

Degenerative-Dystrophic Changes in the Cervical Spine at an Early Age

Ashirov Farruxbek Azamat o'g'li

Student of the 321st group of medical faculty, Samarkand State Medical University

Ashirova Noila Abror qizi

Student of the 109th group of the Paediatrics Faculty, Samarkand State Medical University

Kamalova Malika Ilkhomovna

Associate Professor of the Department of Human Anatomy, Samarkand State Medical University

Abstract: Neck pain usually occurs in response to awkward movement, trauma or inflammation of any of the structures of the cervical spine. In addition, the cause of pain can be overstretching of muscles or ligaments, for example, when lifting weights, unsuccessful turning of the head or against the background of arthrosis of the very joints between the articular processes. 'Pinched nerve', or cervical radiculopathy, specific processes (metastases, tumours of vertebrae, spinal cord sheaths in the cervical region) are relatively rare.

Key points: diseases, cervical osteochondrosis, prevention, gymnastics, physical training.

Introduction. In the overall structure of disability in the Russian Federation, degenerative diseases of the spine account for 20.4% of diseases of the bone and joint system and occupy the first place (41.1%) among the causes of primary disability. In addition, this disease affects a large part of the able-bodied population. According to research data, pronounced lesions of intervertebral joints are found in 80 per cent of the population aged 20 to 30 and up to 100 per cent in older people

Osteochondrosis is the most severe form of degenerative-dystrophic lesions of the spine, which is based on the destruction of the vertebral disc with subsequent involvement of adjacent vertebral bodies. The lumbar and cervical spine are most often affected. According to scientists, cervical osteochondrosis is the basis for many diseases of the cardiovascular and nervous systems

In the risk group for this pathology are people whose work is associated with prolonged stay in one position: office workers, chauffeurs, surgeons, also in this category are students, especially medical students.

Osteochondrosis of the cervical spine can occur in people under 20 years of age, which is why prevention of this disease is necessary at an early age.

26% of men and 40% of women over the age of 30 have experienced neck pain in the last month, and 5% of men and 7% of women feel it all the time.

Acute neck pain usually goes away in 1-2 weeks. Chronic pain in most cases is caused by a lack of physical activity or, on the contrary, by over-exercising.

However, in the people unexplained pain and discomfort in the neck is often mistakenly called cervical osteochondrosis and attribute its development to wear and age-related deformation of

intervertebral discs and other elements of the spinal column. But such pain, as a rule, has nothing to do with the real osteochondrosis.

Osteochondrosis is a disease that requires special attention in the modern world. Until recently, it was believed that this pathology affects only middle-aged and older people. However, many scientific papers contain information about the occurrence of degenerative-dystrophic lesions of the spinal column at an earlier age. This article discusses various approaches to this problem and describes the main diseases that occur against the background of cervical spine osteochondrosis. The results of the research confirming the hypothesis of early occurrence of degenerative-dystrophic changes of the vertebral column in the neck region are presented. The most effective means of prevention of cervical osteochondrosis are presented. According to the International Classification of Diseases (ICD), osteochondrosis (osteochondropathy) is a group of rare hereditary diseases associated with a violation of the normal development and growth of bones. As a rule, osteochondrosis begins in childhood and proceeds severely: part of a joint or bone is deformed, and sometimes even dies out. This disease most often affects not the cervical, but the thoracic spine (lower thoracic vertebrae). Hence the main clinical manifestation of osteochondrosis is a pronounced curvature of the thoracic spine, the so-called thoracic kyphosis.

Symptoms associated with thoracic spine lesions:

shortness of breath,

persistent weakness,

inability to take a full breath,

pain and burning behind the sternum,

heart palpitations.

Conditions accompanied by neck pain

Cervical spondylosis

In people over the age of 50, neck pain is usually caused by cervical spondylosis - age-related wear and tear on the vertebrae and associated structures. In this disease, the intervertebral discs become dehydrated and flattened, so cushioning in the cervical region deteriorates, and many movements are accompanied by pain.

But changes in the spine as we age are normal. Thus, its structures begin to wear out on average after 30 years of age, and by the age of 60, 9 out of 10 people already have cervical spondylosis. At the same time, most people are asymptomatic.

Other causes

Less often, neck pain occurs due to hypothermia or severe stress, due to herniated discs or anomalies of the cervical vertebrae - bone outgrowths (spurs), which squeeze the nerves coming from the spinal cord.

Most often the source of pain in the cervical region and the upper arm is excessive tension (defans) of muscles: trapezius, long muscles of the back of the cervical region.

