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Diagnosis and Prevention of the Origin of Cervical Osteochondrosis in a Modern Interpretation

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Abstract: If a person complains of neck pain, the diagnosis of "cervical osteochondrosis" is often made. Some also associate dizziness, memory loss, numbness of the hands and other unpleasant symptoms. It is mistakenly believed that the disease is associated with wear and age-related deformation of the intervertebral discs and other elements of the spinal column.

Keywords: diagnostics of degenerative changes, treatment of degenerative changes, complications and consequences of degenerative changes

The cervical region consists of 7 vertebrae. Between them are intervertebral discs - semi-rigid structures with a dense ring around the periphery and a jelly-like center, which act as shock absorbers. On the right and left sides of each vertebra there are two joints, between which protrude the surfaces of the vertebral processes covered with cartilage. The joints are connected by ligaments and back muscles.

Structure of the cervical region

Structure of a healthy cervical spine

Typically, neck pain occurs in response to an awkward movement, injury, or inflammation of any structure in the cervical spine. In addition, the cause of pain can be excessive strain on the muscles or ligaments, for example, when lifting weights, unsuccessfully turning the head, or against the background of arthrosis of the joints between the articular processes. "Nerve entrapment" or cervical radiculopathy, specific processes (metastases, vertebral tumors, spinal cord membranes in the cervical region) are relatively rare.

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

Acute neck pain usually goes away on its own within 1-2 weeks. Chronic pain is often caused by lack of physical activity or, conversely, too much exercise.

However, people often incorrectly call inexplicable pain and discomfort in the neck cervical osteochondrosis and associate its development with wear and age-related deformation of the intervertebral discs and other elements of the spinal column. But such pain, as a rule, has nothing to do with true osteochondrosis.

Cervical osteochondrosis

According to the International Classification of Diseases (ICD), osteochondrosis (osteochondropathy) is a group of rare hereditary diseases associated with impaired normal bone development and growth. As a rule, osteochondrosis begins in childhood and is severe: a joint or part of the bone is deformed,

and sometimes even dies. This disease most often affects not the cervical spine, but the thoracic spine (lower thoracic vertebrae). Therefore, the main clinical manifestation of osteochondrosis is a pronounced curvature of the thoracic spine, the so-called thoracic kyphosis.

Symptoms associated with thoracic spine injuries:

a) shortness of breath,

b) constant weakness

c) inability to breathe fully,

d) pain and burning behind the sternum,

e) Attacks of rapid heartbeat.

f) Conditions associated with neck pain

g) Cervical spondylosis

Neck pain in people over 50 is usually caused by cervical spondylosis, an age-related wear and tear of the vertebrae and related structures. With this disease, the intervertebral discs dehydrate and flatten, which leads to poor cushioning in the cervical region, and many movements are accompanied by pain.

Age

Age-related wear and tear of the vertebrae usually manifests as pain in people over 50 years of age.

But as we age, changes in the spine are normal. So, its structures begin to wear out after an average of 30 years, and by the age of 60, 9 out of 10 people already have cervical spondylosis. However, in most people it is asymptomatic.

Other reasons

Less common neck pain is caused by hypothermia or severe stress, herniated discs, or abnormalities of the cervical vertebrae - bone growths (spurs) that compress the nerves extending from the spinal cord.

The most common source of pain in the cervical spine and shoulder girdle is muscle overstrain (protection): trapezius, the long back muscle of the cervical spine.

In addition, the muscles of the cervical spine are closely connected with the aponeurosis - a wide tendon plate that surrounds the head. The muscular elements of the aponeurosis in the occipital, temporal and frontal regions are connected with the muscles of the cervical region, so neck pain is often accompanied by headaches. Thus, neck pain, which occurs after prolonged sedentary work or sleeping in an uncomfortable position and is combined with headaches, is most often associated with lack of physical activity and poor posture and is not dangerous to health.

The phenomenon of techno-neck, also called techno-neck or Internet-age neck, is associated with pain that occurs in an awkward position. Techneck is the result of constant use of computers and smartphones, as a result of which a person is forced to bend his neck. The fact is that the relative mass of the head increases when it is tilted forward. So, in the “correct” position, the average weight of an adult head is 5 kg. If you tilt your head forward by at least 15 °, the load on the neck muscles will be 13 kg, 30 ° - 20 kg, 60 ° - 30 kg. As a result of constant overload, the neck muscles are overloaded, microtraumas, inflammation, fibrosis (excessive growth of connective tissue) and, accordingly, pain may occur.

