months in duration. His blood pressure is 185/100 mm Hg. Laboratory studies show hypernatremia and hypokalemia. Endocrine studies reveal elevated serum aldosterone and low renin and angiotensin. BUN(*Blood Urea Nitrogen)* is 24 mg/dL, and creatinine is 1.2 mg/dL. Endocrinologic studies rule out Cushing syndrome. Which of the following is the most likely cause of hypertension in this patient?

(A) Adrenogenital syndrome
(B) Chronic adrenal failure
(C) Chronic renal failure
(D) Conn syndrome
(E) Pheochromocytoma

The answer is D: Conn syndrome.

Primary hyperaldosteronism (Conn syndrome) refl ects inappropriate secretion of

aldosterone by an adrenal adenoma (75%) or hyperplastic adrenal glands. Muscle weakness and fatigue are produced by the effects of potassium depletion on skeletal muscle. Less Common syndrome is associated with low or normal renin levels. Chronic renal failure (choice C) is excluded by normal BUN and creatinine.
Diagnosis: Conn syndrome

A 34-year-old man complains of sudden attacks of dizziness, blurred vision, and excruciating headaches of 4 months in duration. During one of these attacks, his blood pressure was 180/120 mm Hg. The patient's father had been treated for thyroid cancer about 15 years ago. Laboratory studies show normal serum levels of aldosterone, renin, and angiotensin. A 24-hour urinalysis reveals increased metanephrines. Episodic hypertension in this patient is most likely caused by a tumor in which of the following endocrine organs?

(A) Adrenal
(B) Kidney
(C) Parathyroid
(D) Pituitary
(E) Thyroid

The answer is A: Adrenal.

Pheochromocytoma is a rare tumor of chromaffi n cells of the adrenal medulla that secretes catecholamines. Such tumors also originate in extra-adrenal sites, in which case they are termed paragangliomas. The clinical features associated with pheochromocytoma are caused by the release of catecholamines.
Diagnosis: Pheochromocytoma

If you have any questions you want to add, please send it to

Revisiontest432@gmail.com

Good luck

Team Leaders :
Khalid Al-Osaimi& Lulu Al-Obaid