METHODICAL RECOMMENDATIONS FOR INDEPENDENT WORK

EYE AND THE COMMON PATHOLOGY OF BODY

Actuality of the question: many common diseases as arterial hypertonic, hypotonic, diabetic disease etc. are able to evoke eye wound. Changes of eye sometime are the first manifestation of common pathology.

Purpose: as result of the team learning student has to know:

- the main clinical manifestations of hypertonic angiopathy, retino- and neuroretinopathy;
- the most frequent eye changes in case of sugar disease;
- ophthalmologic symptoms of endocrinal ophthalmopathy;
- eye complications of rheumatism, tuberculosis;
- changes of retina in case of hypotonic disease, hematological pathology;
- ophthalmologic manifestations of AIDS.

To know:

- to carry out external inspection of eye;
- to investigate the main visual functions (visual acute, visual filed, color vision);
- to use the main objective methods of eye investigations and to interpret received results.

Logic schema of the team:

3. Hypertonic disease:
   - hypertonic angiopathy of retina – clinic: arteries are narrow, arteriovenous correlation is changed, symptoms arteriovenous crossing Salus I, II, III, Guist’s symptom, breach of normal arterial branching;
   - hypertonic retinopathy – clinic: angiopathy + polymorphic retinal hemorrhages, sometimes retinal exudations, prognosis: presents of retinal hemorrhages is evidence of cerebral hemorrhage threat;
   - hypertonic neuroretinopathy - clinic: symptoms of the previous two stages + retinal end optic nerve edema; prognosis: symptom of hard form of hypertony.

   Treatment: vasodilatators, antiocsidants, angioprotectors, in case of edema – diuretics.

4. Hypotonic disease - clinic: vessels dilatation and winding, especially veins, often complaints with darkness in eyes, especially orthoclinostatyc;

5. Renal diseases – etiology: the most often retinal changes are diagnosed in chronic and acute glomerulonephrite, pielonephrite.
   - renal angiopathy - clinic: retinal arteries are very narrow;
   - renal retinopathy - clinic: renal angiopathy + retinal hemorrhages, exudative hearths, “star” figure in macula; prognosis: as for eyes – retinal ablation is possible, common – bed prognostic symptom for life;
   - renal neuroretinopathy - clinic: large retinal and optic nerve disc edema; prognosis: bed prognostic symptom for life.
6. Sugar disease:
- bulbar conjunctiva – aneurisms of venous capillaries, prognosis: conjunctival changes often are predecessors of retinal changes, that has prognostic mean.
- diabetic angiopathy - clinic: uneven dilatation of veins, microaneurisms;
- nonproliferate diabetic retinopathy - clinic: angiopathy + small round hemorrhages, “cotton” exudates; prognosis: in case of “cotton” exudates – bad;
- preproliferate diabetic retinopathy - clinic: small vessels thrombosis, regions of retinal ischemia, prognosis: bad;
- proliferate diabetic retinopathy - clinic: neovascular vessels in retina and on optic nerve disc, growth of connective tissue; prognosis: vitreal hemorrhages, retinal ablation;
- diabetic neuroretinopathy - clinic: previous symptoms + edema and hyperemia of optic nerve disc;
- cataract – it is possible for cataract to be true diabetic (“snow storm” picture) and senile;
- another manifestations – chronic eyelids and conjunctiva inflammations, hordeolums, uveits (more often two-sides), hemorrhages under eyelids skin and conjunctiva, transient changes of eye refraction.

Treatment: normalization of glycemia level, antisclerotic, angioprotectors, anabolic steroids, biostimulators, antioxidiant therapy.

7. Thyroid pathology:
- endocrinal ophthalmopathy - clinic: exophthalmia, breach of eye movement function, diplopia is possible, inflammation of conjunctiva, mydriasis, Koher, Graefe, Stellwag, Krauss symptoms etc.
- endocrinal myopathy - clinic: diplopia, limitation of eye movement upwards and outside, Mobius, Minn symptoms.

Diagnostics: ultrasound diagnostic, computer tomography of orbits, positions tonometry.

