



MED437
KING SAUD UNIVERSITY



Adrenal Gland

Lecture (3)

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هذا العمل مبني بشكل أساسي على عمل دفعة 436 مع المراجعة والتدقيق
وإضافة الملاحظات ولا يعني عن المصدر الأساسي للمذاكرة

- **Important**
 - **Doctors Notes**
 - Notes/Extra explanation
- {وَمَنْ يَتَوَكَّلْ عَلَى اللَّهِ فَهُوَ حَسْبُهُ}

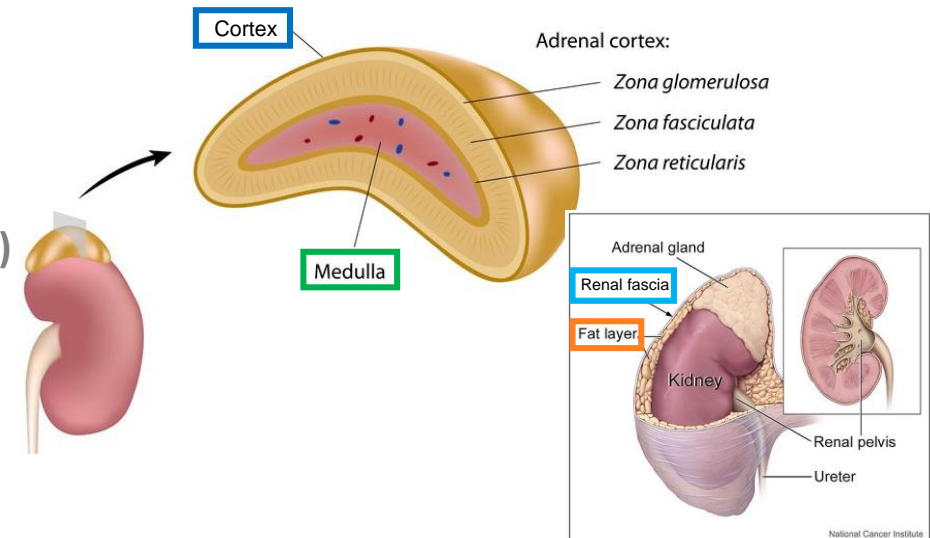
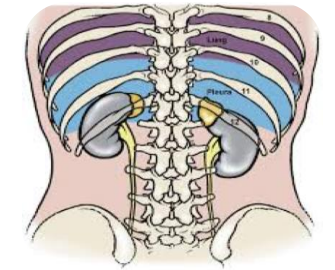
■ Objectives

At the end of the lecture, students should be able to:

- ✓ **Location, shape and relations of the **right** and **left adrenal glands**.**
- ✓ **Blood supply, lymphatic drainage and nerve supply of **right** and **left adrenal glands**.**
- ✓ **Parts of **adrenal glands** and function of each part.**

Suprarenal Gland = Adrenal gland "الغدة الكظرية"

- The **suprarenal (adrenal) gland** is a component of the **hypothalamic-pituitary-suprarenal axis** also called "stressed axis" that is responsible for coordinating **stress response** and **metabolism**.
- They are **yellowish retroperitoneal¹** organs that lie on the upper poles of the kidneys, **At the level of the last thoracic vertebra (T12)** The kidney extends from T12 to L3.
- Each gland has an **outer yellow cortex** and an **inner dark brown medulla**.
- The suprarenal gland is enclosed within the **renal fascia** with the kidney but in a **separate compartment**, that allow the two organs to be separated easily during surgery .
- It is **separated from the kidney** by the **perirenal fat²**

