



HISTOLOGY

Endocrine Block – 432 Histology Team

Lecture 1: Pituitary Gland

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Color Guide:

- **Black:** Slides.
- **Red:** Important.
- **Green:** Doctor's notes (Female).
- **Blue:** Doctor's notes (Male).
- **Orange:** Explanation.

Objectives

At the end of this lecture, you should describe the microscopic structure and the function of:

1. The microscopic structure of the different parts of the pituitary gland in correlation with their functions.
2. The hypophyseal portal circulation; components and significance.

Mind Map

PITUITARY GLAND

(A) ADENOHYPHYSIS

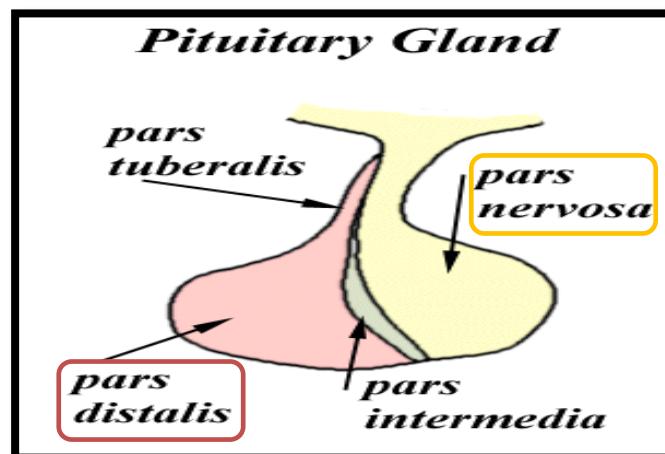
CEREBRI (anterior lobe):

- 1- **Pars Distalis**
(**pars anterior**).
- 2- Pars Tuberalis.
- 3- Pars Intermedia.

(B) NEUROHYPHYSIS

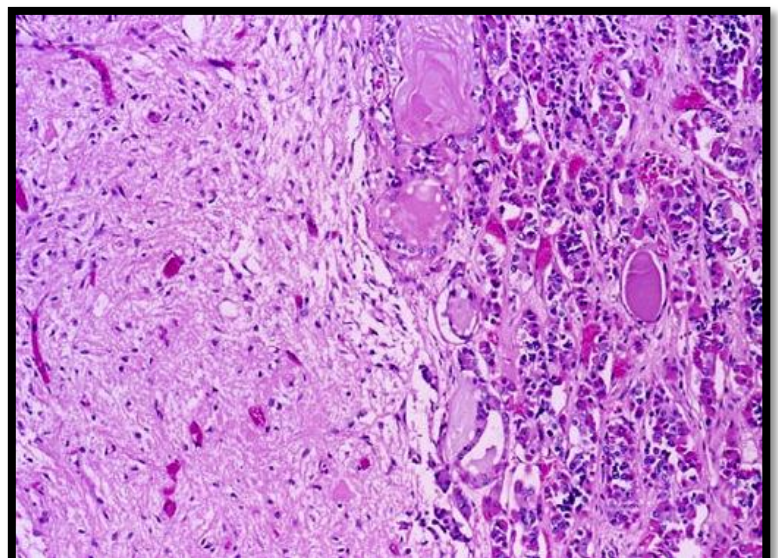
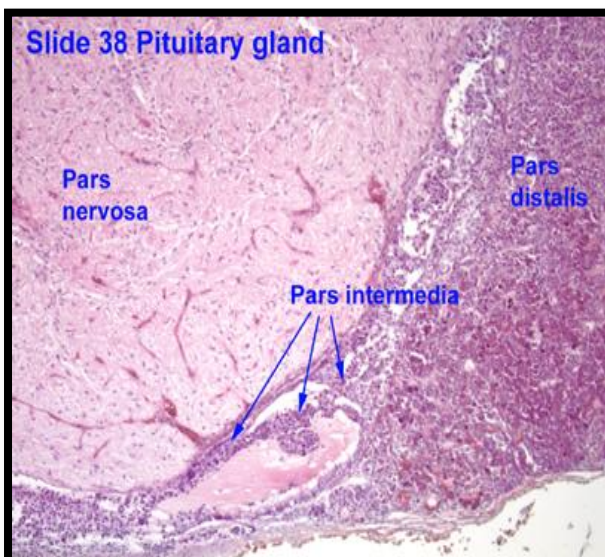
CEREBRI (posterior lobe):

- 1- Median eminence.
- 2- Infundibulum: Neural (Infundibular) Stalk.
- 3- **Pars Nervosa**.