Treatment: diuretics, antiinflammational therapy, immunocorrection, steroids.

8. Collagenoses:
- rheumatism - clinic: returning one-side iridocyclitis, tennonitis, myositis, returning episcleritis, sclerotic keratitis, retinal vessels vasculitis; treatment: antiinflammational, symptomatic (mydriatics, proteolytic ferments, diuretics etc.) therapy;
- rheumatoid arthritis - clinic: returning two-sides scleritis, sclerotic keratitis, dry conjunctivitis, episcleritis, uveitis; complications: secondary glaucoma;
- Sjegren syndrome – dry kerato-conjunctivitis; diagnostics: Shyrmer test;
- Still disease – youth rheumatoid arthritis, iridocyclitis, corneal degeneration, complication cataract;
- Behterev disease – ancylosic spondylitis, returning two-sides iridocyclitis; complications: secondary glaucoma, cataract;
- Reiter disease – uretritis, catarrhal conjunctivitis, asymmetric polyarthritis;
- Behchet disease – aphthosis stomatitis, iridocyclitis, ulceral uretritis.

9. Blood diseases:
- anemia – vessels dilatation, microaneurisms, polymorphic hemorrhages, Roth’s spots;
- leucosis – angio-, retino-, neuropathy, arteriovenous correlation changes at the expense of veins dilatation, pale color of eye bottom, vessels are winded, with microaneurisms;
- hemorrhagic diatheses – hemorrhages under eyelid skin, conjunctiva, hemorrhages from iris vessels, iritis;
- erythremia – iris is red or brown, eye bottom is dark, veins dilatation, vessels are round by hemorrhages, occlusion of central retinal vein is possible.

10. Tuberculosis – keratitis, uveitis, retinal periphlebitis, tuberculosis of eyelid skin, conjunctiva, dacrioadenitis, dacriocystitis, orbital osteomyelitis, scleritis and episcleritis, optic neuritis.

11. AIDS:
- noninfection eye changes – “cotton” hearths, isolated retinal hemorrhages and Roth’s spots, retinal microaneurisms and teleangiectasies, accommodation changes;
- manifestations of opportunistic infection – cytomegalovirus retinitis, herpetic retinitis, sharp retinal necrosis, Herpes Zoster, Toxoplasma Gondi, mycobacteria of tuberculosis, pneumococcs;
- tumors – sarcoma Kaposhi of eyelids and conjunctiva.

**Recommended literature:**

**THE MAIN:**

**ADDITIONAL:**

**Methodic recommendations:**
Read recommended literature.
Learning eye manifestations of hypertonic disease draw your attention on the main symptoms of hypertonic angiopathy – symptoms arteriovenous crossing Salus I,
II, III, Guist’s symptoms. Salus I – vein constriction under artery, Salus II – except of vein constriction under artery it lateral displacement like arc (symptom of arc) is observed; Salus III – vein under artery and some distance from it is not seen – vein is looks to be interrupted in the place of crossing. Guist’s symptom – vessels winding around macula like corkscrew. Remember, that symptoms of crossing are possible in healthy people.

Learning eye manifestations of renal diseases you have to remember that although “star” figure in macula is not revealed in retinal pathology always but it is typical just for retinal pathology.

Learning eye changes in sugar disease you need remember that microaneurisms in bulbar conjunctiva and retina sometimes are the first manifestation of disease, that is why people with these changes have to research sugar of blood. Also research for sugar disease has to be done for people with chronic returning inflammations of eye and it appendages (returning iridocyclitis, blepharitis, hordeoli etc.) It is necessary to take into attention that transitory refraction changes are possible in people with non stabilized level of sugar in blood (during changes of hlycemia level). This fact is to be taken into account in case of optic correction of ametropies.

Learning eye manifestations of endocrinl ophthalmopathy take into attention that exophthalmia in thyroid pathology often is two-sides but one-side asymmetric exophthalmia is possible. Remember normal projection of eye apples is 10-16 mm, asymmetry between right and left eye – 1 mm.

