

GUIDELINES
Students' independent work during preparation to practical lesson

<i>Academic discipline</i>	HUMAN ANATOMY
<i>Topic</i>	ENDOCRINE SYSTEM

Preamble

The main goal of this guidelines is description of the all lessons and exact information that should be prepared. During preparation students should use Textbook 'Human anatomy' (Cherkasov, Kovalchuk et al.), Work Book (Coloring book), 'Atlas of human anatomy' (Sobotta), 'Anatomy international nomenclature' (Cherkasov), 'Tests for preparation of anatomy practical classes' (Kancer) and all other sources that teacher proposes to use.

1. The relevance of the topic:

Endocrine system is responsible for regulation of main functions in the human body along with nervous system. The influence of hormones of endocrine glands has a significant importance in homeostasis, metabolism, reproduction, growth of the organism, differentiation of organs and tissues.

2. Educational goals of the lesson:

To have an idea about (level of initial knowledge):

- *features of the structure of parenchymatous and tubular organs;*
- *features of external and internal structure of bones;*
- *define the concept of "endocrine gland" or "gland of the internal secretion" and "hormone";*
- *to understand the functions of the endocrine system.*

To know (level of reproductive theoretical knowledge):

- *to classify organs of endocrine system;*
- *to analyze the topography and anatomy of endocrine glands;*
- *to find out the features of the structure of the organs of the endocrine system;*
- *to understand a connection: gland → hormone → function;*
- *interpret the pattern of changes in the structure of the endocrine organs in different age of the person.*

To master the skills of demonstration on anatomical models and posters (level of practical skills):

- *thyroid and parathyroid glands: describe general anatomy, function, to demonstrate in atlases, tables and preparations;*
- *pancreatic islets and endocrine part of the reproductive glands: general structure, function, demonstration on drawings of textbooks and atlases;*
- *epiphysis and pituitary gland: describe general anatomy, function, demonstrate on preparations and tables;*

To explore (Creative Level):

- analysis of anatomical and physiological views of scientists over the last five years.
- prepare a presentation.

3. Educational purposes:

- forming a motivation to study anatomy of the endocrine system in students for the further use in diagnostic and medical practice;
- to promote the formation of a responsible attitude towards the subject as a base of the future profession of physician;
- to promote developing of students' attention, memory and clinical thinking.

4. Previous knowledge from disciplines:

- Biology (basic knowledge of the anatomy and function of endocrine organs);
- Latin (basic Latin terminology);
- Chemistry (influence of hormones of the endocrine system on other systems and organs of a human body);

5. Disciplines that provided:

- Histology and embryology: structure and development of endocrine organs and their identification;
- Physiology and Pathological Physiology: Functional Features of endocrine and personal BODIES normal;
- Endocrinology and Immunology: structural and functional features of the rules and endocrine registered BODIES.

6. Integration between subjects:

Human anatomy:

- Features of the structure and location of the organs of endocrine system;
- Determination of topographic areas of the human body from the anatomical section nomenclature, axes and planes;
- Features of the structure of parenchymatous organs of the human body from the introduction to splanchnology;
- Structure and functions of the pancreas from the anatomy of the digestive tract;
- Structure and function of the testes and ovaries from the section of the anatomy of genital organs;
- Age peculiarities of changes in the shape and structure of endocrine organs.

7. Obtained skills:

- Demonstration of anatomical specimens of endocrine organs: thyroid, adrenal glands, pancreas, testes, ovaries, pituitary gland and epiphysis;
- Identification of areas of the body.

8. Sources:

Anatomy international nomenclature	http://anatom.ua/anatomical-terminology/
LECTURE	https://anatom.ua/basis/english/lectures/
Textbook 'Human anatomy' (2019)	PP. 265-277 http://anatom.ua/basis/english/online-book-in-english/
Work Book (Coloring book 2019)	PP. 86-88
Atlas of human anatomy (Sobotta)	
QUIZES	https://anatom.ua/basis/english/tests/
VIDEO	https://anatom.ua/basis/video/

9. WRITE A SHORT DESCRIPTION!

Check yourself.