In addition, the muscles of the cervical spine are closely connected to the aponeurosis, a broad tendon plate that wraps around the head. The muscular elements of the aponeurosis in the occipital, temporal and frontal regions connect with the muscles of the cervical spine, so neck pain is often accompanied by a headache. Thus, neck pain that appears after prolonged sitting or sleeping in an uncomfortable position and is combined with headache, in most cases is associated with a lack of physical activity and poor posture and is not dangerous to health.

The phenomenon of tech neck, the so-called technoshea or internet age neck, is associated with the pain sensations resulting from uncomfortable posture. Technoshea is the result of constant computer and smartphone use, which forces a person to bend their neck. The fact is that the relative mass of

the head increases with forward tilt. Thus, in the 'straight ahead' position, the average weight of an adult's head is 5kg. If the head is tilted forward by at least 15°, the load on the neck muscles will be 13kg, 30° - 20kg, 60° - 30kg. As a result of constant overloading, the neck muscles are overstretched, microtraumas, inflammation, fibrosis (overgrowth of connective tissue) and, consequently, pain can occur.

Causes contributing to the development of degenerative changes in the cervical spine

Cervical pain is caused by birth or any other trauma to the spine, abnormalities of its development, posture disorders, muscular dystonia, as well as prolonged immobilisation, obesity and some autoimmune diseases.

Prolonged immobilisation is a condition in which a person is forced to lie down for more than a month due to the underlying disease. As a result, the muscles become weak - and when verticalisation, when the load on them increases, overstretch. Pain occurs.

Obesity: excessive body weight increases the load on the spinal structures and can cause pain.

Autoimmune diseases in which cartilage tissue is destroyed (autoimmune arthritis, polychondritis) also lead to neck pain.

Stages of degenerative changes in the cervical spine

There are 4 main stages of degeneration (destruction) of the cervical spine:

Stage I: the intervertebral discs are thinning and there is mild discomfort in the neck area;

Stage II: the intervertebral discs are deformed, the distance between the vertebrae is reduced. Pain increases with movements in the cervical region;

Stage III: cartilage and vertebrae rub against each other, neck pain becomes constant and movements become limited. In very pronounced deformations of the cervical spine, vertebral artery syndrome with visual and vestibular disorders, headache may be attached;

Stage IV: degenerative changes are pronounced to a significant degree, movements in the cervical spine are severely limited and painful. The neck region can be almost completely immobilised.

Symptoms of degenerative changes in the cervical spine

Most people with cervical osteochondrosis experience chronic aching pain and feel stiffness in the neck. As the disease progresses, other symptoms may appear (especially if the spinal roots, vertebral artery and adjacent nerve plexuses are compressed).

Symptoms of degenerative changes in the cervical spine:

neck pain that increases with movement or standing;

pain radiating to the shoulder or arm;

numbness, tingling and weakness in the arms and hands;

clicking or grinding in the neck (especially when turning the head);

headache;

attacks of vertigo;

impaired co-ordination of movement;

loss of bladder or bowel control.

If these symptoms occur, you should see a neurologist as soon as possible.

Types of 'cervical osteochondrosis' symptoms

All symptoms of 'cervical osteochondrosis' can be conditionally classified into 3 groups, or syndromes: vertebral, radicular and vertebral artery syndrome.

Symptoms of vertebral (spinal) syndrome:

crunching in the neck on movement;

limited mobility;

abnormal positioning of the vertebrae in relation to each other in the neck;

flattening of the natural cervical lordosis or lateral curvature in the cervical region (can only be seen on X-ray, MRI or CT scan).

Symptoms of radicular syndrome:

numbness in the fingers on one or both hands;

shooting, burning pain in the neck, radiating to the arm or both arms;

dystrophy of the neck and arm muscles.

Symptoms of vertebral artery syndrome:

Seizure-like dizziness, up to and including unconsciousness;

sudden spikes in blood pressure;

tinnitus;

visual disturbances or flickers in the eyes;

loss of balance and nausea when moving your head;

headache (severe pain on one side or bilateral).

Diagnosis of degenerative changes in the cervical spine

To understand the cause of neck pain and diagnose 'degenerative changes in the cervical spine' (commonly referred to as cervical osteochondrosis), the doctor will need to conduct an examination, study the medical history, evaluate the results of laboratory tests and instrumental examinations.

Diagnosis and treatment of cervical osteochondrosis is performed by a neurologist.

Examination

During the examination, the doctor will listen to the patient's complaints, clarify details of the patient's medical history and carry out an examination: check reflexes, muscle strength, sensitivity and vestibular apparatus.

