



Visual Disturbances in Young Patients with Cervical Spine Osteochondrosis Working at the Computer

Jurabekova A.T.

Department of Neurology
Samarkand State Medical University

Eshimova Sh.K.

Department of Neurology
Samarkand State Medical University

Bekturdiev Sh.S.

Department of Neurology
Samarkand State Medical University

ABSTRACT

The American professor Mitchell D. once called osteochondrosis of the spine - "the demon in the back". Modern man due to urbanization suffers from deteriorating environmental conditions from poor diet and quality of nutrition, sedentary lifestyle, all this affects changes in the structure of the spine.

Keywords:

Visual impairment, young adults, cervical osteochondrosis, spinal column, computer.

Introduction. According to the WHO, more than 90% of the world's population suffer from osteochondrosis of the spine over the age of 50. Recent literature data raises the question about the increase of pathology in the spine in particular osteochondrosis among the younger population. In relation to all neurological diseases associated with the spine, the incidence of cervical osteochondrosis has an average limit of 11.5. By its anatomical and morphological structure, the cervical region is the most important conduit between the central and peripheral, autonomic nervous system. The most mobile and most vulnerable part is the cervical region. Equally important is the vertebrobasilar system, where there is a direct connection with the visual analyzers and oculomotor nerve guides. Due to various reasons overweight, prolonged physical exertion, incorrect posture, due to sedentary lifestyle; abnormal vertebral cartilage in the discs, where degeneration may occur, in turn squeezes the arteries and nerve fibers, thereby

reducing the conduction of nerve impulses. As early as 1866, Professor E.V. Alamyuka considered the problem of glaucoma as a secretory neurosis resulting from impingement of the cervical sympathetic nodes. In the same years Swiss ophthalmologist Gorner I.F. (1869), described the famous syndrome (ptosis, miosis, enophthalmus). Accordingly, the connection between the cervical spine and eye symptoms is obvious. However, comprehensive studies on the study of visual impairment in various cervical osteochondrosis syndromes are insufficiently informative.

Purpose of the study. To study the pathomechanism of development of ophthalmic disorders depending on the criteria of cervical osteochondrosis.

Material and methods of research. Patients undergoing inpatient and outpatient treatment at the MC SamGMU, for the period 2020-2023, with the diagnosis of cervical spinal

osteochondrosis aged 25 to 45 years, were subjected to examination. The exclusion criteria were the factors of increased blood pressure, unstable (by tests) blood sugar and other comorbidities. The patients were treated in the neurology department, 70 patients in total, of whom 45 were women and 25 were men; a healthy group of 20 people (volunteers) of identical age was taken for comparison. The morbidity was mainly related to work and lifestyle, namely forced cervical strain for the period of work (by computer), or a whole day of driving. Patients were divided according to the stage classification. Neurological examination was performed according to the traditional stage. Paraclinical methods of investigation included MRI (CT) of the cervical spine, ultrasound CTDG of the main vessels of the head and neck, for complete differentiation with other pathologies. In addition, all patients were examined by an ophthalmologist for level of visual acuity, visual field, examination with optical coherence tomography; intraocular pressure measurements, examination of the fundus, determination of the anterior segment level by biomicroscopy, refractometry, gnoscopy, and visometry of the eye.

Thus, patients were examined both neurologically and ophthalmologically. Statistical data were processed on an individual computer using standard Student's indices.

Results of the study. When analyzing clinical and neurological data, the patients were subdivided according to the degree of cervical spinal dysfunction on the basis of symptoms and using a classification. The common neurological syndromes were in the dominant form headache and dizziness 100%, neck pain was similar in all patients, with pain in the cervical region increasing with any head movement with rotation into the shoulder or chest. The first stage included patients who experienced neck pain, headache, and dizziness only periodically with severe fatigue (10 patients). The second stage included patients who constantly experienced neck pain, facial numbness; they could not independently reduce pain (relaxing massage, change of head and neck posture) (22 patients). In the third stage, the neck pain is

stable with nagging pain in the occipital region, and patients also experience dizziness when changing position or walking (28 patients). In the fourth stage, patients have fear of sudden movements, so they have limited movement in the cervical area, stiffness in the external data change the configuration of the neck (10 patients). At stages III and IV, the patients had dizziness with a sudden change of the head position, with an increase of the symptom periodically accompanied by nausea, vomiting. These signs are confirmed by the authors (Zhulev I.M. et al. 2008), who attribute these signs to a special position of the oblique muscle during head movement with simultaneous functioning of the vertebral artery and the great occipital nerve. In the same patients, atactic syndrome was noted in 35% of cases; tinnitus, intensifying in the prone position (i.e., before going to sleep, which makes it difficult to fall asleep, and accordingly increases anxiety and depression).

