

MINISTRY OF PUBLIC HEALTH OF UKRAINE  
BOGOMOLETS NATIONAL MEDICAL UNIVERSITY  
DEPARTMENT OF OPHTHALMOLOGY

**WORKBOOK**  
**FOR INDEPENDENT WORK FOR STUDENTS**  
**OF DENTAL FACULTY**  
**FOR THE COURSE "OPHTHALMOLOGY"**  
**(new edition)**

Kyiv – 2024

Authors: professor, doctor of medical sciences Zhaboiedov D.G., professor, doctor of medical sciences Vitovska O.P., associate professor, candidate of medical sciences Skripnichenko I.D., associate professor, candidate of medical sciences Greben N.K., assistant PhD Komarova T.M.

Approved for printing at the meeting of the department of ophthalmology of the Bogomolets National Medical University (protocol №1 dated August 29, 2024).

## TOPIC: ANATOMY OF THE EYE

### Competence of the student.

With the help of the eye, a person receives more information about the world around him than with the help of all other organs combined. A doctor of any specialty should know the problem of the eye.

### The educational goal.

After studying the topic, students should **know**:

- anatomical and topographic features of the visual organ: eyeball, auxiliary apparatus of the eye, conducting and central elements of the visual analyzer;

### be able:

- clearly recognize the anatomical elements of the eye in clinical, radiological, ultrasound and tomographic examinations.

### Tasks for the independent preparation for classes.

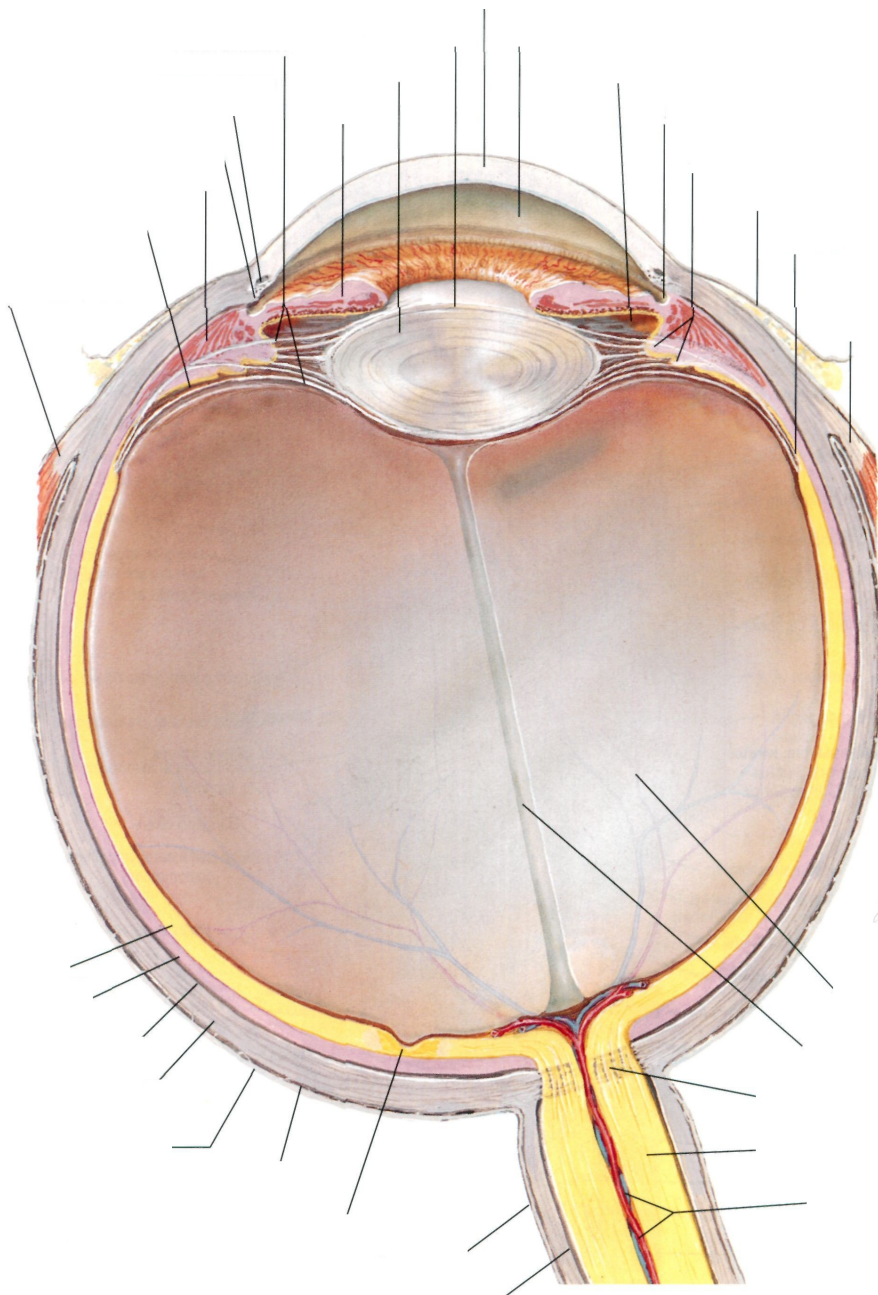
#### Approximate map for the independent work with literature.

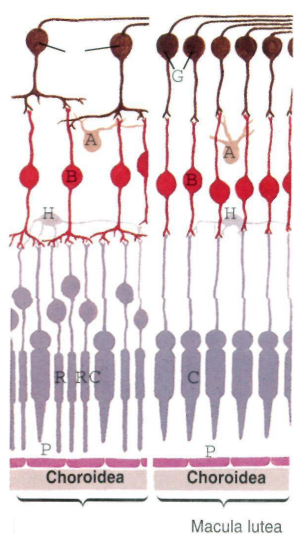
| TASK                                                                                 | ANSWER                                 |
|--------------------------------------------------------------------------------------|----------------------------------------|
| Name the layers of the eyeball.                                                      |                                        |
| Name the muscles of the eyelids and the nerves that innervate them.                  |                                        |
| Name the anatomical elements of the lacrimal apparatus and lacrimal ducts.           |                                        |
| List the bones involved in the formation of the orbit.                               | 1.<br>2.<br>3.<br>4.<br>5.<br>6.<br>7. |
| Name the layers of the cornea and its horizontal diameter in newborns and adults.    |                                        |
| Name the parts of the vascular tract. Record the blood supply to the vascular tract. |                                        |

|                                                                           |  |
|---------------------------------------------------------------------------|--|
| Write down the names of the branches of the central retinal artery.       |  |
| Name three retinal neurons. Record the histological layers of the retina. |  |

**The list of key terms, parameters, characteristics which the student should learn while preparing for lessons.**

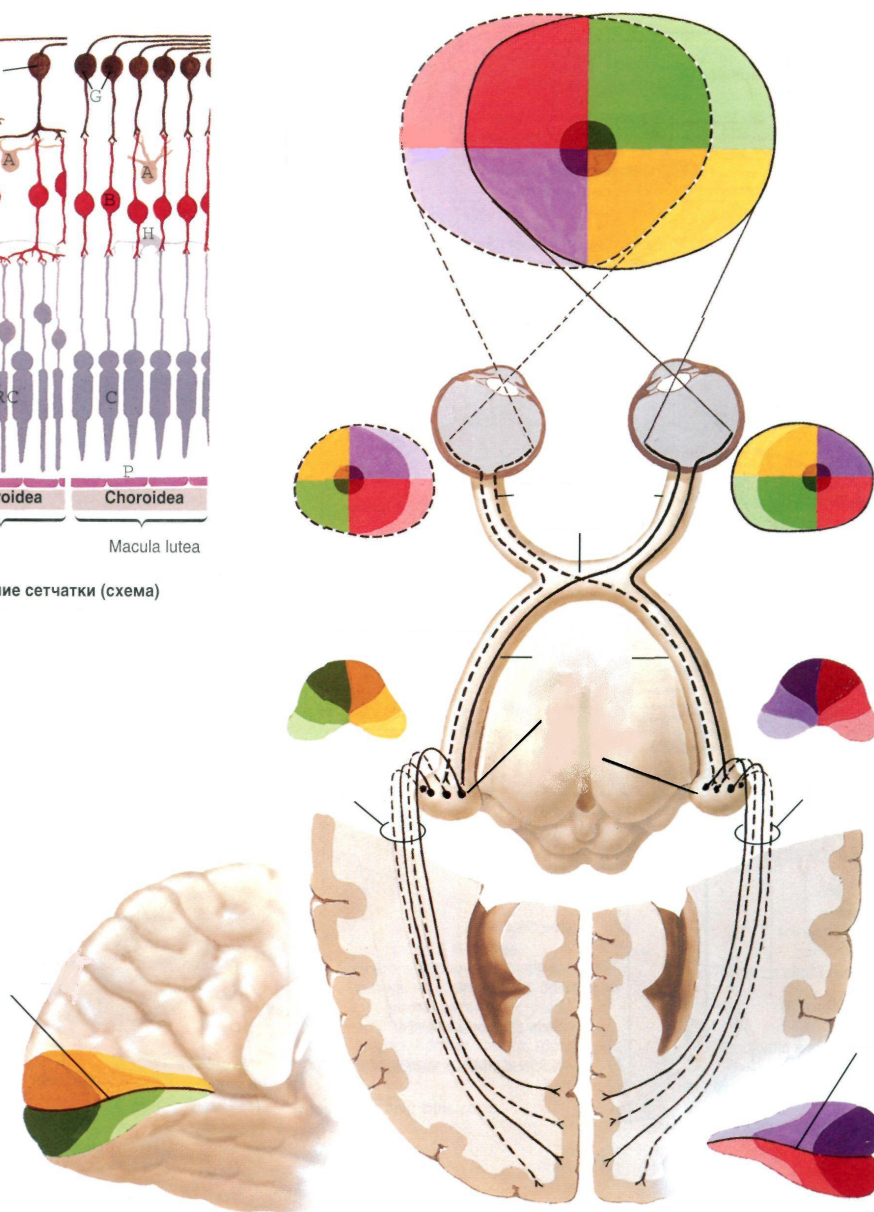
| <b>TERM</b>                          | <b>ANSWER</b> |
|--------------------------------------|---------------|
| Papilla lacrimalis                   |               |
| Punctum lacrimalis                   |               |
| Canaliculus lacrimalis               |               |
| Musculi levator palpebrae superioris |               |
| Glandula lacrimalis                  |               |
| Saccus lacrimalis                    |               |
| Ductus nasolacrimalis                |               |
| Tunica conjunctiva                   |               |
| Cornea                               |               |
| Limbus                               |               |
| Lamina cribrosa                      |               |
| Sclera                               |               |
| Iris                                 |               |
| Corpus ciliare                       |               |
| Choroidea                            |               |
| Lens                                 |               |
| Zonula ciliaris                      |               |
| Corpus vitreum                       |               |
| Retina                               |               |
| Nervus opticus                       |               |