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

The development of pain in the cervical spine is facilitated by birth or other injuries to the spine, anomalies in its development, postural disorders, muscular dystonia, as well as prolonged immobilization, obesity, and some autoimmune diseases.

Prolonged immobilization is a condition in which a person, due to an underlying illness, is forced to lie down for more than a month. As a result, the muscles weaken - and during verticalization, when a load is placed on them, they become excessively tense. Pain occurs.

Obesity: Excess body weight increases stress on spinal structures and can cause pain.

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

Stages of degenerative changes in the cervical spine

Stage I: the intervertebral discs become thinner, mild discomfort occurs in the neck area;

Stage II: the intervertebral discs are deformed, the distance between the vertebrae decreases. The pain increases with movements in the cervical spine;

Stage III: The cartilage and vertebrae rub against each other, neck pain remains constant, and movement is limited. With very severe deformities of the cervical spine, vertebral artery syndrome may occur with visual and vestibular disorders, headaches;

Stage IV: Degenerative changes are evident, movements in the cervical spine are very limited and painful. The neck area may be almost completely immobilized.

Signs of degenerative changes in the cervical spine

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

Symptoms of degenerative changes in the cervical spine:

a) neck pain that worsens with movement or standing;

b) pain radiates to the shoulder or arm;

c) numbness, tingling, and weakness in the hands and arms;

d) pressing or rubbing on the neck (especially when turning the head);

e) headache;

f) dizziness attacks;

g) coordination of movements is impaired;

h) loss of bladder or bowel control.

i) If such symptoms appear, you should consult a neurologist as soon as possible.

j) Types of symptoms of "cervical osteochondrosis"

k) All symptoms of "cervical osteochondrosis" can be conditionally divided into 3 groups or syndromes: vertebral, radicular and vertebral artery syndrome.

Symptoms of vertebral (spinal cord) syndrome:

a) tightness in the neck when moving;

b) limited mobility;

c) violation of the position of the vertebrae relative to each other in the neck;

d) Straightening of the natural cervical lordosis or lateral curvature in the cervical spine (visible only on X-ray, MRI, or CT scan).

Symptoms of radicular syndrome:

a) numbness of the fingers on one or both hands;

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

c) Dystrophy of the neck and arm muscles.

Symptoms of vertebral artery syndrome:

a) paroxysmal dizziness, up to loss of consciousness;

b) a sharp jump in blood pressure;

c) tinnitus;

d) blurred vision or spots in the eyes;

e) loss of balance and attacks of nausea when moving the head;

f) Headache (severe pain on one or both sides).

g) Diagnosis of degenerative changes in the cervical spine

h) To understand the cause of neck pain and make a diagnosis of "degenerative changes in the cervical spine" (commonly called cervical osteochondrosis), a doctor must conduct an examination, study the medical history, and evaluate the results of laboratory tests and instrumental examinations.

Check

During the examination, the doctor listens to the patient's complaints, finds out the details of the medical history, and conducts an examination: checks reflexes, muscle strength, sensitivity, and the condition of the vestibular apparatus.

With "cervical osteochondrosis" in the neck area, visible areas of muscle atrophy (muscle loss), decreased or increased muscle tone of the long back muscles, and static disorders in the cervical region may be observed. When palpating the muscles, the person complains of pain, and when bending the head, the pain may radiate to the head or arms, dizziness or headache may occur.

In addition, patients may experience motor impairments (weakness) in the hands, vision, and hearing problems.

The doctor may also ask the patient to walk, stand on one leg with their eyes closed, or touch their nose. This will help the specialist assess whether there is impaired coordination of movements and whether there are problems with gross 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 ionized calcium, as well as markers of bone growth and destruction - osteocalcin and osteoprotegerin, alkaline phosphatase.

With progressive cervical osteochondrosis, the joints are destroyed, the calcium content may decrease, and osteocalcin and osteoprotegerin, on the contrary, increase.

Total creatine kinase is also a marker of muscle tissue destruction in cervical myositis.