Pituitary Gland

Slide 38 Pituitary gland



PARS DISTALIS

Types of parenchymal cells:

1- Chromophils

A-Acidophils (red):

- 1- Somatotrophs (GH secreting cells).
- 2- Mammotrophs (Prolactin secreting cells); *Increase during lactation and late pregnancy.*

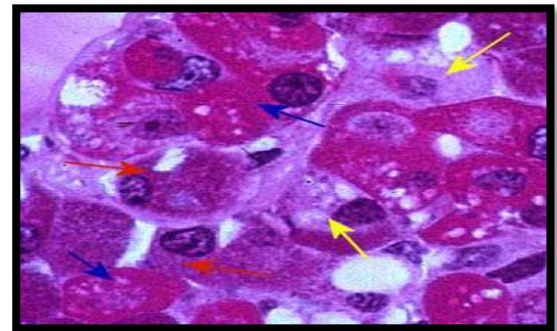
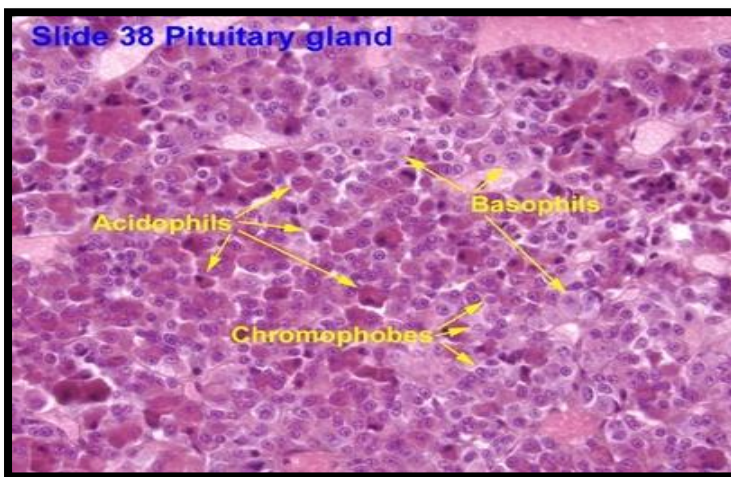
B- Basophils (blue):

- 1- Thyrotrophs (TSH secreting cells).
- 2- Gonadotrophs (Gonadotropic cells) (FSH, LH).
- 3- Corticotrophs (ACTH cells).

2- Chromophobes (pale)

May represent:

- 1- Stem cells.
- 2- Degranulated chromophils.
- 3- Degenerated cells.



Blue arrow: Acidophils.
Red arrow: Basophils.
Yellow arrow: Chromophobes.

PARS NERVOSA

CONTENTS:

1- Unmyelinated axons

- Unmyelinated axons of secretory neurons situated in **supraoptic & paraventricular** nuclei (i.e. *Axons of hypothalamo-hypophyseal tract*).
- **Function:**
Storage & release of:
 1) Vasopressin (ADH; antidiuretic hormone)
 By Supraoptic nuclei.
 2) Oxytocin: *By Paraventricular nuclei.*

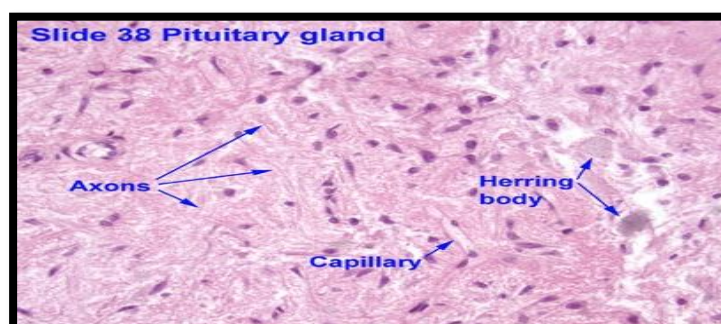
2- Herring bodies

- Are distensions of the axons in pars nervosa.
- Representing **accumulation of neurosecretory granules** at axon termini and along the length of the axons in pars nervosa.

3- Pitocytes

- Are **glial-like cells** in pars nervosa.
 - **Structure:**
Have numerous cytoplasmic processes.
 - **Function:**
Support the axons of the pars nervosa.
- N.B. No secretory or neuronal cells in pars nervosa.**

4- Fenestrated blood capillaries



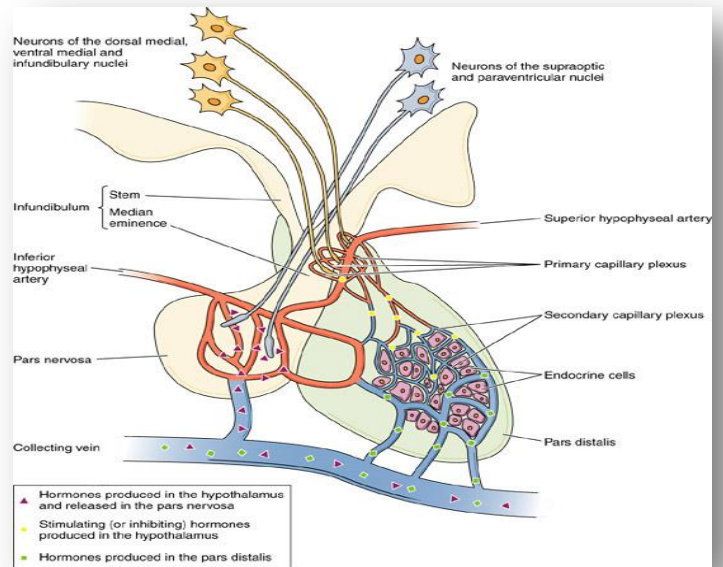
BLOOD SUPPLY

1- Superior Hypophyseal Arteries (Right & Left)