According to the character of the headache, mostly all patients described it as pulsating, intense. In 52% of cases, localization of headache in the cervico-occipital area, in rare cases in 16% of the area of frontal and temporal pain, mainly in the eye socket area, in 40% of cases in 80% of cases, pain in the scalp was noted (hyperpathy). The duration of the pain ranged in time from a few hours from 2 to 8-9 hours, which was most often perceived as migraine signs (accordingly, they received appropriate treatment, where they did not experience any improvement dynamics). Thus, the patients' pain syndrome had a chronic character, the pain syndrome was associated with statistical or dynamic loads, with periodic incoming visual disturbances, of the type of "blurring", "flashes" in the eyes. During control of the volume of movement activity in the neck, there were revealed, smoothing of the cervical lord in 38%, and amplification in 63% of cases. Asymmetry of the forearms, myofascial pain points at the level of straight muscles of the head were noted in 70% of cases. All these signs mostly indicated (muscle-tonic) signs of spondylogenic type of changes. Which required additional diagnostic methods.

Thus, according to the ultrasound findings, there were different indices of blood flow changes (intracranial and vertebral), especially at the level of the posterior cerebral artery. LSCs, clearly decreased, but asymmetrically, with predominance of one side of the vertebral artery; at the same time, vascular blood flow in the arteries had a course, moving in layers, without changes in blood flow rate. The asymmetry described above is associated with decreased ASCs in the affected vertebral artery, which in these conditions is regarded as compensatory-adaptive.

The neuroimaging findings of the cervical spine primarily confirmed the presence of altered processes in the vertebrae. Alteration of the spinal axis in the plane. C-shape, confirmed the disturbance of the associated biochemical in the cervical spine. Vertebral deformity had the form of osteochondrosis, where osteophytes were located in the area of the lower neck, (in 69.9% CIV-CV level); wedge-shaped deformity was also present. Altered signals in the low side, intervertebral discs, with the presence of protrusions (CI-CIII) were observed in almost 100% of cases. Protrusions in 80% in the CIV-CVI region. In 38.5%, there was a thickening of the longitudinal ligaments, which gave parallel narrowing of the spinal canal. It may be a coincidence that the narrow intervertebral foramen was more often found on the right side. Indications of spondyloarthrosis, were noted in character, and the greatest change at the level of the atlanto-axial contact, which again, is associated with motor-dynamic disorder. Thus, the leading role in the pathogenesis of cervical spondylogenic changes is played by mechanisms of stress, constant load on the cervical spine, which in turn leads to spinal deformities, discs, and hemodynamic disturbances in the form of characteristic neurological symptoms.

The purpose of the work, was to study ophthalmological changes, against the background of cervical osteochondrosis. Accordingly, the second stage of the study (after the evidence base of our patients, on making the main diagnosis), was the need for consultation and diagnosis by an ophthalmologist. The result of the analysis of ophthalmological signs was as

follows. In patients in stages I and II of cervical osteochondrosis, where there is obstruction of blood flow of small caliber vessels (due to vasospasm), at the level of paravertebral arteries and internal carotid arteries, accompanying background sympathicopathy: patients complain of periodic "flickering" in the form of sparks or color spots; sometimes sharp darkening in eyes, or the appearance of running "flies" before eyes. Examination by an ophthalmologist revealed only in stage II patients initial changes on the ocular fundus. In the same groups (stage I and II) changes of retinopathy type were noted in the form of arterial narrowing (reversible) with preservation of elasticity of the vessel wall itself; in the form of moderate dilation of veins; in almost 80% cases vessel angiospasm of irreversible nature. In stage II patients, in 3 cases the symptom of arterio-venous crossover of the first degree was found. Corkscrew-shaped tortuosity of blood vessels, was noted in 55%. In stage III patients, the complaints were identical to those of stages I and II, in addition, several patients noted photopsia. Due to compression of not only small but also large main vessels (extravasal compression), angioretinopathy was observed accordingly. Thus, vascular angiospasm, due to arterial constriction, was pronounced in 100% of cases; significant venous profundity was detected in all patients. Changes in the retina caused by background ischemia, where sclerosing of the vascular wall, on the background of already dystrophic process, was noted. These data are confirmed by earlier studies (Lunev D.K., Veritsagin N.V. 2022). Vascular blood flow, in ophthalmological examination, is discontinuous, which is manifested by retinal edema or thickening of the vessel wall, resembling individual "beads" on threads. Such pattern, is noted in 35% of cases. characteristic arterio-venous crossover, which occurred in low percentage in stage II patients, increased in this group of patients up to 60%, which most likely requires additional investigation, and is associated with sclerosing of the arterial wall. In such cases, edema and thickening of the retina are obvious. Level IV, it is necessary to consider as a chronic impairment of cerebral circulation, taking into

account the age of the disease and peculiarities of changes in the cervical spine. In this connection, the complaints are joined by the signs of sharp decrease of vision, loss of visual fields. Having in the presence of vascular compression of all calibers, on the ocular fundus of patients, increased angiospasm, angioretinopathy and in 2 cases

neuroopticopathies were revealed. The data coincide with the literature, in particular with the work of Russian scientists (Tarasova L.N. 2007). In half of cases of all patients in this group the initial signs of neovascularization, optic nerve edema, with color changes and a growing pattern were detected.