**Schemes and drawings.**



Строение сетчатки (схема)

A -  
B -  
C -  
G -  
H -  
P -  
R -



### Tasks for independent work.

| № | TASK                                                                                       | ANSWER |
|---|--------------------------------------------------------------------------------------------|--------|
|   | Name the external muscles of the eyeball, indicate their innervation.                      |        |
|   | Which muscles turn the eyeball:<br>a) inside?<br>b) outside?<br>c) up?<br>d) down?         |        |
|   | What pathology is observed in case of violation of the sympathetic innervation of the eye? |        |
|   | What are the symptoms of upper eyelid syndrome?                                            |        |
|   | Which iris muscles are used to move the pupil? Their innervation?                          |        |

#### Literature.

Main:

1. Ophthalmology : Textbook / O. P. Vitovska [et al.] ; ed. O. P. Vitovska. - Kyiv : AUS Medicine Publishing, 2017. - 647 p. : ill., tab. - Ref.: p. 639-644. - Ind.: p. 645-647.
2. Comprehensive Ophthalmology by A. K. Khurana 4th Ed. Anshan Publishers; 4th edition (December 15, 2007). 600 pages
3. Clinical Ophthalmology: A Systematic Approach: Expert Consult: Online and Print (Expert Consult Title: Online + Print) 7th Edition by Jack J. Kanski MD MS FRCS FRCOphth (Author), Brad Bowling FRCSEd(Ophth) FRCOphth FRANZCO (Author). Saunders; 7th edition (May 16, 2011). 920 pages

### TOPIC: FUNCTIONS OF THE EYE

#### Competence of the student.

The eye is an analytical system in which the reception of light stimuli is realized with their subsequent transformation into a subjective visual image that provides the functions of the visual organ. Mastering the basic methods of studying the functions of the eye allows you to detect pathology of the visual organ in the early stages of the disease.

#### The educational goal.

After studying the topic, students should **know**:

- functions of the eye;
- methods for investigation of the functions of the eye;

#### **be able:**

- determine visual acuity by subjective method;
- determine color perception with the help of Rabkin's polychromatic tables;

- determine the visual field by the control method and by means of an arc perimeter;
- determine the dark adaptation by the approximate method.

**Practical work (tasks) performed in class.**

1. Determining of visual acuity by subjective method.
2. Determination of color perception using polychromatic tables.
3. Determination of visual field by the control method and using the perimeter.
4. Determination of dark adaptation by the approximate method.

**Tasks for the independent preparation for classes.**

**Approximate map for the independent work with literature.**

| TASK                                                                                                           | ANSWER |
|----------------------------------------------------------------------------------------------------------------|--------|
| What is visual acuity? What is the formula for checking the visual acuity?                                     |        |
| List the methods for checking the visual acuity. What objective method of central vision checking do you know? |        |
| What is the principle for constructing the tables for the study of visual acuity?                              |        |
| What theory of color vision is recognized now?                                                                 |        |
| What disorders of color perception do you know?                                                                |        |
| What is the principle for construction the Rabkin's tables?                                                    |        |
| Define the visual field.                                                                                       |        |
| Methods of visual field examination.                                                                           |        |
| Describe the control method of visual field examination.                                                       |        |
| In what units is the visual field measured? Normal limits of visual field.                                     |        |



|                                                                                                                          |  |
|--------------------------------------------------------------------------------------------------------------------------|--|
| Types of visual field disorders.                                                                                         |  |
| Give a complete description of the physiological scotoma "blind spot".                                                   |  |
| What is light perception?                                                                                                |  |
| Types of adaptation. Methods of research of light perception. Describe an indicative method of studying dark adaptation. |  |
| What is hemeralopia? What are the types of hemeralopia?                                                                  |  |

**The list of key terms, parameters, characteristics which the student should learn while preparing for lessons.**

| <b>TERM</b>   | <b>ANSWER</b> |
|---------------|---------------|
| Anopia        |               |
| Monochromacy  |               |
| Dichromacy    |               |
| Trichromacy   |               |
| Protanopia    |               |
| Deutanopia    |               |
| Tritanopia    |               |
| Protanomaly   |               |
| Deuteranomaly |               |
| Tritanomaly   |               |
| Scotoma       |               |
| Blind spot    |               |
| Hemeralopia   |               |

### Tasks for independent work.

| №   | TASK                                                                                                                                   | ANSWER |
|-----|----------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1.  | The patient counts his fingers at a distance of 4m. Calculate his visual acuity.                                                       |        |
| 2.  | The patient has no objective vision. How to check visual acuity?                                                                       |        |
| 3.  | The patient sees the light and correctly determines its direction. Record the visual acuity of this patient.                           |        |
| 4.  | The patient has no objective vision, he does not feel light. What is the patient's visual acuity?                                      |        |
| 5.  | The mother brought a 2-month-old baby to the ophthalmologist and wants to know if the baby sees. How will you check the visual acuity? |        |
| 6.  | You examine the newborn. How to check if he sees or not?                                                                               |        |
| 7.  | The patient reads 8 lines of the Golovin-Sivtsev table, making a mistake in 2 characters. What is his visual acuity?                   |        |
| 8.  | The patient reads 4 lines of the Golovin-Sivtsev table, making a mistake in 2 characters. What is his visual acuity?                   |        |
| 9.  | The patient reads the 2nd line of the Golovin-Sivtsev table, making a mistake in one character. What is his visual acuity?             |        |
| 10. | The patient has a reduced perception of red color. Name the type of disorder of color perception.                                      |        |
| 11. | The patient does not perceive red color. Name the type of disorder of color perception.                                                |        |
| 12. | The patient has a reduced perception of green color. Name the type of disorder of color perception.                                    |        |
| 13. | The patient does not distinguish green color. What color perception disorder do you think of?                                          |        |

|     |                                                                                                                                   |  |
|-----|-----------------------------------------------------------------------------------------------------------------------------------|--|
| 14. | The patient does not perceive any color. Name the type of color vision disorder.                                                  |  |
| 15. | After maladaptation, the subject looks at the colored squares by Purkinje. Which first square should be visible? After what time? |  |

### Literature.

#### Main:

1. Ophthalmology : Textbook / O. P. Vitovska [et al.] ; ed. O. P. Vitovska. - Kyiv : AUS Medicine Publishing, 2017. - 647 p. : ill., tab. - Ref.: p. 639-644. - Ind.: p. 645-647.
2. Comprehensive Ophthalmology by A. K. Khurana 4th Ed. Anshan Publishers; 4th edition (December 15, 2007). 600 pages
3. Clinical Ophthalmology: A Systematic Approach: Expert Consult: Online and Print (Expert Consult Title: Online + Print) 7th Edition by Jack J. Kanski MD MS FRCS FRCOphth (Author), Brad Bowling FRCSEd(Ophth) FRCOphth FRANZCO (Author). Saunders; 7th edition (May 16, 2011). 920 pages

## TOPIC: REFRACTION AND ACCOMMODATION

### Competence of the student.

One of the conditions of normal vision is to obtain a clear image on the retina. Reducing the distance and near vision, refractive errors and disturbance of accommodation, are observed in almost all people in different periods of life. Knowledge of the physical fundamentals (bases) of refraction of rays optical system of the eye, allows to determine how people see objects at different distances and in different ages, this knowledge helps doctor in their practice.

### The educational goal.

After studying the topic, students should **know**:

- types of clinical refraction;
- methods for determining clinical refraction;
- methods for correcting refractive errors;
- clinic and complications of myopia and hyperopia;
- astigmatism, its types;
- accommodation, its age changes;

### be able:

- determine the type of ocular lenses of the patient;
- provide sanitary-hygiene recommendations for the prevention of myopia and its complications

### Term's dictionary

**Accommodation**-the ability of the eye to change its focal length by altering the shape of the lens, thereby either near or far objects to be sharply on the retina

**Presbyopia** -far-sightedness associated with middle age

**Refracting**-measuring or determining the refraction, i.e. the ability of the eye to focus

**Refraction**-focusing power of the eye or optical system

**Retina**- layer of nerve cells at the back of the eye that is responsible for vision and which contains rods and cones

**Ametropia**-discrepancies between the refractive power of the optics and the length of the eyeball

**Axial hyperopia**- a hyperopic eyeball is shorter compared to the power (focal length) of the optics.

**Refractive hyperopia**- an eyeball has the normal size; it is due to the weaker power of the optics.

**Myopia**-if the axial length of the eyeball is longer and the posterior principal focus of the eye lies in the front of the retina

**Axial myopia**- a myopic eyeball is longer than the focal length of the optics

**Myopic conus**- white, crescent-shaped area on the temporal side of the disk, where the sclera is exposed

**Posterior staphyloma**-the retina in the neighborhood of the disk, especially on the temporal side, becomes atrophic and exposes the white sclera, which stretches and bulges.