With 'cervical osteochondrosis' in the neck area can be noted visible areas of muscle atrophy (muscle thinning), decreased or increased muscle tone of the long muscles of the back, static disorders in the cervical region. When feeling the muscles, the person complains of soreness, and when tilting the head, the pain may go to the head or arms, dizziness or headache may occur.

In addition, those who become ill may have movement disorders in the arms (weakness), vision and hearing problems.

The doctor may also ask the patient to walk, stand on one leg with eyes closed, or touch their nose. In this way, the specialist will be able to assess whether movement coordination is impaired and whether there are problems with large and fine motor skills.

Laboratory diagnostics

To assess the general condition of the bones, patients with suspected cervical osteochondrosis are prescribed blood tests for total and ionised calcium, as well as markers of bone growth and destruction - osteocalcin and osteoprotegerin, alkaline phosphatase.

With progressive cervical osteochondrosis, joints are destroyed, calcium content may be decreased, and osteocalcin and osteoprotegerin, on the contrary, increased.

The main function of the cervical spine is to protect the many nerve roots and blood vessels travelling to the brain within the spinal canal. The slightest changes in the structure of the vertebrae can provoke compression of the spinal cord or disruption of cerebral circulation.

In the vertebral bodies, the morphological substrate of osteochondrosis is considered to be marginal bony overgrowths along the disc, bulging beyond the bodies of adjacent vertebrae, as well as osteosclerotic rearrangement of the bone structure in the closure plate of the vertebral body. In the disc, degenerative and dystrophic changes are manifested by loss of normal turgor, decreased elastic properties, reduced height, furrows and fractures, and gradual replacement of the pulposus nucleus and cartilaginous elements of the fibrous ring, first by loose and then more dense fibrous tissue with its possible ossification

According to the classification of L. Armstrong classifies 3 stages of degenerative-dystrophic changes of the spine

Stage I. Initial dystrophic changes in the glomerular nucleus and posterior part of the fibrous ring, provoking irritation of receptors of the posterior longitudinal ligament of the dura mater. Clinically manifested by back pain.

Stage II. The displaced pulposus nucleus is located in the bulging part of the fibrous ring, through the defect of which the disc herniation falls out. Clinically appear radicular symptoms: irradiation of pain along the dermatomes corresponding to the radicular innervation.

Stage III. Degeneration of the prolapsed disc progresses. Resorption or calcification of disc parts, its fibrosis begins. Bony overgrowths may form in the area of rupture of the posterior longitudinal ligament. The prolapse of sequestrations often causes aseptic epiduritis. Direct pressure on the root is reduced, the course of the disease acquires a chronic character.

In lesions of the cervical spine distinguish:

1. Reflex syndromes:

- cervicalgia;
- cervicocranialgia;
- cervicobrachialgia with muscle-tonic, vegetative-vascular and/or neurodystrophic manifestations.

2. Colic syndromes.

3. Vascular radicular-spinal syndromes:

- radiculoischaemia;
- radiculomyeloischaemia, myeloischaemia - transient, acute chronic [2]

One of the most frequent manifestations of cervical osteochondrosis is vertebral artery syndrome, which is associated with the growth of the hooked processes towards the intervertebral foramen and their subsequent narrowing. This mechanism leads to deformation of the vertebral artery wall, clinically manifested by cochleovestibular disorders, visual disturbances, cranialgia and facial sensitivity disorders.

According to scientific studies, cervical osteochondrosis can aggravate the course of hypertension, contribute to increased resistance to the ongoing hypotensive therapy [8]. In addition, pain syndromes of vertebrogenic genesis can lead to increasing changes in the psycho-emotional state of the patient, i.e. to worsening of anxiety and depressive disorders

To prevent the worsening of the condition, it is necessary to carry out preventive measures. Prevention of osteochondrosis of the cervical spine requires the fulfilment of a number of mandatory provisions. Jumping, hopping and running are contraindicated, as they create a great load on the intervertebral discs [5].

Conclusions: Thus one of the main methods of prophylaxis to prevent the development of osteochondrosis of the cervical spine is swimming. It is useful to use the backstroke and breaststroke swimming styles. These styles will help to relax the muscles, stretch the spine and get rid of stiffness.