Learning eye manifestations of collagenosis you have to remember their frequency and intensiveness (in particular rheumatism) do not depend on activity of common process. The hardest eye defeats are peculiar for latent forms. Returning of rheumatic iridocyclitis as a rule is coincided with rheumatic attack or gone just after it. Sometimes rheumatic uveitis flows almost without symptoms and are able to be determined only in case of complications rise (for example retinal ablation).

Eye changes in blood diseases can be revealed only in case of hard flow of the main disease.

Learning tuberculosis eye defeats you need to repeat teams “Tuberculosis keratitis” and “Iridocyclitis”.

Learning eye manifestations of AIDS remember that “cotton” hearths which are the marker of AIDS take the first place among them. They have been shown just at once after disease’s beginning or 4-8 months later. More often they are localized in back pole of eye, do not influence on visual acuity and have been resolved some months later. Cytomegalovirus retinitis is the most often cause of blindness in AIDS.

Tests for control of knowledge of the team:
1. Presence of hemorrhages on eye bottom in people with hypertonic disease is testify about threat of: a). retinal ablation b). cerebral hemorrhages c). renal necrotic processes d). all the called
2. What are the symptom of hard flow of hypertonic disease:
   a). retinal exudation
   b). retinal hemorrhages
   c). vitreal hemorrhages
   d). retinal and optic nerve disc edema
   e). presence of Salus I-III and Guist’s symptoms

3. Proliferate diabetic retinopathy can lead to:
   a). optic nerve atrophy
   b). sharp ischemic neuropathy
   c). macular dystrophy
d). cystic degeneration of retina
e). retinal ablation

4. What testified about hard flow of sugar disease?
   a). retinal hemorrhages
   b). vitreal hemorrhages
c). hemorrhages under conjunctiva
d). presence “flies” before of the eye
e). returning two-sides uveitis

5. The main eye symptoms of thyroid ophthalmopathy are:
   a). two-sides exophthalmia
   b). one- or two-sides exophthalmia
c). two-sides enophthalmia
d). one- or two-sides enophthalmia
e). eye apples
   f). eye apples
   g). eye apples
   h). eye apples
   i). eye apples
   j). eye apples
   k). eye apples
   l). eye apples
   m). eye apples
   n). eye apples
   o). eye apples
   p). eye apples
   q). eye apples
   r). eye apples
   s). eye apples
   t). eye apples
   u). eye apples
   v). eye apples
   w). eye apples
   x). eye apples
   y). eye apples
   z). eye apples

6. Border of upper eyelid in case of quiet look straight:
   a). closes 2-3 mm of cornea
   b). localized in level of the upper limb
c). localized 2-3 mm higher of the upper limb

7. Hypofunction of lacrimal gland (Shirmer test) is determined if in 5 minutes paper piece was been moistened:
   a). less than 1,5 cm
   b). less than 3,0 cm
c). less than 4,5 cm
d). less than 6,0 cm
e). hypofunction can not be revealed by this test

8. Reiter disease includes three symptoms:
   a). ancylosic spondylitis, returning two-sides iridocyclitis, secondary glaucoma
   b). arthritis, iridocyclitis, corneal degeneration
c). aphthosis stomatitis, two-sides iridocyclitis, ulceral urethritis
d). meningitis, iridocyclitis, arthritis
e). urethritis, catarrhal conjunctivitis, polyarthritis

9. The most often cause of blindness in AIDS:
   a). “cotton” hearths
   b). isolated retinal hemorrhages
SUDDEN LOSS OF VISION

**Actuality the question:** there are many diseases in ophthalmology that lead to sudden loss of vision with next blindness. Timely diagnostic these diseases is important for prognosis.

**Purpose:** as a result of learning the team student has to know:
- etiology, pathogenesis, clinic, possible complications and treatment principles for sharp occlusions in retinal vessels (arteries and veins);
- etiology, clinic manifestations, urgent help, treatment principles for optic neuritis;
- etiology, clinic, urgent help, treatment principles for ischemic neuropathy;
- etiology, clinic, complications, treatment principles for haemophthalm;
- etiology, clinic, complications, treatment principles for retinal ablations.