**Tasks for the independent preparation for classes.  
Approximate map of the independent work with literature.**

| TASK                                              | ANSWER |
|---------------------------------------------------|--------|
| What is clinical refraction?                      |        |
| Write down types of clinical refraction.          |        |
| What is accommodation?                            |        |
| What is presbyopia?                               |        |
| Write down complications of myopia.               |        |
| Write down types of correction of ametropia.      |        |
| Give hygiene guidelines for a patient with myopia |        |

**The list of key points, parameters, characteristics which the student should learn while preparing for lesson.**

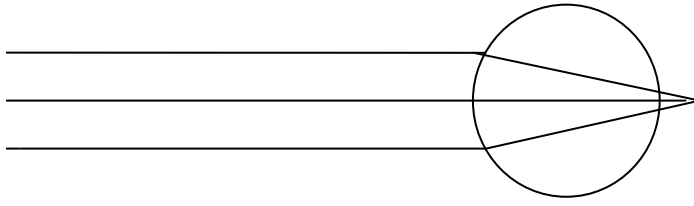
| TERM                     | ANSWER |
|--------------------------|--------|
| Accommodation            |        |
| Ametropia                |        |
| Aniseikonia              |        |
| Anisometropia            |        |
| Accommodation asthenopia |        |
| Astigmatism              |        |

|                        |  |
|------------------------|--|
| Hyperopia              |  |
| Emmetropia             |  |
| Myopia                 |  |
| Presbyopia             |  |
| Spasm of accommodation |  |

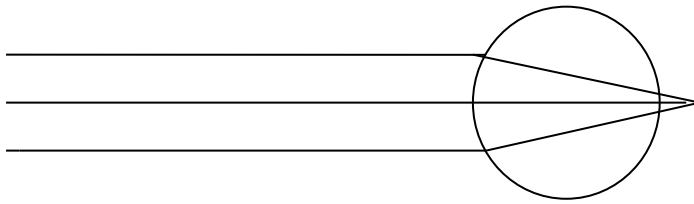
### Tasks for independent work.

| № | TASK                                                                                                                                                                                                                                                                                                                   | ANSWER |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
|   | 20-year-old patient can read the 10th row of the Golovin table. Which type of refraction is present?                                                                                                                                                                                                                   |        |
|   | 50-year-old patient can see properly at distant objects, but complains about reading, he clearly sees letters only at arm's length Which type of refraction is present based on the age?                                                                                                                               |        |
|   | 60-year-old patient came to the doctor for annual eyes control. He has refraction: myopia of 3.0 diopters. Does this patient need glasses, which one, for what?                                                                                                                                                        |        |
|   | 50-year-old patient has hyperopia of 7.0 diopters. Which glasses does the patient require for clear vision on distant objects and for reading?                                                                                                                                                                         |        |
|   | 12-year-old schoolgirl has visual acuity both eyes 0.5, best corrected visual acuity is 1.0 with the help of lenses -1.0 diopters. After instillation of 1% mydriatic solution for 3 times each 5 minutes visual acuity has increased to 0.8, and the next day it was 1.0 without correction. What can we think about? |        |
|   | An uncorrected visual acuity of the patient is 0.3. With the help of lens (-1.5 and -1.75 and -2.0 dpt) his visual acuity is 1.0. What type of clinical refraction is present?                                                                                                                                         |        |

Name the type of refractive error?



1.



2.



3.

**Differential diagnosis of types of clinical refraction**  
(Marking the sign "+" presence, and the sign "-" absence of symptoms).

| Criteria                                                       | Emmetropia | Myopia | Hyperopia |
|----------------------------------------------------------------|------------|--------|-----------|
| The main focus of the optical system is in front of the retina |            |        |           |
| The main focus of the optical system is at the retina          |            |        |           |
| The main focus of the optical system is beyond the retina      |            |        |           |

|                                                                                             |  |  |  |
|---------------------------------------------------------------------------------------------|--|--|--|
| A far point of clear vision goes to infinity                                                |  |  |  |
| A far point of clear vision is missing                                                      |  |  |  |
| A near point of clear vision is at a distant position                                       |  |  |  |
| Refracting power of the eye is within the normal limits                                     |  |  |  |
| Refracting power of the eye is too great                                                    |  |  |  |
| Refracting power of the eye is too weak                                                     |  |  |  |
| Can see properly at distant objects, this ability is reduced with aging                     |  |  |  |
| Cannot see properly at distant objects, but can read without glasses with aging             |  |  |  |
| Can see properly at distant objects, this ability and reading ability is reduced with aging |  |  |  |
| Does not require correction                                                                 |  |  |  |
| Require concave lenses for correction                                                       |  |  |  |
| Require convex lenses for correction                                                        |  |  |  |

### **Literature.**

Main:

1. Ophthalmology : Textbook / O. P. Vitovska [et al.] ; ed. O. P. Vitovska. - Kyiv : AUS Medicine Publishing, 2017. - 647 p. : ill., tab. - Ref.: p. 639-644. - Ind.: p. 645-647.
2. Comprehensive Ophthalmology by A. K. Khurana 4th Ed. Anshan Publishers; 4th edition (December 15, 2007). 600 pages
3. Clinical Ophthalmology: A Systematic Approach: Expert Consult: Online and Print (Expert Consult Title: Online + Print) 7th Edition by Jack J. Kanski MD MS FRCS FRCOphth (Author), Brad Bowling FRCSEd(Ophth) FRCOphth FRANZCO (Author). Saunders; 7th edition (May 16, 2011). 920 pages

## TOPIC: DISEASES OF THE OCULOMOTOR APPARATUS (STRABISMUS)

### Competence of the student

Among eye diseases, strabismus occurs in 3% of cases. Children are early aware of their cosmetic defect - strabismus, which negatively affects the psychological state, the formation of the child's character, the relationship with the environment. Incomplete visual perception and decreased visual acuity further limits the choice of profession. Therefore, early detection and treatment of this pathology is a social problem in which society is interested.

### The educational goal.

#### After studying the topic, students should know:

- methods of definition the nature of vision (binocular, monocular, simultaneous).
- types of strabismus.
- differential diagnosis of associated and paralytic strabismus.
- the consequences of strabismus.
- the principles of treatment and prophylaxis of strabismus.

#### be able:

- to define a squint angle by Hirschberg.
- to diagnose a paralytic and associated strabismus.
- to determine the volume of movement of the eyeball.
- 

### Practical work (tasks) performed in class.

- 1. To define a squint angle by Hirschberg.

### Term's dictionary

**Angle Kappa** - the angle between the visual axis and the central pupillary line. When the eye is fixing a light, the corneal reflection is centered on the pupil, the visual axis and the central pupillary line coincide and the angle Kappa is zero. Ordinarily, the light reflex is 2-4 degrees nasal to the pupillary center, giving the appearance of slight exotropia (positive angle Kappa). A negative angle Kappa gives the false impression of esotropia.

**Conjugate movement** - movement of the eyes in the same direction at the same time.

**Ductions** - monocular rotations with no consideration of the position of the other eye

**Adduction** - inward rotation.

**Abduction** - outward rotation.

**Supmduction** (elevation) - upward rotation.

**Introduction** (depression) - downward rotation.

**Fusion** - formation of one image from the two images seen simultaneously by the both eyes.

Fusion has two aspects:

- **Motor fusion:** Adjustments made by the brain in innervation of extraocular muscles in order to bring both eyes into bifoveal and torsional alignment.
- **Sensory fusion:** Integration in the visual sensory areas of the brain of images seen with the two eyes into one picture.

**Incyclotropia** - inward rotation of one eye about its anteroposterior axis (ie, clockwise right eye, counterclockwise left eye).

**Excyclotropia** - outward rotation of one eye about its anteroposterior axis (i.e., counterclockwise right eye, clockwise left eye).

**Orthophoria** - the absence of any tendency of either eye to deviate when fusion is suspended. This state is rarely seen clinically. A small phoria is normal.

**Heterophoria (phoria)** - latent deviation of the eyes held straight by binocular fusion.

- **Esophoria:** tendency for one eye to turn inward.
- **Exophoria:** tendency for one eye to turn outward.
- **Hyperphoria:** tendency for one eye to deviate upward.
- **Hypophoria:** tendency for one eye to deviate downward.



**Heterotropia (tropia):**

- **Esotropia:** convergent manifest deviation ("crossed eyes").
  - **Exotropia:** divergent manifest deviation ("walleyes").
  - **Hypertropia:** manifest deviation of one eye upward.
  - **Hypotropia:** manifest deviation of one eye downward.
- Strabismus** - manifest deviation of the eyes that cannot be controlled by binocular fusion.

**Tasks for the independent preparation for classes.**  
**Approximate map for the independent work with literature.**

| <b>TASKS</b>                                                          | <b>ANSWER</b> |
|-----------------------------------------------------------------------|---------------|
| To write down the conditions necessary for binocular vision.          |               |
| What is strabismus?<br>Give the definition                            |               |
| List the types of strabismus.                                         |               |
| Describe latent squint.                                               |               |
| Characterize the squint angle according to Hirschberg scheme          |               |
| What are the effects of strabismus. Give the definition of amblyopia. |               |
| Specify the principles of treatment of strabismus.                    |               |

**The list of key terms, parameters, characteristics which the student should learn while preparing for lessons.**

| <b>TERM</b>  | <b>ANSWER</b> |
|--------------|---------------|
| Amblyopia    |               |
| Heterophoria |               |
| Diplopia     |               |
| Orthophoria  |               |

### Tasks for independent work.

| №  | TASK                                                                                                                                                                                                                                                                                                                                                                                                                  | ANSWER |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1. | 56-year-old patient complains about sudden twisting. The day before she noticed deterioration in general condition (headache, dizziness). She suffers from hypertension for 10 years. After taking antihypertensive drugs, the general condition has improved, but diplopia appeared. On examination: deviation of the left eye up and inward, restriction of mobility downwards and outwards. What is the diagnosis? |        |
| 2. | A mother of a 4-year-old child has noticed that the child's right eye occasionally deviates to the nose for 2 years. The angle of strabismus according to the Hirschberg scheme is equal 30°. There is no diplopia. The mobility of this eye in all directions is complete. The secondary angle of strabismus is equal to the primary. What is the diagnosis?                                                         |        |
| 3. | 23-year-old patient complains about decimated alternately one or the other eye inwards, no ghosting. On examination you notice that the patient can record the subjects by right or left eye. The angle of strabismus by Hirschberg scheme is 30°. What is the diagnosis?                                                                                                                                             |        |

### Make differential diagnostics between associated and paralytic strabismus.

| Clinical signs/etiological factors                                                                                  | Associated strabismus | Paralytic strabismus |
|---------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------|
| Amblyopia                                                                                                           |                       |                      |
| Diplopia                                                                                                            |                       |                      |
| Full volume of the eyeball movements                                                                                |                       |                      |
| Restrictions of mobility or lack of eyeball movements                                                               |                       |                      |
| Equality of angles of primary and secondary deviation                                                               |                       |                      |
| The angle of primary deviation is less than the angle of secondary deviation                                        |                       |                      |
| The compelled head position                                                                                         |                       |                      |
| From the anamnesis: the skull injury, inflammatory or vascular disease of the brain, brain tumor, myasthenia gravis |                       |                      |

### Literature.

Main:

1. Ophthalmology : Textbook / O. P. Vitovska [et al.] ; ed. O. P. Vitovska. - Kyiv : AUS Medicine Publishing, 2017. - 647 p. : ill., tab. - Ref.: p. 639-644. - Ind.: p. 645-647.
2. Comprehensive Ophthalmology by A. K. Khurana 4th Ed. Anshan Publishers; 4th edition (December 15, 2007). 600 pages

3. Clinical Ophthalmology: A Systematic Approach: Expert Consult: Online and Print (Expert Consult Title: Online + Print) 7th Edition by Jack J. Kanski MD MS FRCS FRCOphth (Author), Brad Bowling FRCSEd(Ophth) FRCOphth FRANZCO (Author). Saunders; 7th edition (May 16, 2011). 920 pages

## TOPIC: DISEASES OF THE CONJUNCTIVA

### Competence of the student.

Approximately 30% of patients with diseases of the eye, that are visiting the clinic, suffer from diseases of the connective membrane. Paying attention that conjunctivitis is extremely contagious, family doctor should know how to give the correct diagnosis. Early diagnostics allows prescribing treatment in time, isolating patients and preventing the spread of disease.