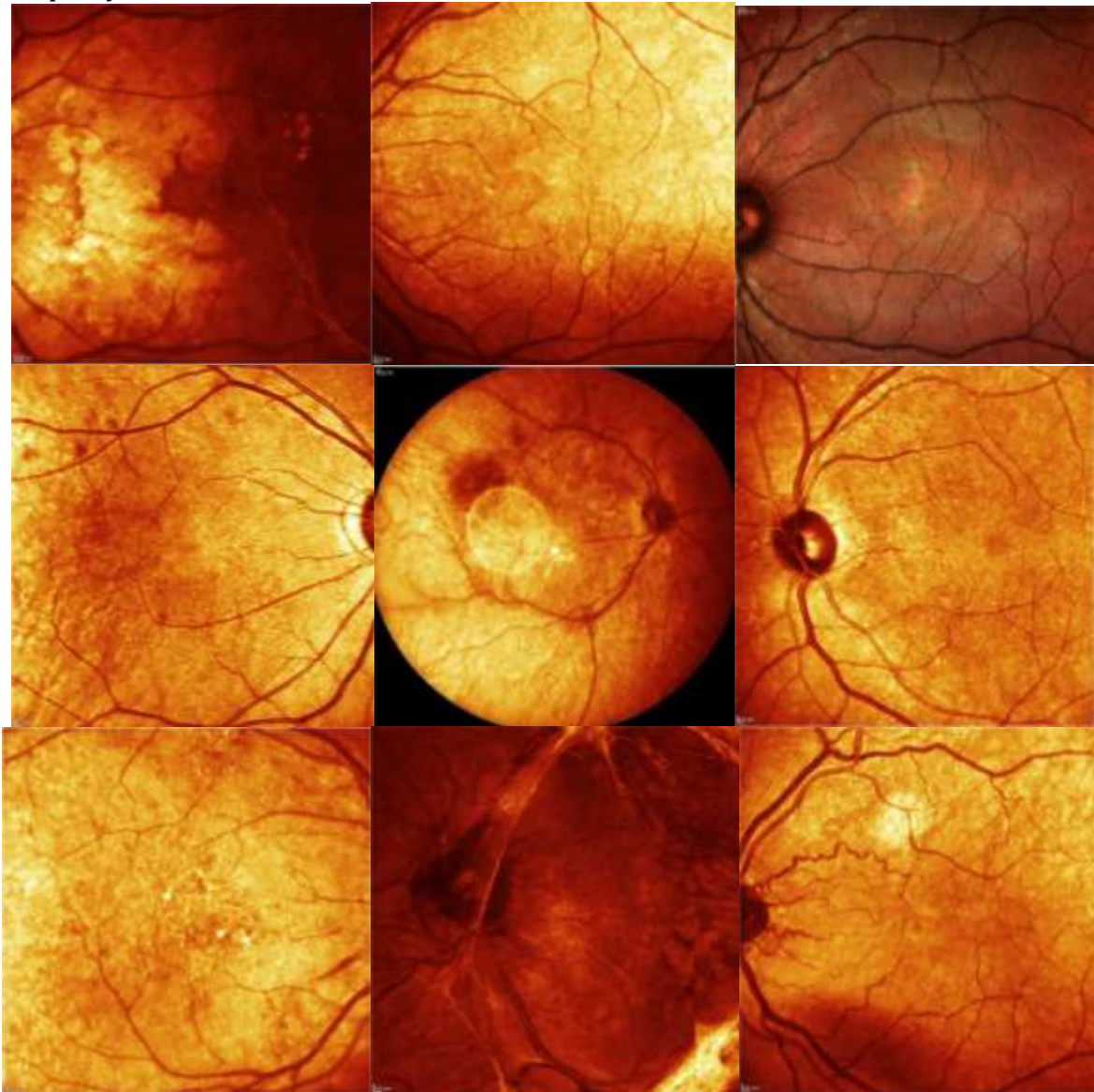


Figure1.- Ophthalmological signs were as follows. In patients in stages I and II of cervical osteochondrosis, where there is obstruction of blood flow of small caliber vessels (due to vasospasm), at the level of paravertebral arteries and internal carotid arteries

At the same time, sources of scientific analyses, other authors (Euronean), note in patients with stage IV cervical osteochondrosis sclerotic atrophies with contour shading pseudoglaucomatous displacement, characterized by the progression of the process.

