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# Ankylosing spondylitis (Bechterew's Disease)

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## *Introduction*

Ankylosing spondylitis is a chronic progressive disease manifested by inflammation of the joints of the spine. Prolonged inflammation leads to disruption of joint movements. As a result, the spine is practically immobile. For the first time this disease was described by a Russian neurologist Vladimir Bekhterev. In his honour ankylosing spondylitis and got its second name - Bekhterev's disease. Ankylosing spondylitis mainly affects men aged 20-40 years, although the disease begins in late school age, about 15 years. With the development of the disease, there is a gradual damage to the joints of various parts of the spine. First of all, Bekhterev's disease affects the sacroiliac joints (connect the sacral spine with the bones of the pelvis) (Braun et.al 2011). Then, intervertebral and costal-vertebral joints are involved in the inflammatory process. If the process is not taken on time in time, the patient may be significantly impaired by the mobility of the spine, up to its complete immobility.

The causes of the development of Bechterew's disease are not known exactly. Apparently, the disease develops in people who have a specific hereditary predisposition and certain genetic characteristics of the immune system. A certain role is played by chronic infections (especially the intestines and urinary tracts). The first signs of this disease is un sharp pain in the sacrum, sometimes also in the groin and in the region of the external side of the thighs (Van der Heijde et.al 2008). These sensations are most pronounced in the morning and at night. The patient's sleep is disturbed. In the morning, stiffness is felt in the back, it is difficult for patients to get out of bed.

***Discussion***

Gradually, sometimes in a few years, there are pain and stiffness in the neck and back, while in the morning there is also discomfort. Tilts to the sides, forward and back are difficult and painful. Deep breathing, coughing and sneezing also cause pain. Bekhterev's disease is characterized by an increasing limitation of the mobility of the spine, its shortening. In the absence of treatment, the disease can lead to complete immobility of the spine, the patient acquires a "supplicant's pose" (bent at the elbows, stooped back, bowed head, legs slightly bent at the knees). In addition to limiting the mobility of the spine in the absence of treatment, the disease spreads to other organs and systems.

*Diagnostic*

Suspect the disease can make the following symptoms: pain in the lumbar region, lasting more than three months and does not decrease with rest; Pain in the chest and a feeling of stiffness; Difficulty breathing. If you have these symptoms, you need to consult a rheumatologist and prescribe additional methods of research. The main value in diagnostics is roentgenography of the spine or magnetic resonance imaging of the joints. Be sure to appoint a general and biochemical blood test. It is quite difficult to diagnose at the initial stages of the disease (Lukas et.al 2009). To begin with, the doctor must complete the medical history and perform an examination. Of the additional methods of research, laboratory tests and X-rays will certainly be needed.

The doctor will suspect AS if:

- Back pain appeared before 35-40 years
- The gradual onset is not caused by trauma

- Pain lasts more than 3-6 months
- Pain in the thoracic spine giving to the chest at deep breaths
- Reducing pain when doing physical exercises and movements
- Stiffness in the lumbar spine
- Some of the relatives had an AS
- X-ray

*Treatment Procedure*

Currently, in the treatment of Bechterew's disease, non-steroidal anti-inflammatory drugs, glucocorticoids are used, immunosuppressant are indicated in severe disease. In addition to medicinal therapy, physiotherapy, manual therapy and therapeutic gymnastics are used. To understand the mechanism of the organism's damage in the AU it is enough to look at the words "ankylosing" and "spondylitis". Ankylosing - means a tendency to stiffness, and spondylitis - an inflammation of the spine. Straightening of the spine in AS is caused by inflammatory reactions in the intervertebral joints, which leads to their fusion into a single block. In the future this leads to pronounced kyphosis (Heijde et.al 2008). A healthy spine can move in three planes, performing inclinations, flexions, turns. Individual vertebrae connected together by means of joints, ligaments, intervertebral discs. It is through these elements that the whole complex of movements is realized. At the AS, the ligaments harden, and the bones coalesce into a single block.

So far, no real or authentic means have been found that heal patients from AS. However, with the help of complex conservative treatment it is possible to reduce the pain syndrome and improve the general condition. Complex therapy includes medicaments,

restorative, exercise therapy (Australo-Anglo-American Spondyloarthritis Consortium, 2010). Operative treatment is necessary in rare cases of damage to the spine and joints.

*Symptoms*

In order to better understand the symptoms, mechanisms of the development of the disease, tactics and methods of treating AS, it is necessary to understand the basic principles of the anatomy of the spine, which includes acquaintance with various parts and structures of the spinal column and the mechanisms of their interaction (Evans et.al 2011). In the future, these structures harden, and the volume of movement in the spine is limited. Ultimately, there is a complete fusion of the vertebrae with each other (called ankylosis).