### The educational goal.

After studying the topic, students should **know**:

- clinic and treatment of acute and chronic conjunctivitis;
- clinic, prevention of gonorrhea of babies and adults;
- clinic, diagnostics and treatment of conjunctivitis diphtheritica;
- clinic, diagnostics, treatment and prevention of trachoma;

### be able:

- examine the conjunctiva;
- diagnose acute and chronic conjunctivitis;
- provide emergency care for acute conjunctivitis;
- drip drops and put ointment in the eye.

### Practical skills (tasks performed in class).

1. Review the conjunctiva.
2. Drip eye drops.
3. Put ointment in the eye.

### Term's dictionary

**Conjunctivitis** – an inflammation of conjunctiva, generally consisting of hyperemia associated with discharge.

**Conjunctival injection** - irritation of the conjunctiva that is greater near the periphery of the bulbar conjunctiva and became less marked as the limbus is approached.

**Hyperemia of the conjunctiva** - dilatation of the of conjunctiva vessels.

**Pseudomembranous** - acute inflammation of conjunctiva, exudate rich of fibrin is formed on the surface of the conjunctiva.

**Papillae** - the formation of small elevation on the of conjunctival surface that contain newly formed capillaries infiltrated with lymphoid cells.

**Parinaud's oculoglandular syndrome** - consists of the conjunctivitis associated with marked preauricular gland enlargement.

**Pinguecula** - raised yellow-gray area at either side of the limbus.

**Pterygium** - a growth on the cornea, histologically it resembles a pinguecula.

**Tasks for the independent preparation for classes.  
Approximate map of the independent work with literature.**

| <b>TASKS</b>                                                                                              | <b>ANSWER</b> |
|-----------------------------------------------------------------------------------------------------------|---------------|
| Define conjunctivitis. Classification of conjunctivitis.                                                  |               |
| Name the possible ways of contamination with conjunctivitis                                               |               |
| What types of inflammatory eyeball injections do you know? What characterizes the conjunctival injection? |               |
| List the complaints of the patient with acute conjunctivitis.                                             |               |
| What objective evidence of acute conjunctivitis do you know?                                              |               |
| List the objective symptoms of chronic conjunctivitis.                                                    |               |
| List the possible complications of conjunctivitis.                                                        |               |
| Specify the general principles for the treatment of conjunctivitis.                                       |               |

**The list of key points, parameters, characteristics which the student should learn while preparing for lesson.**

| <b>TERM</b>                 | <b>ANSWER</b> |
|-----------------------------|---------------|
| Epiphora                    |               |
| Xerosis                     |               |
| Symblepharon                |               |
| Chemosis of the conjunctiva |               |

**Tasks for independent work.**

|    | <b>TASK</b>                                                                                                                                                                                                          | <b>ANSWER</b> |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| 1. | 45-year-old patient complains about feeling heaviness in eyelids, "sand" sensation in the eyes. Symptoms worsen in the evening under artificial lighting, On examination, a small amount of mucous secretions at the |               |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|    | inner corner of eye is seen. The conjunctiva of cartilage and fornixes is red, velvety in appearance. The disease lasts several years. What is the diagnosis?                                                                                                                                                                                                                                                                                                                                                               |  |
| 2. | 25-year-old patient complains about gluing eyelids, tearing, unexpressed photophobia, mucopurulent discharge, redness and foreign body sensation on both eyes. On examination, dried mucus on the skin of the eyelids, narrowing of the eye fissure due to swelling of the eyelids; abundant mucopurulent discharge, swelling and redness of the conjunctiva of the eyelids and fornixes, conjunctival injection of the vessels of the eyeball. What is the diagnosis?                                                      |  |
| 3. | During the examination of newborns at the hospital the doctor has noticed that one child (was born the day before) has swelling and redness of the eyelids. On examination, significant swelling, redness of the eyelids. It is difficult to open the eyelids, mucous discharge; the conjunctiva of the eyelids is hyperemic and swollen; conjunctival injection of the vessels of the eyeball is present. What is the diagnosis?                                                                                           |  |
| 4. | 6-year-old child complains about sudden temperature up to 38.8°C, increased left parotid gland. On examination, eyelids are swollen, flushed with a bluish tinge, very painful on palpation. The pain increases while you are trying to open the eyelids. A cloudy fluid with flakes is secreted from the conjunctival sac. Dirty-gray films, tightly welded to the underlying tissue are seen on the conjunctiva of the eyelids; after removal of the films, the surface of the conjunctiva bleeds. What is the diagnosis? |  |

### Literature.

#### Main:

1. Ophthalmology : Textbook / O. P. Vitovska [et al.] ; ed. O. P. Vitovska. - Kyiv : AUS Medicine Publishing, 2017. - 647 p. : ill., tab. - Ref.: p. 639-644. - Ind.: p. 645-647.
2. Comprehensive Ophthalmology by A. K. Khurana 4th Ed. Anshan Publishers; 4th edition (December 15, 2007). 600 pages
3. Clinical Ophthalmology: A Systematic Approach: Expert Consult: Online and Print (Expert Consult Title: Online + Print) 7th Edition by Jack J. Kanski MD MS FRCS FRCOphth (Author), Brad Bowling FRCSEd(Ophth) FRCOphth FRANZCO (Author). Saunders; 7th edition (May 16, 2011). 920 pages

## TOPIC: DISEASES OF EYELIDS AND LACRIMAL SYSTEM

### Competence of the student.

Peculiar morphological features of the structure of the eyelids, their innervation and blood supply determine the uniqueness of their pathology, which is 10% in the overall structure of ocular morbidity. Patients with diseases of the lacrimal system are 3-6% of all ophthalmic patients. Early diagnostics of diseases of the eyelids and lacrimal system contributes to the timely and correct choice of methods for their treatment.

### The educational goal.

After studying the topic, students **should know**:

- methods of investigation of eyelids and lacrimal system;
- clinic and treatment of inflammatory diseases of the eyelids;
- clinic and treatment of anomalies of eyelids position;
- clinic, diagnostics and treatment of acute and chronic dacryocystitis of adults and dacryocystitis of newborns;

### be able to:

- examine the eyelids and lacrimal system;
- evert the eyelids;
- diagnose stye and treat it;
- diagnose blepharitis and chalazion;
- diagnose dacryocystitis of newborns and adults.

### Practical skills (tasks performed in class).

1. To examine the eyelids
2. To evert the eyelids.

### Term's dictionary

**Ptosis** - malposition of the upper eyelid, in which the lid margin is abnormally low.

**Lagophthalmos** - an inadequate closure of the eyelids that leaves the cornea exposed.

**Horner's syndrome** - a combination of ptosis, miosis, anhidrosis, resulting from paralysis of the superior cervical sympathetic chain on the side involved.

**Ectropion** - the lid margin is everted away from the globe.

**Entropion** - the lid margin is inverted.

**Trichiasis and distichiasis** - conditions where eyelashes have an abnormal growth and are directed towards the globe.

**Anhidrosis** - absence of sweating of the lids.

**Sjogren's syndrome** - general systemic disease of unknown etiology with decreased tear secretion.

**Hordeolum (stye)** - focal acute infection of a lid margin gland.

**External hordeolum** - purulent infection of a sebaceous or sweat gland along the lid margin

**Internal hordeolum** - purulent infection with the swelling appearing on the conjunctival side and intermarginal space of the lids.

**Chalazion** - chronic inflammation of Meibomian gland, histopathologic examination of this lesion shows a granulomatous reaction to liberated fat

### Tasks for the independent preparation for classes.

#### Approximate map of the independent work with literature.

| TASK                                            | ANSWER |
|-------------------------------------------------|--------|
| Define the stye (hordeolum). Ways of treatment. |        |

|                                                                                                                    |  |
|--------------------------------------------------------------------------------------------------------------------|--|
| Define blepharitis. Ways of treatment.                                                                             |  |
| Define the chalazion. Ways of treatment.                                                                           |  |
| Define ptosis of the upper eyelid. Etiology and classification of ptosis. Ways of treatment.                       |  |
| What is lagophthalmos? What are the causes of lagophthalmos? Ways of treatment.                                    |  |
| Define entropion and ectropion. Ways of treatment.                                                                 |  |
| What are the causes of dacryocystitis of adults and newborns?                                                      |  |
| What are the signs of chronic dacryocystitis of adults? Witch complications of chronic dacryocystitis do you know? |  |
| List the basic principles of treatment of chronic dacryocystitis of adults.                                        |  |
| What are the signs of dacryocystitis of newborns? Witch complications of dacryocystitis of newborn do you know?    |  |
| What are the basic principles of treatment of dacryocystitis of newborn?                                           |  |
| Define the acute dacryocystitis, its symptoms and ways of treatment.                                               |  |

**The list of key points, parameters, characteristics which the student should learn while preparing for lesson.**

| <b>TERM</b>     | <b>ANSWER</b> |
|-----------------|---------------|
| Ankiloblepharon |               |
| Blepharohalasis |               |
| Ectropion       |               |
| Entropion       |               |
| Epicanthus      |               |
| Lagophthalmos   |               |
| Madarosis       |               |
| Ptosis          |               |
| Trichiasis      |               |