However, there are a number of contraindications:

- 1) disease of the acute stage, accompanied by a pronounced pain syndrome, spasms, limitation of mobility. In this case, it is necessary to pre-exposure to medication, relief of symptoms and only after the water procedure;
- 2) when signs of respiratory, infectious or viral disease are detected;
- 3) acute cardiac and respiratory failure;
- 4) in case the patient is prone to epileptic seizures or fits
- 5) To prevent the development or worsening of the course of cervical osteochondrosis, it is necessary to perform daily physical exercises. Gymnastics in the cervical spine improves blood circulation, improves the tone of the neck muscles and reduces friction between the vertebrae.

Literature:

1. Иванникова Ю.Б. История развития вертеброневрологии / Ю.Б. Иванникова // Центральный научный вестник. Медицина. — 2019. — 13. — с. 16-17.
2. Кириенко А.Н. Дегенеративно-дистрофические поражения шейного отдела позвоночника / А.Н. Кириенко, В.А. Сорокинов, Н.А. Поздеева // Сибирский медицинский журнал. — 2015. — 7. — с. 22-23.
3. Ilkhomovna, K. M., Eriyigitovich, I. S., & Kadyrovich, K. N. (2020). Morphological Features of microvascular Tissue of the Brain at hemorrhagic stroke. *The American Journal of Medical Sciences and Pharmaceutical Research*, 2(10), 53-59.
4. Kadyrovich, K. N., Erkinovich, S. K., & Ilhomovna, K. M. (2021). Microscopic Examination Of Postcapillary Cerebral Venues In Hemorrhagic Stroke. *The American Journal of Medical Sciences and Pharmaceutical Research*, 3(08), 69-73.
5. Камалова, М. И., & Хайдаров, Н. К. (2020). Prevention and risk factors for brain infarction (literature review). *Журнал неврологии и нейрохирургических исследований*, 1(2).
6. Ismoilov, O. I., Murodkosimov, S. M., Kamalova, M. I., Turaev, A. Y., & Mahmudova, S. K. (2021). The Spread Of SARS-Cov-2 Coronavirus In Uzbekistan And Current Response Measures. *The American Journal of Medical Sciences and Pharmaceutical Research*, 3(03), 45-50.
7. Shomurodov, K., Khaidarov, N., & Kamalova, M. (2021). The formation and eruption of baby teeth in children. *Збірник наукових праць SCIENTIA*.
8. Khodjiev 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*. – 2018. – №. 11-12. – С. 186-193.
9. Kamalova M. I., Khaidarov N. K., Islamov S. E. Pathomorphological Features of hemorrhagic brain strokes // *Journal of Biomedicine and Practice*. – 2020. – С. 101-105.
10. Khodjiev D. T. et al. Optimization of the diagnosis and treatment of early neurological complications in cardio embolic stroke // *European Journal of Molecular & Clinical Medicine*. – 2020. – Т. 7. – №. 07. – С. 2020.
11. Ходжаева Д. Т., Хайдарова Д. К., Хайдаров Н. К. Характеристика поражений проводящих путей при умеренно-когне-тивных расстройствах на фоне хронической ишемии мозга // *Евразийский Союз Ученых*. – 2015. – №. 7-3 (16). – С. 97-98.

12. Ilkhomovna K. M., Kadyrovich K. N., Eriyigitovich I. S. Clinical and demographic quality of life for patients with ischemic stroke in Uzbekistan //ACADEMICIA: An International Multidisciplinary Research Journal. – 2020. – Т. 10. – №. 10. – С. 883-889.
13. Ходжиева Д. Т., Хайдаров Н. К., Хайдарова Д. К. Коррекция астеноневротического синдрома энергокорректором цитофлавином //Неврология.–Ташкент. – 2013. – №. 3. – С. 16-19.
14. Kamalova M., Khaidarov N. Assessment of quality of life in ischaemic stroke patients //Збірник наукових праць Scientia. – 2021.
15. Ходжиева Д. Т., Хайдарова Д. К., Хайдаров Н. К. Биофизические основы возникновения синингомиелии: современные воззрения //Журнал неврологии и нейрохирургических исследований. – 2020. – Т. 1. – №. 3.
16. Kadirovna K. D., Kadirovich X. N., Tadjiyevna K. D. Clinical basis for the development of neuroprotective therapy in acute ischemic stroke //International Journal of Health Sciences. – 2022. – №. I. – С. 4177-4183.
17. Хайдаров Н. К., Тешаев Ш. Ж., Камалова М. И. RISK FACTORS AND MECHANISMS OF ONCOLOGY IN WOMEN (Literature review) //ЖУРНАЛ НЕВРОЛОГИИ И НЕЙРОХИРУРГИЧЕСКИХ ИССЛЕДОВАНИЙ. – 2023. – Т. 4. – №.