You should be able to describe, compare and classify:

1. *Endocrine glands: classification.*
2. *Thyroid gland: topography (holotopy, skeletotopy, syntopy), parts, structure, function.*
3. *Parathyroid glands: topography, structure, function.*
4. *Topography of right and left adrenal glands (holotopy, skeletotopy, syntopy), structure, function. Blood supply and innervation of the adrenal gland.*
5. *Paraganglia: topography, structure, function.*
6. *Pituitary gland: topography, parts, function.*
7. *The pineal body: topography, function.*
8. *The endocrine part of the pancreas: structure, function.*
9. *Other endocrine structures.*

10. QUIZES

Endocrine system

1. *Which of the following structures is located superiorly to the pituitary gland?*
 - a. *Sphenoid sinus*
 - b. *Cavernous sinus*
 - c. *Optic chiasm*
 - d. *Basilar artery*
 - e. *Infundibulum*
2. *Which of the following structures is located anteriorly to the pituitary gland?*
 - a. *Sphenoid sinus*
 - b. *Cavernous sinus*
 - c. *Optic chiasm*
 - d. *Basilar artery*
 - e. *Infundibulum*
3. *Which of the following structures is located posteriorly to the pituitary gland?*
 - a. *Sphenoid sinus*
 - b. *Cavernous sinus*
 - c. *Optic chiasm*
 - d. *Diaphragma sellae*
 - e. *Posterior intercavernous sinus*
4. *Which of the following structures has a central opening to allow passage of the infundibulum?*
 - a. *Sphenoid sinus*
 - b. *Cavernous sinus*
 - c. *Optic chiasm*
 - d. *Diaphragma sellae*
 - e. *Posterior intercavernous sinus*
5. *Laboratory study of the 56-year old patient's blood showed increase in blood sugar. Which endocrine gland is affected?*
 - a. *Glandula pineale*
 - b. *Glandula suprarenalis*

- c. *Glandula thyroidea*
 - d. *Glandula parathyroidea*
 - e. *Pancreas*
6. *In adult, calcium is frequently deposited in the epiphysis cerebri and then serves as a landmark on an x-ray investigation of brain. Epiphysis cerebri (pineal body) belongs to:*
 - a. *Mesencephalon*
 - b. *Telencephalon*
 - c. *Myelencephalon*
 - d. *Metencephalon*
 - e. *Diencephalon*
 7. *A patient has Recklinghausen's disease which occurs in case of the parathyroid glands hyperfunction. The examination revealed kidney stones, chest limbs, bone distortion, missing teeth, spontaneous fractures often occur. The increased amount of which hormone was detected in the plasma of the patient?*
 - a. *Triiodothyronine*
 - b. *Parathyrin*
 - c. *Calcitonin*
 - d. *Tetraiodothyronine*
 - e. *Thyrotropin*
 8. *Which of the following structures is located laterally to the pituitary gland?*
 - a. *Sphenoid sinus*
 - b. *Cavernous sinus*
 - c. *Optic chiasm*
 - d. *Basilar artery*
 - e. *Infundibulum*
 9. *What structure can become compressed in a pituitary adenoma, leading to problems with vision?*
 - a. *Basilar artery*
 - b. *Cavernous sinus*
 - c. *Optic chiasm*
 - d. *Pons*
 - e. *Infundibulum*
 10. *At extirpation of the lateral lobes of thyroid gland great care must be taken to avoid removing the parathyroid glands, which are situated:*
 - a. *In front of lobes*
 - b. *Behind the lobes*
 - c. *Laterally from lobes*
 - d. *Medially from lobes*
 - e. *Between the lobes*
 11. *A patient came to the doctor with complaints of tremor of the fingers and the whole body, muscle weakness, palpitations, sleep disorders, weight loss with increased appetite. Symptoms of which gland's disorder are observed in the patient?*
 - a. *Pituitary*
 - b. *Pancreatic*
 - c. *Thyroid*
 - d. *Adrenal*
 - e. *Epiphysis*
 12. *How is the pituitary gland accessed surgically?*
 - a. *Via the cavernous sinus*
 - b. *Via the sphenoid sinus*
 - c. *Via the optic chiasm*
 - d. *Via the infundibulum*

- e. *Via the dorsum sellae (posterior wall of the sella turcica)*
13. *What part of the pituitary gland is mainly responsible for hormone synthesis and secretion?*
- Infundibulum*
 - Hypothalamus*
 - Pars tuberalis*
 - Pars intermedia*
 - Pars anterior*
14. *Patient with impaired respiratory function must undergo tracheostomy. We should remember that the isthmus of the thyroid gland is often located at the level of the following cartilaginous rings of the trachea:*
- II- IV*
 - I-II*
 - IV-V*
 - V-VI*
 - III-IV*
15. *Examination of the 27-year old male showed increase in the size of hand, foot and lower jaw, deformity of the joints and spine, hormonal disorders (impotence, testicular atrophy). What gland is damaged?*
- anterior pituitary*
 - adrenal glands*
 - pineal body*
 - thyroid gland*
 - parathyroid glands*

ANSWERS:

1	C	11	C
2	A	12	B
3	E	13	E
4	D	14	B
5	E	15	A
6	E		
7	B		
8	B		
9	C		
10	B		