**Tasks for independent work.**

| <b>№</b> | <b>TASK</b>                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>ANSWER</b> |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| 1.       | The patient complains about photophobia, lacrimation, purulent discharge from the right eye, pain in the eye after the common cold. On examination: swelling of the lower eyelid, redness, on the base of the eyelashes in the middle third of the eyelid – a purulent focus. It touches the cornea during blinking. What is the diagnosis?                                                                                           |               |
| 2.       | 34-year-old woman complains about a pea-sized formation on the eyelid of the right eye. The tumor gradually grew to the size of a pea during 2-3 months. On examination: on the upper eyelid – a tumor, not soldered to the skin, round shape, without signs of acute inflammation. When the upper eyelid is everted, a yellowish content shines through, surrounded by a network of slightly dilated vessels. What is the diagnosis? |               |
| 3.       | 42-year-old patient complains about tearing, purulent discharge. From history revealed that tearing lasts 2 months. She has been suffering from hypertrophic rhinitis for about a year. On examination: tearing, bean-shaped bulging area in the inner corner of the eye. On the pressing at the area of                                                                                                                              |               |



|    |                                                                                                                                                                                                                                                                                                                                                                                   |  |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|    | lacrimal sac the purulent discharge appears from the lacrimal points. What is the diagnosis?                                                                                                                                                                                                                                                                                      |  |
| 4. | Mother of newborn (2 months old) has noticed that her child has purulent discharge from the right eye, which appeared a week after birth. On examination: there is the bulging with redness in the inner corner of the right eye, wetting of the eye. On the pressing at the area of lacrimal sac the purulent discharge appears from the lacrimal points. What is the diagnosis? |  |

### Literature.

Main:

1. Ophthalmology : Textbook / O. P. Vitovska [et al.] ; ed. O. P. Vitovska. - Kyiv : AUS Medicine Publishing, 2017. - 647 p. : ill., tab. - Ref.: p. 639-644. - Ind.: p. 645-647.
2. Comprehensive Ophthalmology by A. K. Khurana 4th Ed. Anshan Publishers; 4th edition (December 15, 2007). 600 pages
3. Clinical Ophthalmology: A Systematic Approach: Expert Consult: Online and Print (Expert Consult Title: Online + Print) 7th Edition by Jack J. Kanski MD MS FRCS FRCOphth (Author), Brad Bowling FRCSEd(Ophth) FRCOphth FRANZCO (Author). Saunders; 7th edition (May 16, 2011). 920 pages

## TOPIC: DISEASES OF THE LENS

### Competence of the student.

Cataract - one of the most common eye diseases and one of the main causes of curable blindness. The family doctor should diagnose cataract, prescribe the necessary treatment and resolve the issue of surgery in a timely manner.

### The educational goal.

After studying the topic, students should **know**:

- methods of lens examination;
- classification, etiology and clinic of cataract;
- differential diagnosis of cataract and glaucoma;
- medical treatment and indications for surgical treatment of cataract;
- aphakia; characteristics and methods of correction;
- abnormalities of the lens position. principles of treatment.

### be able:

- to examine the lens;
- to diagnose cataract.

### Practical skills (tasks performed in class).

1. Examination of the lens in transmitted light.

### Term's dictionary

**Aphakia** – absence of the lens of the eye.

**Aphakic eye** - when a cataract is removed but isn't replaced.

**Phakic** - natural lens of the eye.

**Pseudophakic eye** – when a cataract is replaced with an artificial lens.

**Phacoemulsification** – surgical procedure to remove a cataract using sound waves to disintegrate the lens which is then removed by suction.

**Intraocular lens** – an artificial lens made of plastic, silicone, acrylic or other material that is implanted in the eye during cataract surgery (abbreviated IOL).

**Lenticonus** - localized, cone-shaped deformation of the anterior or posterior lens surface. Posterior lenticonus is more common than anterior lenticonus and is usually unilateral and axial in location.

**Lentiglobus** - localized spherical deformation of the lens surface.

**Microspherophakia** - a developmental abnormality in which the lens is small in diameter and spherical in shape.

**Photophobia** – extreme sensitivity to light. Photophobia is a major symptom of acute uveitis.

**Slit lamp** – an instrument that combines a binocular microscope with special lights. It allows an eye doctor to examine the front portion of the eye.

**Tasks for the independent preparation for classes.**  
**Approximate map of the independent work with literature.**

| <b>TASK</b>                                                                                     | <b>ANSWER</b> |
|-------------------------------------------------------------------------------------------------|---------------|
| What is cataract?                                                                               |               |
| What is congenital cataract? Clinical management of patients suffering from congenital cataract |               |
| Classification of acquired cataract.                                                            |               |
| Stages, signs of senile cataract.                                                               |               |
| Therapeutical treatment of cataract.                                                            |               |
| Indications for surgical treatment of cataract.                                                 |               |
| Methods of surgical treatment of cataract.                                                      |               |
| List the symptoms of aphakia.                                                                   |               |
| List methods for aphakia correcting.                                                            |               |

**The list of key points, parameters, characteristics which the student should learn while preparing for lesson.**

| <b>TERM</b>          | <b>ANSWER</b> |
|----------------------|---------------|
| Aphakia              |               |
| Artiphakia           |               |
| Luxation of the lens |               |
| Iridodonesis         |               |

**Tasks for independent work.**

| <b>N</b> | <b>TASK</b>                                                                                                                                                                                                                                                                                                        | <b>ANSWER</b> |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| 1.       | 30-year-old patient, painter, after the hit can't see properly with his left eye (visual acuity is 0.01 and can't be corrected). On examination: opacification of the lens. The right eye is intact. What is the diagnosis?                                                                                        |               |
| 2.       | 6-year-old child has visual acuity 1.0 (20/20) on both eyes. On examination: light opacities scattered through-out the lens without involving the embryonal nucleus of both eyes. What is the diagnosis?                                                                                                           |               |
| 3.       | 70-year-old patient was operated a year ago due to the cataract of right eye. Visual acuity after surgery was 1,0. During the last 4 months the visual acuity on the right eye has decreased to 0,4 and can't be corrected. On examination: a thin film in region of pupil behind the lens. What is the diagnosis? |               |
| 4.       | 30-year-old man has opacification of lens in the back capsular region in both eyes. What is the diagnosis? What additional methods of diagnostics should the doctor perform?                                                                                                                                       |               |
| 5.       | 65-year-old man complains about slow gradual vision loss on the right eye, which is not accompanied by pain and inflammation. On examination: visual acuity of right eye is 0.6, can't be corrected. In passing                                                                                                    |               |

|                                                                                          |  |
|------------------------------------------------------------------------------------------|--|
| light on the background of the red reflex black strokes are seen. What is the diagnosis? |  |
|------------------------------------------------------------------------------------------|--|

### Literature.

Main:

1. Ophthalmology : Textbook / O. P. Vitovska [et al.] ; ed. O. P. Vitovska. - Kyiv : AUS Medicine Publishing, 2017. - 647 p. : ill., tab. - Ref.: p. 639-644. - Ind.: p. 645-647.
2. Comprehensive Ophthalmology by A. K. Khurana 4th Ed. Anshan Publishers; 4th edition (December 15, 2007). 600 pages
3. Clinical Ophthalmology: A Systematic Approach: Expert Consult: Online and Print (Expert Consult Title: Online + Print) 7th Edition by Jack J. Kanski MD MS FRCS FRCOphth (Author), Brad Bowling FRCSEd(Ophth) FRCOphth FRANZCO (Author). Saunders; 7th edition (May 16, 2011). 920 pages

## TOPIC: DISEASES OF THE CORNEA

### Competence of the student.

Diseases of the cornea take about 25% among the diseases of eye. Diseases of the cornea often lead to reduced vision or blindness. Early diagnostics and proper treatment of inflammatory processes of the cornea in the first place contribute to the best course of the disease, prevent serious complications. Knowledge of the structure of the cornea, methods of diagnostics and clinic of diseases is necessary in the practice of family doctor.

### The educational goal.

After studying the topic, students should **know**:

- methods of examination of the cornea;
- classification of keratitis;
- clinic and consequences of keratitis;
- principles of treatment of keratitis;
- abnormalities of the cornea;

### be able:

- examine the cornea by side lighting;
- determine the sensitivity of the cornea;
- diagnose keratitis.

### Practical skills (tasks performed in class).

1. Investigation of the cornea by side lighting.
2. To determine the sensitivity of the cornea.

### Term's dictionary

**Megalocornea** - bilateral, nonprogressive, congenitally enlarged cornea (the diameter may reach 16 mm); myopia, dislocation of the lens, and posterior subcapsular cataracts are frequently associated findings.

**Microcornea** – often is associated with microphthalmos, The cornea is abnormally small (10mm or less). Patients often are highly hyperopic and predisposed to glaucoma.

**Xerophthalmia** - refers to the ocular changes caused by vitamin A deficiency. In the late stages of xerophthalmia, exfoliation of the epithelium, corneal clouding, ulceration are seen.

**Bitot's spots** – gray-white, oval to triangular lesion occurring predominantly on the temporal side of the limbus, associated with the deficiency of vitamin A, but they are also observed in pellagra and in other nutritional deficiencies.

**Keratic precipitates** - deposits of inflammatory cells on the posterior surface of the cornea.

**Arcus senilis** - gray, opaque ring about 1 to 1.5 mm wide following the contour of the limbus but separated from it by a clear zone, found among people older 50 years.