**To know:**
- to investigate the main visual functions (visual acuity, visual filed, color vision);
- to render urgent help in case of optic neuritis, haemophthalm, retinal ablation.

**Logic schema of the team:**
1. Optic neuritis – *etiology:* sharp and chronic infections, cerebral inflammations, orbital inflammations, traumas, intoxications, avitaminosis; *clinic:* quick loss of vision, early breach of color vision, concentric contraction of visual filed, scotoma, eyelids hyperemia and edema, normal eye bottom in case of retrobulbar neuritis; *prognosis:* partial or total optic nerve atrophy; *complications:* are absent; *diagnostics:* ophthalmoscopy, investigation of visual functions; *treatment:* etiothropic, steroids, diuretics.

2. Occlusion of central retinal artery - *etiology:* rheumatism, hypertonic disease, atherosclerosis, diseases of blood; *clinic:* total or subtotal sudden loss of vision, milk-white retinal edema, “cherry stone”; *prognosis:* total optic nerve atrophy; *diagnostics:* ophthalmoscopy, investigation of visual functions; *treatment:* vasodilatators.

3. Thrombosis of central retinal vein - *etiology:* hypertonic disease, sugar disease, atherosclerosis; *clinic:* considerable but non total visual loss, picture of “crush tomato” on eye bottom; *prognosis:* partial optic nerve atrophy; *complications:* secondary glaucoma; *diagnostics:* ophthalmoscopy, investigation of visual functions; *treatment:* steroids, ferments;

4. Haemophthalm - *etiology:* traumas, sugar disease, leucosis, tumors; *clinic:* sudden loss of vision, absence of pupilar reflex; *prognosis:* vitreal fibrosis; *complications:* retinal ablation; *diagnostics:* transillumination, USD; *treatment:* angioprotectors, ferments, vitrectomy.

5. Ischemic neuropathy – *etiology:* hypertonic disease, sugar disease, atherosclerosis, temporal arteritis, neck vertebral discopathy; *clinic:* rapid and large loss of visual functions, pallid disc edema, petehial hemorrhages; *prognosis:*

Recommended literature:

THE MAIN:

ADDITIONAL:

Methodic recommendations:

Read recommended literature.

Turn your attention on the most often causes of central retinal artery occlusion (hypertonic disease, rheumatism, diseases of blood, atherosclerosis), on peculiarities of it clinic (sudden visual loss until blindness), prognosis (bad), urgent therapy (urgent use vasodilatators).

Learning sharp occlusion of central retinal vein turn your attention on fact that unlike central retinal artery occlusion total blindness never has been, possible complications (secondary glaucoma, haemophthalm), distant results (partial optic nerve atrophy), prognosis (relatively better).

Learning neuritis turn your attention on fact that loss of vision in this cause has not sudden but quick character, early color vision dysfunction and very often optic nerve atrophy as a result are typically. Remember, that returning retrobulbar neuritis can be the only symptom such hard disease as diffuse sclerosis during long time. If you suspected neuritis you should direct the patient to ophthalmologist immediately.

Learning haemophthalm turn your attention on fact that besides traumas and eye diseases causes of it rise are common diseases, especially sugar and hypertonic
diseases, leucosis. Sudden loss of vision till light sensation and absence of transillumination are typically. Patients have to be immediately hospitalized to ophthalmologic clinic. You should remember that very often retinal ablation is result of total haemophthalm. Timely vitrectomy is able to prevent it.

Learning retinal ablation turn your attention on the most often etiologic factors (high myopia, retinal dystrophy, eye traumas), provoked moments (hard physical work, long inclinations of head and body, concussion of them). Photopsia (lightning, sparks in eye) very often precede for ablation. In those causes patient need immediately direct to ophthalmologist. Very typically for ablation is “curtain” appearance front of eye and fluctuation of objects.