Instrumental diagnostics

To determine the cause of neck pain and related diseases, visual examinations are necessary: cervical spine radiography, computed tomography and magnetic resonance imaging, electroneuromyography.

Radiography. With the help of X-rays, you can detect bone deformities, malignant tumors, and degenerative changes in the joints.

If there is a suspicion of pathology of the spinal cord, spinal cord, or brain, computed tomography and magnetic resonance imaging are performed. Computed tomography shows hemangiomas of the vertebral bodies and gross deformation of the cervical spine. Magnetic resonance imaging provides more information for viewing the muscles, roots, and spinal cord.

Electroneuromyography is a method of studying the effectiveness of impulses along nerve fibers using a low-intensity electric current. The test can be somewhat uncomfortable. The study helps determine the transmission of impulses along the roots, nerves, and from nerves to muscles, confirm nerve or muscle damage, and determine the nature and extent of the damage.

Treatment of degenerative changes in the cervical spine

The main goals of treating degenerative changes in the cervical spine are to relieve pain, prevent compression of the nerves in the neck, and restore cervical mobility.

a) Bandage

b) Treatment of cervical osteochondrosis, as a rule, begins with immobilization of the neck with a bandage.

c) Depending on the severity of the condition, your doctor may prescribe medication, physical therapy, or massage. Pinched nerves or joint deformities may require surgery.

d) Drug treatment of degenerative changes in the cervical spine

e) Neck pain can be relieved with medication.

f) Medications to relieve neck pain and stiffness:

g) local anesthetic ointments, gels, and patches;

h) non-steroidal anti-inflammatory drugs;

i) hormonal drugs in the form of tablets or injections into the affected joint area;

j) muscle relaxants to relieve muscle spasms;

k) Antidepressants for chronic pain relief.

Treatment of cervical osteochondrosis without medication

Along with drug therapy, it is important for patients with cervical osteochondrosis to perform neck exercises. For this purpose, a person is referred to a physiotherapist for consultation. This will teach them how to properly stretch and strengthen the muscles of the neck and shoulders.

Your doctor may recommend mats or rollers with metal or plastic needles. These are used for 15 to 30 minutes before bed to relax the muscles.

Wearing a Schantz splint (neck brace) is a passive exercise therapy for the deep muscles of the cervical region that are difficult to influence with exercises. When a person puts on a splint, their muscles relax, and when they are removed, they tense. If you wear a splint for 15-20 minutes several times a day, you can train and strengthen them.

If you have a serious neck injury, it makes sense to wear it for 2-3 hours. Also, you should not lie down in it, you should sleep less.

Surgical treatment of degenerative changes in the cervical spine

As a rule, surgery is required for patients with severe spinal deformity and nerve compression.

During the operation, the surgeon removes pathological elements (herniated protrusions, formations, etc.) or part of the vertebra. After such treatment, a long rehabilitation period is required: wearing a Schants splint or a rigid cervical spine splint, physiotherapy, regular walking, painkillers.

Complications and consequences of degenerative changes in the cervical spine

a) Without treatment, the intervertebral discs gradually wear out and the vertebrae "disappear".

b) Common complications of degenerative changes in the cervical spine include:

c) unbearable pain syndrome in the head, neck, chest;

d) cramps, movement disorders and numbness of the hands;

e) Frequent dizziness, impaired coordination of movements, fine and gross motor skills.

f) Prevention of degenerative changes in the cervical spine ("cervical osteochondrosis")

g) There is no specific prevention for true cervical osteochondrosis, as it is a hereditary disease.

To prevent the occurrence of non-specific neck pain, which is incorrectly associated with cervical osteochondrosis, it is important to maintain proper posture and be physically active: the more a person moves, the better the condition of the muscles, bones, ligaments and joints.

To stay physically active, adults need 150 minutes of moderate-intensity aerobic activity per week. Brisk walking, swimming, cycling, tennis, dancing, or rollerblading are all good options. Pilates and yoga can help strengthen your muscles.

In addition, gymnastics helps prevent excessive strain on the neck muscles and the appearance of pain: tilting the head forward, back, alternately to each shoulder, turning it, as well as sleeping on an orthopedic pillow.

You should avoid injuries to the cervical spine: do not jump into water upside down, wear seat belts in the car (to prevent whiplash injury in an accident).

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