**Staphyloma** - ectasia or bulging of weakened cornea or sclera lined with uveal tissue.

**Hypopyon** - protein aggregates and debris form a yellow mass on the inferior portion of the anterior chamber.

**Tasks for the independent preparation for classes.**  
**Approximate map of the independent work with literature.**

| <b>TASK</b>                                                                                 | <b>ANSWER</b>                    |
|---------------------------------------------------------------------------------------------|----------------------------------|
| List the layers of the cornea.                                                              |                                  |
| List the properties of the cornea.                                                          | 1.<br>2.<br>3.<br>4.<br>5.<br>6. |
| What methods are used to examine the cornea?                                                | 1.<br>2.<br>3.                   |
| How to investigate the corneal sensitivity? Check schematically the corneal sensitivity.    |                                  |
| List the abnormalities of the cornea.                                                       | 1.<br>2.<br>3.<br>4.<br>5.       |
| Classification of keratitis.                                                                |                                  |
| What is corneal syndrome? Describe the pericorneal injection of the vessels of the eyeball. |                                  |

|                                                                                                                    |  |
|--------------------------------------------------------------------------------------------------------------------|--|
| List the symptoms of keratitis.                                                                                    |  |
| What are the consequences of keratitis?                                                                            |  |
| List the symptoms of corneal ulcer serpens.                                                                        |  |
| General principles of treatment of keratitis. List the main drugs prescribed for the local treatment of keratitis. |  |

**The list of key points, parameters, characteristics which the student should learn while preparing for lesson.**

| <b>TERM</b>                   | <b>DEFINITION</b> |
|-------------------------------|-------------------|
| Corneal opacity               |                   |
| Keratohlobus                  |                   |
| Keratoconus                   |                   |
| Keratomalacia                 |                   |
| Keratoplasty                  |                   |
| Xerophthalmia                 |                   |
| Macrocornea<br>(megalocornea) |                   |
| Mikrocornea                   |                   |
| Nebula                        |                   |
| Macula                        |                   |

### Tasks for independent work.

| №  | TASK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ANSWER |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1. | The patient came to a family doctor with complaints about cough, fever. On examination: corneal opacity of the right eye. The right eye can't see properly for 15 years (after trauma). On examination: eyelids are open; the eye is without any inflammatory signs. White clouding 5 × 6 mm in diameter is seen in the cornea. What is the diagnosis?                                                                                                                                                                                                 |        |
| 2. | The patient came to a family doctor with complaints about pain in the right eye, photophobia, lacrimation, inability to open eyes, visual loss. On examination: swollen eyelids; eye fissure is closed, blepharospasm, lacrimation, pericorneal injection, gray corneal infiltrates. What is the diagnosis?                                                                                                                                                                                                                                            |        |
| 3. | The patient complains about lacrimation, photophobia, decreased vision acuity, pain in the right eye. Two days ago she had a foreign body in the right eye. Woman didn't visit the doctor. On examination: narrowing of the eye fissure, a slight swelling of the eyelids, pericorneal injection, in the center of the cornea a grayish-yellow infiltrate 3 × 5 mm in diameter is present. The content of the anterior chamber is transparent, pupil is round, iris is clear. The sensitivity of the ciliary body is unpainful. What is the diagnosis? |        |

### Literature.

#### Main:

1. Ophthalmology : Textbook / O. P. Vitovska [et al.] ; ed. O. P. Vitovska. - Kyiv : AUS Medicine Publishing, 2017. - 647 p. : ill., tab. - Ref.: p. 639-644. - Ind.: p. 645-647.
2. Comprehensive Ophthalmology by A. K. Khurana 4th Ed. Anshan Publishers; 4th edition (December 15, 2007). 600 pages
3. Clinical Ophthalmology: A Systematic Approach: Expert Consult: Online and Print (Expert Consult Title: Online + Print) 7th Edition by Jack J. Kanski MD MS FRCS FRCOphth (Author), Brad Bowling FRCSEd(Ophth) FRCOphth FRANZCO (Author). Saunders; 7th edition (May 16, 2011). 920 pages

## TOPIC: DISEASES OF VASCULAR TRACT

### Competence of the student.

Diseases of the vascular tract have 10% among all diseases of the eye, and often lead to reduced vision or blindness. Iridocyclitis (uveitis) often arises due to various infectious diseases of the body. Therefore, knowledge of the clinic, the foundations of early diagnosis and treatment of the diseases of vascular tract, give the ability to provide emergency assistance in the practice of family doctors.

### The educational goal.

After studying the topic, students should **know**:

- classification of uveitis;
- clinic and consequences of uveitis;
- diagnosis and treatment guidelines of uveitis;
- emergency care of acute iridocyclitis.

### be able:

- assess the state of the iris (color, size and reaction of the pupils);
- determine the sensitivity of the ciliary body;
- diagnose the acute iridocyclitis;
- provide emergency care of acute iridocyclitis.

### Practical work (tasks) performed in class.

1. Palpation to determine the sensitivity of the ciliary body.

### Term's dictionary

**Aniridia** – absence of the iris.

**Iridodialysis** – the iris is torn from its root at the ciliary body

**Iridodonesis** – is the vibration or agitated motion of the iris with eye movement. It indicates subluxation or dislocation of the lens.

**Ciliary flash** – refers to a deep, diffuse, dull red injection around the limbus, resulting from dilatation of the vessels supplying the iris and ciliary body.

**Posterior synechiae** – adhesion of the iris to the anterior capsule of the lens with irregularly shaped pupil.

**Seclusion of the pupil** – is an annular posterior adhesion or synechia resulting from iritis and shutting off anterior from posterior chamber.

**Occlusion of the pupil** – posterior synechiae are formed around the entire pupillary margin, they prevent the normal passage of aqueous humor from posterior to anterior chamber.

**Iris bomber** – the midportion of the iris to bulge forward the inner surface of the cornea.

### Tasks for the independent preparation for classes.

#### Approximate map for the independent work with literature.

| TASK                                                      | ANSWER |
|-----------------------------------------------------------|--------|
| Define uveitis. Write down the classification of uveitis. |        |
| Make a table in a notebook of the main causes of uveitis. |        |
| The main symptoms of iridocyclitis.                       |        |
| Record symptoms of iritis,                                |        |



|                                            |  |
|--------------------------------------------|--|
| cyclist, choroiditis.                      |  |
| Principles of treatment of uveitis.        |  |
| Name the mydriatic drops.                  |  |
| Complications and consequences of uveitis. |  |
| First aid in case of acute iridocyclitis.  |  |

**The list of key terms, parameters, characteristics which the student should learn while preparing for lessons.**

| <b>TERM</b>        | <b>ANSWER</b> |
|--------------------|---------------|
| Aniridia           |               |
| Hypopyon           |               |
| Mydriasis          |               |
| Miosis             |               |
| Precipitate        |               |
| Posterior synechia |               |
| Tyndall phenomenon |               |

**Tasks for independent work.**

| <b>№</b> | <b>TASK</b>                                                                                                                                                                                                          | <b>ANSWER</b> |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| 1.       | 27-year-old patient complains about pain in the right eye that is worse at night, decreased vision acuity, photophobia, lacrimation. A week ago, he had flu. On examination, pericorneal injection is present, pupil |               |

|    |                                                                                                                                                                                                                                                                                                                                                                                            |  |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|    | is narrow, iris color is changed. What is the diagnosis?                                                                                                                                                                                                                                                                                                                                   |  |
| 2. | Patient has noticed worsening of visual acuity in left eye, a spot in sight two weeks ago. Visual acuity of left eye is 0.4, can't be corrected. On examination, the anterior segment of the eye is unchanged, on the fundus - some yellowish lesions of various sizes, the boundaries are not clear. What is the diagnosis?                                                               |  |
| 3. | Patient complains about blurred vision in right eye. He was treated in the tuberculosis department. Visual acuity of left eye is 0.3, can't be corrected. On examination, pericorneal injection is present, pupil is narrow, iris color is changed, on the corneal surface there are big greasy precipitates. On the fundus - rounded lesion with fuzzy boundaries. What is the diagnosis? |  |

### Literature.

#### Main:

1. Ophthalmology : Textbook / O. P. Vitovska [et al.] ; ed. O. P. Vitovska. - Kyiv : AUS Medicine Publishing, 2017. - 647 p. : ill., tab. - Ref.: p. 639-644. - Ind.: p. 645-647.
2. Comprehensive Ophthalmology by A. K. Khurana 4th Ed. Anshan Publishers; 4th edition (December 15, 2007). 600 pages
3. Clinical Ophthalmology: A Systematic Approach: Expert Consult: Online and Print (Expert Consult Title: Online + Print) 7th Edition by Jack J. Kanski MD MS FRCS FRCOphth (Author), Brad Bowling FRCSEd(Ophth) FRCOphth FRANZCO (Author). Saunders; 7th edition (May 16, 2011). 920 pages

## TOPIC: DISEASES OF THE ORBIT

### Competence of the student.

Diseases of the orbit - one of the most difficult sections in ophthalmology. Tumors, inflammation, blood vessels' and endocrine diseases can develop in orbit. Orbit is closed for direct examination and palpation with the bony walls and eyeball. Its small volume contains many complex anatomical structures and support functions of the eye. We should remember that orbit is very closely connected with the skull cavity (like thrombosis of cavernous sinus or tumor in the cranial cavity).

### The educational goal.

After studying students should **know**:

- clinical picture, diagnostics and treatment of orbital cellulitis;
- clinical picture, diagnostics and treatment of tumors of the orbit;

**be able:**

- assess the position of the eyeball in the orbit;
- diagnose orbital cellulitis.

**Practical skills (tasks performed in class)**

1. Assess the position of the eyeball in the orbit.

**Tasks for the independent preparation for classes.****Approximate map of the independent work with literature.**

| <b>TASK</b>                                                                          | <b>ANSWER</b> |
|--------------------------------------------------------------------------------------|---------------|
| The main symptoms that are due to diseases of the orbit.                             |               |
| List the malignancies of the orbit.                                                  |               |
| List the benign tumors of the orbit.                                                 |               |
| What are the distinctive features of malignant and benign tumor growth of the orbit? |               |
| List the names of orbital inflammation.                                              |               |
| What are the signs of orbital inflammation?                                          |               |
| List the etiological factors of orbital cellulitis.                                  |               |
| List the complications of orbital cellulitis.                                        |               |
| Methods of treatment of orbital cellulitis.                                          |               |

**The list of key points, parameters, characteristics which the student should learn while preparing for lesson.**

| <b>TERM</b>  | <b>DEFINITION</b> |
|--------------|-------------------|
| Anophthalmos |                   |
| Exophthalmos |                   |
| Enophthalmos |                   |

|                 |  |
|-----------------|--|
| Ophthalmoplegia |  |
|-----------------|--|