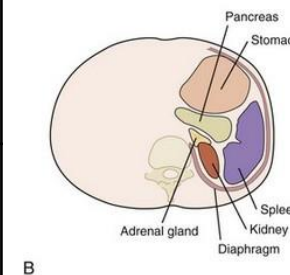
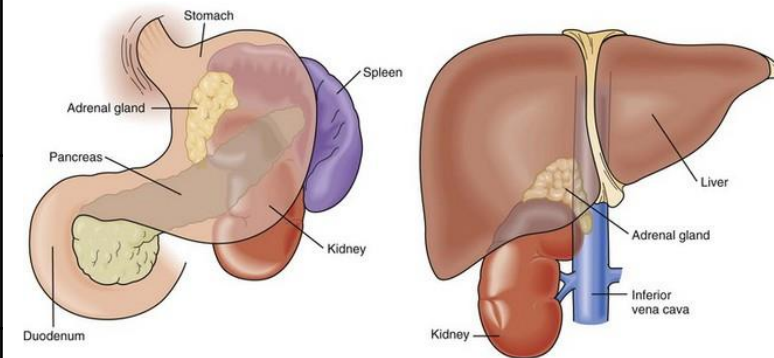
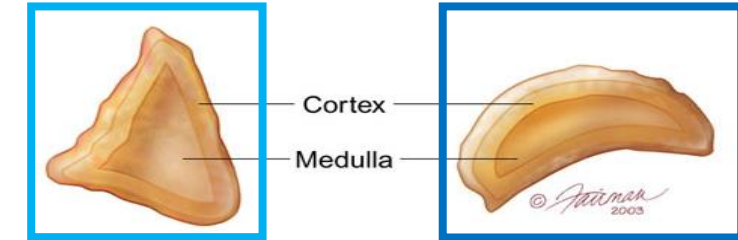


1- Retroperitoneal: lying posterior to the peritoneum (covers it anteriorly only)

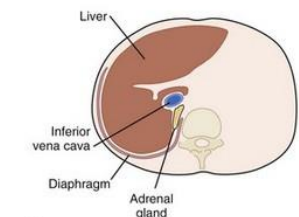
2- Recall the kidney is covered by 4 layers: capsule, perirenal fat, renal fascia, pararenal fat.

Right & left Suprarenal Gland

		<u>Right Suprarenal Gland</u>	<u>Left Suprarenal Gland</u>
Shape		Pyramidal or triangular shape	Crescentic or semilunar shape
	Location	Caps the upper pole of the right kidney So it is at the level of T12	Extends along the medial border of the left kidney from the upper pole to the hilum Its level is from T12 to L2
Relations	Anterior	1. Right lobe of liver 2. Inferior vena cava	1. Pancreas 2. Lesser sac 3. Stomach
	Posterior	Diaphragm	
	Medial	1. Celiac plexus 2. Ganglia	



B



C

Suprarenal Gland Supply

Arterial: The arteries supplying each gland are **three** in number:

- Superior suprarenal from inferior phrenic artery.
- Middle suprarenal from abdominal aorta.
- Inferior suprarenal from renal artery.

Venous drainage: A **single vein** (adrenal vein) emerges from the hilum of each gland and drains into :

- The inferior vena cava (directly¹) on the **right** side.
- The left renal vein (then to the IVC) on the **left** side

1- Because the IVC located to the right of the midline its directly

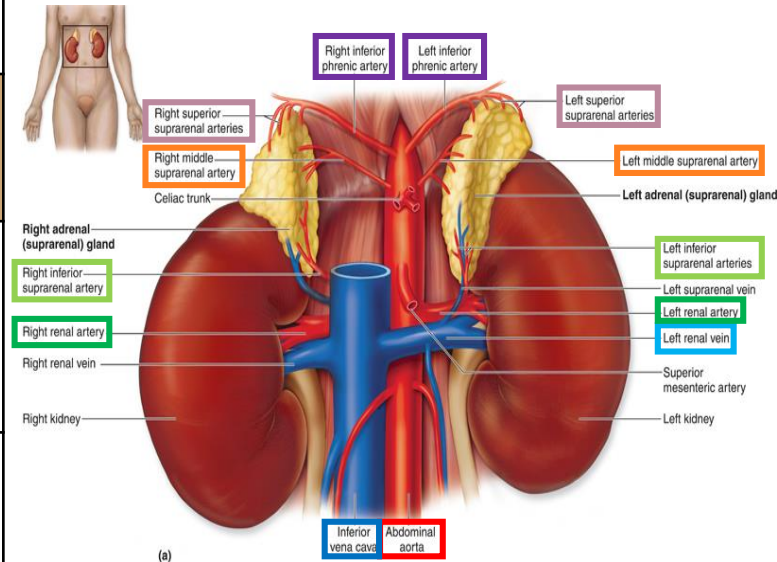
Nerve supply

- **Preganglionic sympathetic** fibers derived from the **splanchnic nerves** supply the glands
- Most of the nerves (**postganglionic**) end in the medulla of the gland.

Lymph drainage

- The lymph drains into the **lateral aortic² lymph nodes**.
- 2- Also called **paraaortic or lumbar lymph nodes**.

*The inferior phrenic and renal arteries are branches of the abdominal aorta.