At the end we would like to note, the patients under 30 years old (3 patients work in the banking system (2) and one patient works as a teacher of computer programming), all three were included in the stage I and II, cervical spine osteochondrosis diseases. In 2001, the

Association of American Optometrists (AOA), recommended in the classification of visual impairment to use the term-computer visual syndrome (CPS), in which there are signs described above (pain in the eyes, visual impairment, pain in the neck, dizziness). Accordingly, such patients need additional and separate examination, to address comorbidity or combined, both computer eye strain and circulatory disorders due to impingement in the cervical spine area, such dual role, is associated with a more accelerated progression of visual impairment.

Conclusions:

1. Pathological process in the cervical spine (osteochondrosis, spondylitis) changes the structure of the vertebral discs, deforms the vertebrae, which leads to compression of nerve limbs, compression of vessels from small to large caliber, as a result, visual disturbances, in the form of sharpness, field of vision, angioretinopathy.
2. Visual impairment depends on the degree of cervical osteochondrosis, stage III and IV characterized by a chronic circulatory disorder, usually manifested by a unilateral process depending on the sides of the vertebral artery; in the form of myopia.
3. special attention should be paid to patients who work directly at a computer, because the combined load (cervical dysfunction and vision (CDS) simultaneously) leads to early clinical ophthalmic disturbances in the microcirculatory system.

Literature:

1. Gustov A.V. Sigriansky K.I., Stolyarova Z.P. Practical neuroophthalmology. - N.-Novgorod, 2003. - 264 с. Кригер Д.Н. Патогенез и лечение оптической нейропатии различного генеза // Клинич. офтальмология. - 2007. - № 1. - С. 40-43.
2. Kushnir G.M. On ophthalmological diagnosis of cerebral disorders in cervical osteochondrosis // Problems of ophthalmology in a neurological clinic: proc. Medical clinical inst. Yalta. 1981. T. 90. C. 24-25.

3. Kamalova M., Khaidarov N., Shomurodov K. Microscopic examination of brain tissue in hemorrhagic stroke in uzbekistan // Материали конференцій МЦНД. - 2021.
4. . M. I. Kamalova, N.K.Khaidarov, Sh.E.Islamov, Pathomorphological Features of hemorrhagic brain strokes, Journal of Biomedicine and Practice 2020, Special issue, pp. 101-105
5. Kamalova Malika Ilkhomovna, Islamov Shavkat Eriyigitovich, Khaidarov Nodir Kadyrovich. Morphological Features Of Microvascular Tissue Of The Brain At Hemorrhagic Stroke. The American Journal of Medical Sciences and Pharmaceutical Research, 2020. 2(10), 53-59
6. Khodjueva D. T., Khaydarova D. K., Khaydarov N. K. Complex evaluation of clinical and instrumental data for justification of optive treatment activites in patients with resistant forms of epilepsy. American Journal of Research. USA. № 11-12, 2018. C.186-193.
7. Khodjueva D. T., Khaydarova D. K. Clinical and neuroph clinical and neurophysiological ch ological characteristics of teristics of post-insular cognitive disorders and issues of therapy optimization. Central Asian Journal of Pediatrics. Dec.2019. P 82-86
8. Sitel A.B. Diagnostics and treatment of patients with vascular syndromes of cervical osteochondrosis // Journal of Neurology and Psychiatry. - 1990. - № 5. - C. 39-42.
9. Smirnov V.A., Vashkevich V.I., Grachev S.V. On some symptoms of blood circulation disorders in vertebrobasilar system in cervical spine osteochondrosis // Journal of neurology and psychiatry. - 1991. - № 3. - C. 44-47.
10. Tarasova L.N., Kiseleva T.N., Fokin A.A. Eye ischemic syndrome. - Moscow: Medicine, 2003. - 176 с.
11. Cherednichenko L.P., Borisova L.I. Study of pathogenetically determined clinical and functional disorders of the visual organ in osteochondrosis of the cervical spine // Russian Ophthalmological Journal. 2013. - № 1. - C. 49-53.
12. Borisova L.I., Cherednichenko L.P., Karpov S.M. Ophthalmological

- manifestations of cervical spine osteochondrosis depending on the stage of the pathological process // Fundamental Research. - 2014. - № 4-1. - C. 40-43;
13. Neyasov V.S. Can vision fall from cervical osteochondrosis? // <https://glaz-center.com/blog/zrenie-padaet-sheyniy-osteohondroz>
14. Grachev I.I., Efremov M.M. Cervical intervertebral hernia // <https://clinica-paramita.ru/info/mezhpozvonohnaya-gryzha-shejnogo-otdela/>
15. Trubnikov V.I. Cervical Osteochondrosis and Vision // <https://freemove.ru/health/osteokhondroz-sheynogo-otdela-i-zrenie.php>