### Tasks for independent work

| №  | TASK                                                                                                                                                                                                                                                                                                                                                          | ANSWER |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1. | 20-year-old patient complains about bulging of his right eye. In anamnesis, you have found that exophthalmos is present for 2 years. On examination: the mobility of the right eye is not limited; the anterior segment of the eye is intact. Visual acuity is not deteriorated. Eye fissure is enlarged. What is the diagnosis?                              |        |
| 2. | 42-year-old patient complains about bulging of his left eye, double vision, blurred vision. In anamnesis, you find that exophthalmos is present for 4 months and is progressing. On examination: eye fissure is enlarged, the deviation of the left eye outward, limited mobility towards the nose. No signs of inflammation are seen. What is the diagnosis? |        |
| 3. | 36-year-old patient complains about acute headache, high temperature (38 ° C), pain in the right eye. In anamnesis, you have found that the woman was suffering from chronic sinusitis. On examination: ocular pain, lid edema, chemosis, proptosis and limited ocular movements. Visual acuity is decreased. What is the diagnosis?                          |        |
| 4. | 15-year-old patient complains about bulging of his right eyeball. In anamnesis, young man has noticed this phenomenon two years ago. On examination: limited mobility of the right eye towards the nose. Eye fissure is enlarged. Visual acuity is not changed. No signs of inflammation are seen. What is the diagnosis?                                     |        |

|    |                                                                                                                                                                                                                                                                                                                                                                                               |  |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 5. | 56-year-old patient complains about bulging of his left eyeball for 5 years and its quick progress. On examination: eye fissure is enlarged, limited mobility of the eye in all directions, significant exophthalmos, visual acuity is decreased. What is the diagnosis?                                                                                                                      |  |
| 6. | 34-year-old patient complains about headache, fever up to 38°C, pain in his right eye. In anamnesis, two days ago the patient pressed out the styte on the inferior eyelid of the right eye. On examination: redness and swelling of the eyelids, exophthalmos, narrowing of the eye fissure, chemosis, blurred vision, limited mobility of the eye in all directions. What is the diagnosis? |  |
| 7. | 45-year-old patient complains about retraction of the left eye. In anamnesis, 5 years ago he has suffered from syphilis, and now he is under the supervision of a neurologist. On examination: enophthalmos, partial ptosis and miosis, visual acuity is not changed. What is the diagnosis?                                                                                                  |  |

### Literature.

Main:

1. Ophthalmology : Textbook / O. P. Vitovska [et al.] ; ed. O. P. Vitovska. - Kyiv : AUS Medicine Publishing, 2017. - 647 p. : ill., tab. - Ref.: p. 639-644. - Ind.: p. 645-647.
2. Comprehensive Ophthalmology by A. K. Khurana 4th Ed. Anshan Publishers; 4th edition (December 15, 2007). 600 pages
3. Clinical Ophthalmology: A Systematic Approach: Expert Consult: Online and Print (Expert Consult Title: Online + Print) 7th Edition by Jack J. Kanski MD MS FRCS FRCOphth (Author), Brad Bowling FRCSEd(Ophth) FRCOphth FRANZCO (Author). Saunders; 7th edition (May 16, 2011). 920 pages

## TOPIC: GLAUCOMA

### Competence of the student.

The significant prevalence of primary glaucoma, the complexity of its early diagnostics and a serious prognosis are the reasons for the constant interest to this group of diseases by both scientists and practitioners. Knowledge of methods of early diagnostics, principles of treatment is necessary for the practical activities of a family doctor.

### The educational goal.

After studying the topic of subject students to **know**:

- methods of measurement of the intraocular pressure (tonometry);
- classification of glaucoma;
- diagnostics, clinical signs and symptoms of different forms of glaucoma and treatment options;
- etiology, pathomechanism, features of acute angle-closure glaucoma onset, emergency care, differential diagnosis with acute iridocyclitis;

### **be able to:**

- assess intraocular pressure by palpation method;
- evaluate pneumotonometry data;
- provide first aid for acute angle-closure glaucoma attack;
- assess the size of the cornea in newborns.

### Practical skills (tasks performed in class).

1. To assess intraocular pressure by palpation method.
2. To provide medical therapy for acute angle-closure glaucoma attack.

### Term's dictionary

**Open-angle glaucoma** - form of glaucoma in which the anterior chamber appears normal. Access to the trabecular meshwork is thus free and the outflow resistance must be due to changes in the meshwork itself.

**Congenital glaucoma** - a rare form of glaucoma characterized by undevelopment of the anterior chamber during fetal development.

**Glaucoma attack** - medical emergency; a sudden, massive increase in intraocular pressure that arises due to a blockage in the outflow of the aqueous humor.

**Goldmann applanation tonometry** - measuring intraocular pressure by applying a force strong to flatten a defined corneal area using a special prism.

**Gonioscopy** - examination of the angle of anterior chamber.

**Ocular Hypertension** - elevated intraocular pressure without glaucomatous damage.

**Papillary excavation** - physiological (normal) or pathological (loss of tissue) depression in the center of the papilla.

**Papilla** - the site where the axons of retinal ganglion cells converge and then leave the eye; syn. optic nerve head, optic disc

**Trabecular meshwork** - a meshwork of collagen fibers located in the anterior chamber angle through which the aqueous humor flows out.

### Tasks for the independent preparation for classes.

#### Approximate map of the independent work with literature.

| TASK                                                        | ANSWER |
|-------------------------------------------------------------|--------|
| Describe the main pathways of outflow of intraocular fluid. |        |

|                                                                                                             |  |
|-------------------------------------------------------------------------------------------------------------|--|
| What are the anatomical structures and landmarks of the angle of anterior chamber and eye drainage system?  |  |
| What are the normal and increased levels of IOP?                                                            |  |
| Define glaucoma. Classification of glaucoma.                                                                |  |
| What are the clinical features of open-angle glaucoma?                                                      |  |
| What are the clinical signs and features of angle-closure glaucoma?                                         |  |
| Consider the steps of medical therapy of the open-angle glaucoma.                                           |  |
| What are the indications for surgical treatment of glaucoma?                                                |  |
| List the clinical symptoms of an acute angle-closure glaucoma attack.                                       |  |
| Provide the management of acute angle-closure glaucoma attack. Indications for laser or surgical treatment? |  |
| List methods of early detection of glaucoma.                                                                |  |
| Define congenital glaucoma.                                                                                 |  |
| Define secondary glaucoma.                                                                                  |  |

**The list of key points, parameters, characteristics which the student should learn while preparing for lesson.**

| <b>TERM</b>               | <b>DEFINITION</b> |
|---------------------------|-------------------|
| Buphthalmos               |                   |
| Iris bulging              |                   |
| Glaucoma optic neuropathy |                   |

**Tasks for independent work.**

| <b>№</b> | <b>TASK</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>ANSWER</b> |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| 1.       | 45-year-old patient complains about “fog” in the right eye, iridescent circles, nape pain, nausea, which appeared at 4 AM. Earlier he never complained about vision problems. On examination: right eye - swelling of the eyelids, tearing, mixed injection, the cornea is opalescence, anterior chamber is shallow, pupil is dilated, oval-shaped, reaction on light is absent. Visual acuity of the right eye: hand movement near the face, eye is tight by palpation (IOP is T+3). What is the diagnosis?    |               |
| 2.       | 50-year-old patient complains about “fog” in front of left eye, iridescent circles, headache and nausea. This condition has repeated for two times, but all the symptoms gradually passed and visual acuity has recovered. Now all the symptoms last for more than 2 days. On examination: eyelids are swelling, congestive injection of the conjunctiva vessels, cornea is dull, anterior chamber is shallow, pupil is wide and there is no reaction on light. By palpation IOP is T+3. What is the diagnosis? |               |

**Literature.**

**Main:**

1. Ophthalmology : Textbook / O. P. Vitovska [et al.] ; ed. O. P. Vitovska. - Kyiv : AUS Medicine Publishing, 2017. - 647 p. : ill., tab. - Ref.: p. 639-644. - Ind.: p. 645-647.
2. Comprehensive Ophthalmology by A. K. Khurana 4th Ed. Anshan Publishers; 4th edition (December 15, 2007). 600 pages



3. Clinical Ophthalmology: A Systematic Approach: Expert Consult: Online and Print (Expert Consult Title: Online + Print) 7th Edition by Jack J. Kanski MD MS FRCS FRCOphth (Author), Brad Bowling FRCSEd(Ophth) FRCOphth FRANZCO (Author). Saunders; 7th edition (May 16, 2011). 920 pages

### **TOPIC: DISEASES OF THE RETINA AND OPTIC NERVE. EYE CHANGES ASSOCIATED WITH GENERAL DISEASES**

#### **Competence of the student.**

Pathological conditions of the retina and optic nerve can be caused by many neurological, neuroophthalmological, cardiovascular diseases, as well as endocrine diseases, which often require combined coordinated observation and treatment by both an ophthalmologist and a physician of any specialty. Changes in the fundus are of great diagnostic and prognostic value, as a large number of patients require therapeutic treatment. Hence the need to study the pathology of the retina and optic nerve for their timely diagnosis and development of appropriate treatment tactics.

#### **The educational goal.**

After studying the topic of subject you need to **know**:

- picture (image) of normal optic fundus;
- methods of optic nerve and retina examination;
- etiology, clinic and methods of treatment of retinal detachment;
- etiology, clinic and methods of treatment of optic neuritis, differential diagnosis with congestive optic disc;
- etiology, clinic and methods of treatment of optic nerve atrophy;
- clinic and methods of treatment of congenital and acquired retinal degenerations;
- etiology, clinic and methods of treatment of retinal circulatory disorders;
- changes in the fundus due to hypertension and diabetes;

#### **be able:**

- to connect the general pathology with changes of the optic fundus.

#### **Practical work (tasks) performed in class.**

1. To describe picture (image) of normal optic fundus;

#### **Term's dictionary**

**Retina** - layer of nerve cell at the back of eye responsible for vision; contains rods and cones

**Receptor** - a structure that receives signals at the target organ

**Photoreceptor** - light-sensitive sensory cells of the retina. One distinguishes between rods (responsible for dark and night vision) and cones (responsible for daylight and color vision)

**Retinopathy** - non-inflammatory retinal disease

**Retinal angiospasm** - pathological constriction of retinal blood vessel

**Metamorphopsia** - visual disturbance in which images are distorted

**Retrobulbar** - behind the eyeball

**Retrobulbar neuritis** - inflammation of the optic nerve behind the eyeball

**Trombus** - blood clot

**Trombosis** - formation of a thrombus

**Venous stasis syndrome** - obstruction of the retinal vein outflow by blood congestion

**Proliferative** - rampant growth

**Ophthalmoscope** - instrument that allows a direct view of the optic fundus

**Tasks for the independent preparation for classes.  
Approximate map for the independent work with literature.**

| <b>TASK</b>                                                                                                                              | <b>ANSWER</b> |
|------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Describe and draw a picture of the normal optic fundus.                                                                                  |               |
| Name the methods of diagnostics of the retina and optic nerve diseases.                                                                  |               |
| Identify differences in the clinical picture of central retinal vein thrombosis and central retinal artery embolism.                     |               |
| Write down the causes of optic neuritis.                                                                                                 |               |
| Indicate the main symptoms of optic neuritis.                                                                                            |               |
| Identify the differences in the clinical picture of optic neuritis, retrobulbar neuritis, optic nerve atrophy and congestive optic disc. |               |
| Write down the stages of development of fundus changes due to hypertension.                                                              |               |
| Write down the stages of development of fundus changes due to diabetes.                                                                  |               |