- To **median eminence** & **neural stalk**.
- [**Hypophyseal Portal System**]:-
- a) 1ry capillary plexus of fenestrated capillaries.
- ↓
- b) Hypophyseal portal Veins (or venules).
- ↓
- c) 2ry capillary plexus of capillaries in adenohypophysis (**mainly in pars distalis**).
- It carries **neurohormones** from median eminence to adenohypophysis.

2- Inferior Hypophyseal Arteries (Right & Left)

- Mainly to **pars nervosa**
- Not** participating in hypophyseal portal circulation.



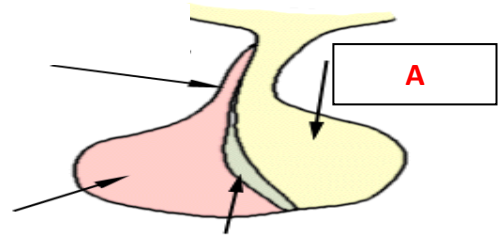
Summary:

By: Shaimaa Alrefaie PITUITARY GLAND

Components					Blood Supply		
Adenohypophysis Cerebri			Neurohypophysis Cerebri		<p>1. Superior Hypoph. Arteries (Rt&Lt): To median eminence & neural stalk.</p> <p>- 1ry capillary plexus of fenestrated capillaries.</p> <p>- Hypophyseal portal veins (venules).</p> <p>- 2ry capillary plexus of capillaries in adenohypophysis.</p> <p>{ Hypophyseal portal system } It carries neurohormones from median eminence to adenohypophysis.</p> <p>2. Inferior Hypoph. Arteries (Rt & Lt): Mainly to pars nervosa, they are NOT participating in hypophyseal portal circulation.</p>		
Pars distalis (pars anterior)		Pars tuberalis	Pars intermedia	Median eminence		Infundibulum	Pars Nervosa
Types of parenchymal cells:						Neural stalk.	<p>1. Unmyelinated axons of secretory neurons situated in supraoptic & paraventricular nuclei</p> <p>- Function: storage & release of: * Vasopressin (ADH). * Oxytocin.</p> <p>2. Fenestrated blood capillaries.</p> <p>3. Herring Bodies: - Are distensions of the axons in pars nervosa. - Representing accumulation of neurosecretory granules at axon termini.</p> <p>4. Pitucytes: Are glial like cells in Pars Nervosa.</p> <p>- Structure: Neumerous cytoplasmic process.</p> <p>- Functions: Support the axons of pars nervosa.</p> <p>N.B. NO secretory or neural cells in pars nervosa.</p>
1- Chromophils	2- Chromophobes						
<p>a) Acidophils:</p> <ul style="list-style-type: none"> - Somatotrophs (GH). - Mammotrophs (Prolactin) <li style="color: red;">Increasing during lactation. <p>b) Basophilic:</p> <ul style="list-style-type: none"> - Thyrotrophs (TSH). - Gonadotrophs (FSH, LH) - Corticotrophs (ACTH). 	<ol style="list-style-type: none"> 1. Stem cells. 2. Degranulated chromophils. 3. Degenerated cells. 	----	----	----			

Questions

Pituitary Gland



Q1: Identify structure A in the pic:

- A. Pars Distalis.
- B. Pars Intermedia.
- C. Pars Tuberalis.
- D. Pars Nervosa.

Q2: Which one of the following increase during lactation:

- A. Mammatrophs.
- B. Somatotrophs.
- C. Thyrotrophs.
- D. Gonadotrophs.

Q3: Which one of the following supports the axons of the pars nervosa:

- A. Herring bodies.
- B. Pitocytes.
- C. Thyrotrophs.
- D. Corticotrophs.

Q4: the PARS NERVOSA Store & release:

- A. GH.
- B. TSH.
- C. ADH.
- D. ACTH.

Q5: the Hypophyseal Portal System is formed by:

- A. Superior hypophyseal arteries.
- B. Inferior hypophyseal arteries.

Answers

1	2	3	4	5
D	A	B	C	A



**If you have any questions or suggestions please do not
hesitate to contact us on:**

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Best of luck!