Like other forms of arthritis, the symptoms of AS are manifested in the form of inflammation. For the first time, symptoms can occur within one or several weeks.The first symptom of AS is usually sacroiliitis (inflammation of the sacroiliac joint). There is pain in the buttocks and lower back. After sakroileitis, the pain usually changes to the hip joints, increasing over time. Stiffness and soreness in the lumbar region from the morning, passing during the day. Long rest worsens AS symptoms, which is the main difference from other arthritis, the symptoms of which weaken during rest. Flexibility of the spinal column decreases, which in time does not allow the patient to bend forward. Also, rib-vertebral joints can be affected, which can cause pain in the chest and abdominal cavity. The defeat of the neck manifests itself stiffness and restriction of movement (Inman et.al 2008). Often, joint damage is accompanied by synovitis. Synovitis is an inflammation of the synovial membrane of the joint. Symptoms of synovitis include pain, stiffness, swelling and redness in the joint area. With the progression of AS and the growth of kyphosis, patients have breathing problems caused by a decrease in lung volume.

The defeat of the rib-vertebral joints further aggravates the respiratory failure, switching off the chest from the mechanics of breathing. Patients are breathing only due to the diaphragm. Thus, all conditions for a severe course of inflammatory lung diseases are

created. In 25% of cases in patients on AS, eyes are affected in the form of iridocyclitis (inflammation of the iris of the eyes), which is manifested by pain and reddening of the eye, but impairment of vision usually does not occur. Because of the calcification of ligaments and discs, the vertebrae are fused into a single block. The vertebral column loses its flexibility and mobility, loses its amortization function and becomes vulnerable to fractures. When the bone block is fully formed, the back pain usually passes. However, this does not signal the end of the disease, and if the pain suddenly appeared after a long period of calm, then probably the patient suffered a vertebral fracture.

*Causes*

The causes that because AC are not known. However, much is known about the progression of AS and why changes occur in the spine. The onset of AS is manifested by inflammation of bone tissue (osteitis) around the joint edges. In these areas a large number of specific cells (characteristic for inflammation) gradually accumulate. These cells produce substances that damage the bone, it dissolves and weakens around the edges of the joints. The progression of this process causes the body to intensively replace defects with bone and scar tissue. As the process constantly progresses the bone is increasingly weakened. When the inflammation "burns" the bone and begins to fade, the body, trying to heal bone, accumulates large calcium deposits in the lesions and near them (in ligaments and intervertebral disks). All this leads to the fusion of the vertebrae into a single block, the so-called ankylosis. A genetic predisposition to AS has also been found: 90% of patients found the HLA-B27 gene (van der Heijde et.al 2009). However, this does not mean that if you have found this gene, then you will automatically get sick AS. Approximately 6-8% of the world's population have this gene, but the AU is manifested only in one percent of them.

If the doctor suspects an AS, then it doctor will definitely prescribe an x-ray of the spine and pelvic bones. The vertebral bodies on the X-ray in patients with AS are distorted and have a square shape, the closure plates are compacted against the background of osteoporosis. Doctors call this a symptom of a "bamboo stick". Gradually, as the disease progresses, calcification of ligaments and intervertebral discs will be noted, up to the complete fusion of the vertebrae with each other. Also, in the anteroposterior projection, three vertical lines are formed on the roentgenogram, formed by a calcified interosticular ligament, right and left arcuate articulations (a symptom of "tramway rails"). One of the first radiographic manifestations of AS is the lesion of the sacroiliac joints: on the roentgenogram,

focal osteoporosis, smoothness of the edges, expansion and erosion of the articulation are detected (Shen et.al 2009).

***Conclusion***

To study the function of the kidneys, a urine test should be performed. This is done to exclude possible kidney diseases that could cause symptoms like AS. If NSAIDs are not enough, your doctor can also give salazosulfapyridine. Corticosteroids, such as prednisolone, are effective agents for treating the inflammatory process of the induced AS, however, they have serious side effects in long-term admission. If anti-inflammatory treatment reduces pain and inflammation is not enough, available means are available that block the immune system. However, these drugs have a large number of side effects, and patients who take them, should be carefully examined. Patients with AS need to work with a physician-rehabilitologist. A well-designed comprehensive rehabilitation program helps to reduce pain and inflammation, improve the flexibility and strength of the spine, and help to cope with daily activities more easily.

Safe movements will help improve the spinal mobility and posture. Restorative therapy helps to reduce pain and is the prevention of deformities caused by AS. Patients are advised to sit, stand and walk with the maximally straightened back, and avoid prolonged inclinations (van der Heijde et.al 2009). The complex of exercises must be changed every 4-6 weeks. To study the correct posture and movement of the body, in order to counteract the deformation of the spine (kyphosis). It is important to learn to take the right pose for sleep, use a hard mattress and a thin pillow. Further, for patients always maintain an adequate level of activity on which they daily perform a prescribed course of exercise therapy.

It is rare that patients with AS need surgical treatment. If the disease has led to severe deformity of the spine, such as pronounced kyphosis, which prevents you from straightening up and seeing ahead of yourself. In this case, it is necessary to consider the option of surgical treatment in the form of corrective osteotomy. This operation involves removing the posterior

elements of one or more vertebrae, and setting the spine to a more advantageous position. Much more common in the AS is a severe hip joint injury with arthritis. In this case, patients are recommended to perform the operation of total endoprosthetics (replacement of the affected joint by artificial).

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