**Tests for control of knowledge of the team:**

1. Patient with rheumatic hard vice suddenly wend blind on right eye. Optic environments are transparent. Optic nerve disc is pallid, with edema, there are large milk-white retinal edema with red spot in it center on eye bottom. Retinal arteries are very narrow. What the diagnose?
   a). Thrombosis of central retinal vein
   b). Retinal ablation
   c). Tumor in eye
   d). Occlusion of central retinal artery

2. What medicines you should prefer for urgent help in previous cause?
   a). Spazmolitics
   b). Antibiotics c).
   Steroids d). Diuretics
   e). Laser treatment

3. Patient complains on sudden large vision loss. He has hypertonic disease. Visual acuity 0,05, the same with correction. Eye is quiet. Optic environments are transparent. Optic disc nerve is hyperemic, edema, it borders are illegible. Retinal veins are dilated, winded, arteries are narrow. There are a lot of hemorrhages in the centre of eye bottom. Another eye is healthy. What disease is it?
   a). Occlusion of central retinal artery b).
   Thrombosis of central retinal vein c).
   Ischemic neuropathy d). Hypertonic retinopathy

4. After carried grippe patient has had quick vision loss on left eye (0,02 correction doesn’t help), front part of the eye, optic environments and eye bottom are normal. Visual filed is normal but there are central absolute scotoma. Color vision is violated by acquired type. Your diagnosis?
   a). Papillitis
   b). Front ischemic neuropathy
   c). Retrobulbar neuritis
   d). Occlusion of central retinal artery

5. Woman with meningoencephalitis is noted quick large vision loss (0,03 correction doesn’t help) on left eye. Front part of the eye, optic environments are normal.
Optic nerve disc is hyperemic, it borders are illegible. Disc some edematic, there is exudation in vessel funnel. Borders of visual filed are concentric narrow. Color vision is violated by acquired type. Your diagnosis?
   a). Papillitis  
   b). Stagnation of optic nerve disc  
   c). Retrobulbar neuritis  
   d). Optico-hiasmal arachnoiditis
6. What kind of therapy needs patient by test №5?
   a). Antibiotics with wide spectrum  
   b). Steroids commoc  
   c). Steroids local  
   d). Diuretics  
   e). Biostimulators
7. Patient with hard sugar disease sudden lost vision at right eye. The eye is quiet. There are like-needle dimness in lens. IOP is 16 mm.Hg. Transillumination is absence. What the most probable cause of vision loss?
   a). Occlusion of central retinal artery  
   b). Thrombosis of central retinal vein  
   c). Haemophthalm  
   d). Retinal ablation  
   e). Tumor in eye
8. What investigation should be done in purpose of diagnosis verification by test №7?
   a). Ultrasonography diagnostic of eye  
   b). Radionuclide diagnostic  
   c). Roentgengraphy of orbit  
   d). Tomography of eye and orbit
9. Patient with high myopia after hard physical work had quick lost of vision on left eye. Appearance of lightning before the eye had been previous for it. The eye is quiet, cornea and lens are transparent. There is gray bubble with small-wrinkled surface in eye bottom that is swayed during eye moving. Bright-red spot like horseshoe is seen on the grey bubble background. What disease is possible?
   a). Tumor in eye  
   b). Retinal ablation  
   c). Haemophthalm  
   d). Occlusion of central retinal artery
10. Patient with hypertonic disease sudden lost vision by one eye. Visual acuity is 0,04, correction doesn’t help. Front part of eye is normal. Optic environments are transparent. Optic nerve disc is pallid, has petechial hemorrhages. Retinal arteries are narrow. Color vision Arterii сетчатки сужены. Color vision is violated by acquired type. There is inferior hemianopsia in visual filed. What is your supposition about diagnosis?
   a). Optic neuritis  
   b). Optic nerve athrophy  
   c). Occlusion of central retinal artery
d). Front ischemic opticopath

11. What medicines do you prefer for treatment the patient by test №10?
   c). Vasodilatators
d). Biostimulators
e). Steroids f).
Diuretics g).
Antibiotics

12. Call the main difference of front ischemic opticopathy from papillitis:
   c). Pallid disc with edema
d). Hyperemia and edema of disc
e). Presence of relatively large hemorrhages in disk tissue and retina
f). Petechial hemorrhages in disc and peripapillar region
g). Color vision breach
e). Defects of visual field