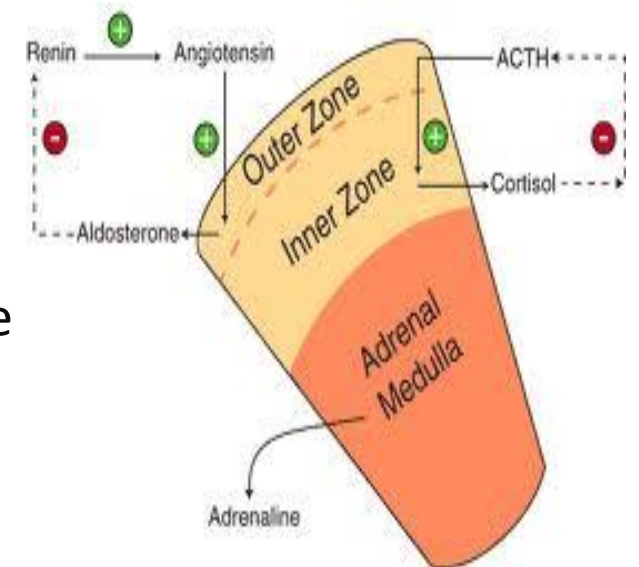
REMEMBER!

Right adrenal vein → IVC

Left adrenal vein → left renal vein → IVC

Suprarenal Gland Function

- The **Cortex** of the suprarenal glands secretes hormones that include:
related to metabolism.
 - **Mineral corticoids**, which are concerned with the control of **fluid & electrolyte balance**
 - **Glucocorticoids**, which are concerned with the control of the **metabolism** of **carbohydrates, fats, and proteins**
 - **Small amounts of Sex hormones**, which probably play a role in the **prepubertal development** of the **sex organs**.
- The **Medulla** (**related to stress**) of the suprarenal glands secretes the **catecholamines: epinephrine & norepinephrine**.



SUMMARY

Adrenal gland

- retroperitoneal.
- At the level of the last thoracic vertebra (T12).
- Enclosed within the renal fascia.

	Right suprarenal gland		Left suprarenal gland
Shape	Pyramidal		Crescentic
Location	Caps upper pole of the right kidney		Along the medial border from upper pole to hilus
Relation	Anterior	1. right lobe of liver 2. IVC	1. Pancreas 2. Lesser sac 3. Stomach
	Posterior	diaphragm	
	inferior	celiac plexus & ganglia	
Blood supply	1. Superior suprarenal from inferior phrenic artery. 2. Middle suprarenal from abdominal aorta 3. Inferior suprarenal from renal artery.		
Lymph drainage	Lateral aortic lymph nodes.		
Venous drainage	Right adrenal vein drain into IVC		Left adrenal vein drain into left renal vein
Nerve supply	Preganglionic sympathetic fibers from splanchnic nerve		

MCQs

1. The hypothalamic--pituitary-- suprarenal axis is responsible for:

- A. Control stress
- B. Control stress and metabolism
- C. Control lipid digestion

2. The suprarenal gland is:

- A. Yellowish retroperitoneal
- B. Reddish retroperitoneal
- C. Brown retroperitoneal

3. The suprarenal gland is at the level of:

- A. T11
- B. T12
- C. L1

4. The supra renal gland is separated from the kidney by:

- A. Adrenal fascia
- B. Perirenal fat
- C. Peritoneal fat

5. The right supra renal gland is:

- A. Crescentic in shape
- B. Circular in shape
- C. Pyramidal in shape

6. Which of the following is anterior to the Right supra renal :

- A. Inferior vena cava
- B. Diaphragm
- C. Celiac plexus

7. Which of the following play a role in the prepubertal development of sex organs?

- A. Mineral corticoids
- B. Glucocorticoids
- C. Sex hormones

8. Nerve fibers that are supplying the adrenal gland are :

- A. Preganglionic sympathetic
- B. Postganglionic sympathetic
- C. Preganglionic parasympathetic

9. Superior suprarenal artery is a branch of?

- A. Superior phrenic artery
- B. Inferior phrenic artery
- C. Abdominal aorta

10. A lesion in the left renal vein may affect which of the following venous drainage :

- A. Left suprarenal gland
- B. Right suprarenal gland
- C. Both



Good luck
Special thank for team436 ❤️

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- References:
 1. Girls' & Boys' Slides
 2. Greys Anatomy for Students
 3. TeachMeAnatomy.com

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