**The list of key terms, parameters, characteristics which the student should learn while preparing for lessons.**

| <b>TERM</b>    | <b>DEFINITION</b> |
|----------------|-------------------|
| Macropsia      |                   |
| Metamorphopsia |                   |
| Micropsia      |                   |
| Photopsia      |                   |
| Photophobia    |                   |

### Tasks for independent work.

| №  | TASK                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ANSWER |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1. | <p>The patient complains about reduced vision, the presence of a spot in front of the left eye. On examination: visual acuity of left eye is 0.1, can't be corrected. The anterior segment of the eye and vitreous body are not changed. On ophthalmoscopy: optic nerve disc is swollen, slightly passes into the vitreous, the boundaries are blurred, in the peripapillary area there are single hemorrhages, varicose veins, tortuous. What is the diagnosis?</p> |        |
| 2. | <p>The patient complains about reduced vision, the presence of dark spots spot in front of the right eye. Visual acuity of the right eye is 0.02, can't be corrected. The anterior segment of the eye and vitreous body are not changed. On ophthalmoscopy: optic nerve disc is pale pink, with clear boundaries, the ratio of arteries to veins is 2:3. Macular region is normal. What is the diagnosis?</p>                                                        |        |
| 3. | <p>The patient complains about reduced vision in both eyes since childhood. Visual acuity of both eyes is 0.1, can't be corrected. The anterior segment of the eye and vitreous body are not changed. On ophthalmoscopy: optic nerve disc is with clear boundaries, gray color, vessels are narrow. What is the diagnosis?</p>                                                                                                                                       |        |
| 4. | <p>The patient has no complains about vision loss. Visual acuity in both eyes is 1.0. The anterior segment of the eye and vitreous body are not changed.</p> <p>On ophthalmoscopy: optic nerve disc is enlarged and mushroom-shaped, protrudes into the vitreous, the boundaries of the disc are blurred; retinal vessels, especially veins, are sharply dilated, serpentine twisted. What is the diagnosis?</p>                                                     |        |

|    |                                                                                                                                                                                                                                                                                                                                                                                                             |  |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 5. | The patient complains about sudden vision loss in the right eye (visual acuity is 0 – zero). The anterior segment of the eye and vitreous body are not changed. On ophthalmoscopy: optic nerve disc is pale, grayish color, arteries are sharply narrow. On a white opaque retina a dark red spot distinguishes clearly in the central area of the fundus. What is the diagnosis?                           |  |
| 6. | The patient complains about reduced vision in his left eye. Visual acuity of the left eye is 0.2, can't be corrected. The anterior segment of the eye and vitreous body are not changed. On ophthalmoscopy: optic nerve disc is swollen, with bright red, shaded boundaries. The veins are dark and expanded; there are multiple hemorrhages of various sizes throughout the fundus. What is the diagnosis? |  |
| 7. | Picture of the optic fundus: the optic nerve disc is round, pale pink, the boundaries are clear, does not prominent in the vitreous body, the ratio of arteries and veins is 2:3. The area of the yellow spot is horizontal oval, red colored. How do you interpret this picture of the optic fundus?                                                                                                       |  |

### Literature.

#### Main:

1. Ophthalmology : Textbook / O. P. Vitovska [et al.] ; ed. O. P. Vitovska. - Kyiv : AUS Medicine Publishing, 2017. - 647 p. : ill., tab. - Ref.: p. 639-644. - Ind.: p. 645-647.
2. Comprehensive Ophthalmology by A. K. Khurana 4th Ed. Anshan Publishers; 4th edition (December 15, 2007). 600 pages
3. Clinical Ophthalmology: A Systematic Approach: Expert Consult: Online and Print (Expert Consult Title: Online + Print) 7th Edition by Jack J. Kanski MD MS FRCS FRCOphth (Author), Brad Bowling FRCSEd(Ophth) FRCOphth FRANZCO (Author). Saunders; 7th edition (May 16, 2011). 920 pages

## TOPIC: INJURIES OF THE EYE

### Competence of the student.

The leading link in the structure of ocular pathology is the damage to the eye and its adnexa, these are penetrating and impenetrable injuries of the eyeball, contusions, corneal and conjunctival burns. The largest number of blind people in the world are people with injuries due to military, industrial and domestic injuries. The future doctor of any specialty should know that the correct diagnosis of eye injuries, prompt hospitalization and timely qualified surgical care to the victim helps to preserve the most important anatomical structures of the eye and the fastest restoration of its functions. The problem of injury control is now one of the most pressing in ophthalmology.

### The educational goal.

After studying the topic, students should **know**:

- the symptoms of the penetrating injuries of the eye and the first aid;
- manifestations and treatment of contusions of the eye;
- complications of penetrating eye injuries (endophthalmitis, panophthalmitis, sympathetic inflammation);
- eye burns, their clinic and emergency care;
- foreign bodies of the cornea and emergency care;
- electroophthalmia, its clinical picture and emergency care;

### be able:

- diagnose the eye penetrating injury;
- give first aid for the eye penetrating injury;
- remove the foreign body from the conjunctiva;
- render the first aid for chemical and thermal burns;
- apply the monocular and binocular bandage.

### Practical work (tasks) performed in class.

1. To provide emergency care for penetrating injuries of the eye.
2. To provide emergency care for chemical burns of the eye.

### Term's dictionary

**Hyphema** - blood in the anterior chamber, usually from tears of the ciliary body

**Hypopyon** - protein aggregates and debris form a yellow mass on the inferior portion of the anterior chamber.

**Hemosiis** - conjunctival edema

**Pattern of injection** - ciliary flush

**Sympathetic ophthalmia** - bilateral, granulomatous uveitis that may follow any surgical or traumatic perforation involving the uveal tract.

**Enucleation** – removing of the eye

**Iridodialysis** - condition, causes by blunt trauma, appears as an accessory pupil at the iris root.

**Emphysema** - the sign of the orbital fracture (fracture into ethmoid or maxillary sinus), air infiltrates the tissues, which, on palpation, exhibit a characteristic of crackling or crepitation.

**Prolapse of the iris** - denotes protrusion of the iris into a wound in the cornea or sclera.

### Tasks for the independent preparation for classes.

#### Approximate map for the independent work with literature.

| TASKS                                                            | ANSWER |
|------------------------------------------------------------------|--------|
| Name the symptoms of penetrating injuries of the eyeball. Record |        |

|                                                                                                                        |  |
|------------------------------------------------------------------------------------------------------------------------|--|
| absolute and relative signs of penetrating injury.                                                                     |  |
| Prescribe first aid for penetrating injuries of the eye.                                                               |  |
| List the complications of penetrating injuries of the eye.                                                             |  |
| Name the clinical manifestations that may occur due to blunt trauma of eye. Describe the severity of an eye contusion. |  |
| Describe severity levels of the eye burns.<br>Clinical picture of the eye burns.                                       |  |
| Emergency help for the chemical eye burns.                                                                             |  |

**The list of key terms, parameters, characteristics which the student should learn while preparing for lessons.**

| <b>TERM</b>          | <b>ANSWER</b> |
|----------------------|---------------|
| Iridodialysis        |               |
| Emphysema of eyelids |               |
| Hematoma of eyelids  |               |
| Hemophthalmus        |               |
| Hyphema              |               |
| Endophthalmitis      |               |
| Panophthalmitis      |               |

|                                   |  |
|-----------------------------------|--|
| Eye siderosis                     |  |
| Eye halcosis                      |  |
| Subatrophy<br>(atrophy) of an eye |  |
| Sympathetic<br>ophthalmia         |  |

### Tasks for independent work.

| №  | TASK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ANSWER |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1. | Patient complains about blurred vision in right eye. It was found that when he worked in the studio a piece of metal hit his right eye. Patient has tearing, photophobia, blepharospasm. On examination: gaping wound of the cornea, shallow anterior chamber, hyphema, hypotension. What is the diagnosis?                                                                                                                                                                                                                                                                                                                                           |        |
| 2. | Patient at work accidentally got a solution of calx in the right eye. She has washed her eyes thoroughly with water. The patient was taken by ambulance to the ophthalmology department. On examination: severe swelling and redness of the skin of the eyelids, tearing, photophobia, blepharospasm. The conjunctiva of the eyelids is hyperemic, in the lower fornix there is local ischemia of the conjunctiva. Conjunctival injection of the vessels of the eyeball is seen. The cornea is grayish, swollen, total corneal erosion, positive fluorescein test. Visual acuity of the right eye is 0.05, can't be corrected. What is the diagnosis? |        |
| 3. | A child from a sports boarding school was taken to the ophthalmology department. In the anamnesis - a blow to the eye with a stick. On examination: partial tearing of the eyelids, total corneal erosion,                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|    | hyphema, uneven anterior chamber, iridodonesis, subluxation of the lens. The central parts of the retina are swollen, milky. Reduction of visual acuity up to 0.1. What is the diagnosis?                                                                                                                                                                                                                                                                                                                                                                                 |  |
| 4. | 19-year-old patient came to the emergency room at 2 o'clock in the morning with complaints about severe tearing, photophobia, blepharospasm, and eye pain. According to the patient, in the afternoon she visited the solarium in order to get tan. She took off her glasses during the ultraviolet procedure. On examination: lacrimation, photophobia, blepharospasm, mixed injection of the vessels of the eyeballs, corneal edema, anterior chamber has moderate depth, pupil is round. Visual acuity of both eyes is 0.6, can't be corrected. What is the diagnosis? |  |

### Literature.

#### Main:

1. Ophthalmology : Textbook / O. P. Vitovska [et al.] ; ed. O. P. Vitovska. - Kyiv : AUS Medicine Publishing, 2017. - 647 p. : ill., tab. - Ref.: p. 639-644. - Ind.: p. 645-647.
2. Comprehensive Ophthalmology by A. K. Khurana 4th Ed. Anshan Publishers; 4th edition (December 15, 2007). 600 pages
3. Clinical Ophthalmology: A Systematic Approach: Expert Consult: Online and Print (Expert Consult Title: Online + Print) 7th Edition by Jack J. Kanski MD MS FRCS FRCOphth (Author), Brad Bowling FRCSEd(Ophth) FRCOphth FRANZCO (Author). Saunders; 7th edition (May 16, 2011). 920 pages