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# DIFFUSE IDIOPATHIC SKELETAL HYPEROSTOSIS OF THE SPINE

# HIPEROSTOZA SZKIELETOWA OSIOWEGO NARZĄDU RUCHU

**Gustaw Wójcik[1], Anna Szulc[2]**

1. Państwowa Szkoła Wyższa im. Papieża Jana Pawła II w Białej Podlaskiej, Wydział Nauk o Zdrowiu, Katedra Kultury Fizycznej i Fizjoterapii, Zakład Fizjoterapii.
2. Uniwersytet Medyczny w Lublinie, Wydział Nauk o Zdrowiu, Katedra Rehabilitacji, Fizjoterapii i Balneoterapii, Zakład Rehabilitacji.

## SUMMARY

Spontaneous hyperostosis of the spine is a degenerative disease with a non-inflammatory base consisting in the formation of bone growth with thickening, calcification and ossification of soft tissues surrounding at least four vertebral bodies and three-disc spaces. The part of the spine covered by these changes take the shape of stearin burning after the candle - this symptom is visible in X-ray images. The disease especially affects the elderly. Symptoms of the disease are associated with stiffness of the spine and chronic pain. The principle of comprehensive treatment applies to the treatment of hyperostosis. In addition to pharmacotherapy, physiotherapy is widely used (kinesitherapy, electrotherapy, thermotherapy), a properly balanced diet and psychotherapy, and in extreme cases such as dysphagia, compression and spine stenosis, surgical procedures are implemented to remove pathologically grown bone tissue.

**Keywords**: spine, degenerative changes, calcification of soft tissues, spondylosis

## STRESZCZENIE

Samoistna hiperostoza kręgosłupa należy do chorób zwyrodnieniowych o podłożu niezapalnym polegającym na powstawaniu wyrośli kostnych z pogrubieniem, zwapnieniem i kostnieniem tkanek miękkich otaczających co najmniej cztery trzony kręgowe i trzy przestrzenie dyskowe. Objęte przez te zmiany odcinki kręgosłupa przybierają kształt ściekającej po świecy stearyny – objaw ten widoczny jest na zdjęciach rentgenowskich. Choroba dotyczy szczególnie osób w podeszłym wieku. Objawy choroby związane są ze sztywnością kręgosłupa i przewlekłymi dolegliwościami bólowymi. W leczeniu hiperostozy obowiązuje zasada leczenia kompleksowego. Oprócz farmakoterapii, szeroko stosowana jest fizjoterapia (kinezyterapia, elektroterapia, termoterapia), właściwie zbilansowana dieta i psychoterapia, a w przypadkach skrajnych takich jak zaburzenia połykania, czy zmiany uciskowe i stenoza kręgosłupa wdrażane są procedury

chirurgiczne polegające na usunięciu patologicznie rozrośniętej tkanki kostnej.

**Słowa kluczowe**: kręgosłup, zmiany zwyrodnieniowe, kalcyfikacja tkanek miękkich, spondyloza

INTRODUCTION

Disseminated idiopathic skeletal hiperostosis (diffuse idiopathic skeletal hyperostosis-DISH). Belongs to a group of sick units bearing the common name Spondyloarthropathies non-inflammatory, proliferation of bone tissue, as well as bold, calcification and ossification of the soft tissues, such as ligaments and joint capsules and the muscles in the parts of the tendon.

Synonyms of this condition: generalized intrinsic excessive growth of bones, Forestier, Morbus Forestiere-Rotes-de Querol, DISH, ligamentosis ossificans, calcification of ligaments, vertebral spondylosis of hiperostosis.

The most noticeable feature of this condition is occurring in the axial skeleton characteristic ossified ligaments that connect neighboring vertebrae (longitudinal ligament and the posterior longitudinal ligament), which leads to a lack of mobility in the part of the or the whole spine. Spine segments covered by the DISH look as if after anterior and lateral surfaces of the vertebral bodies flowed in molten lard, like the wax in the candle burning.

Ossification of the most frequently occur in impacted my vocal chords: longitudinal front and rear at thoracic spine [1].

EPIDEMIOLOGY AND ETIOLOGY

The DISH most commonly affects older people, especially in the 6-7 Decade of life, several times more common in diabetics. The estimated prevalence of the disease in older people in the general population is ~ 10%, with a predominance of men. The lesions occur at different frequencies in different sections of the spine. It is assumed that the most common are in the thoracic region (almost 100%), lumbar (> 90%) and cervical (75%).

The disease can spread to every pond of the body, causing its rigidity and its immobilization. The disease is not fatal, however, some complications can lead to death, though in most cause paresis, dysphagia (swallowing disorders) and lung infections.

The etiology of the disease is not fully understood, but this medical condition can be called different factors. The disease is probably the result of a combination of genetic factors, environmental, metabolic and mechanical.

During the development of the disease comes to the morphological, biochemical, molecular and biomechanical changes of matrix cells that lead to softening of the, filamentoid, ulcers and weight loss of articular cartilage, sclerosis and compaction bone tissue, osteophytes and small under cartilaginous cyst. As a result of these changes to the deformation of the vertebral bodies, which can affect the shape of the individual sections of the spine.

THE RISK FACTORS

Factors that increase risk should include:

- Sex. Men are more prone to the development of the DISH.
- Age. The DISH most commonly occurs in older people, especially in people over the age of 50 years.
- Diabetes and other diseases. In people with type 2 diabetes are more likely to develop the DISH than in people who do not suffer from diabetes. Other conditions that may increase the levels of insulin in the body, can also cause increased risk, including hyperinsulinemia,

Before a diabetic state and obesity and hyperuricemia, dyslipidemia, hypertension, coronary artery disease and podagra pseudogout.

- Medicines. Prolonged use of drugs called retinoids, such as isotretinoin (Amnesteem, Claravis, other), which are used to treat skin conditions such as acne, can increase the risk.

The incidence of the disease increases with the coexistence of the above-mentioned risk factors.

There is a positive correlation between the presence of these factors, and incidence of disease, there is however a causal relationship.

DIAGNOSIS

The diagnosis of DISH is based on interview with the patient, and also on the basis of thorough research of physical and imaging methods such as x-ray crystallography (x-ray), computed tomography (CT) or magnetic resonance imaging (MRI). Functional tests should perform in order to differentiate the DISH with other diseases which give similar symptoms.

Physical examination in the case of the DISH include measurements of the movable property of the spine [2]:

- Test Schober
- Test your fingers-the floor
- Lateral flexion lumbar
- Test of movable chest
- Measuring the distance back from the wall
- Bend and snap the cervical spine.

CLINICAL SYMPTOMS

The course of the disease is often asymptomatic or have only a feeling of stiffness. As a result of symptomatic disease reduces first of all quality of life of the patient, due to the restrictions of movement in the joints of the spine. DISH causes chronic, moderate pain in the spine and limitation of its movable property (flexibility). The pain is mainly in the thoracic spine, and slightly less in the psoas. Both these locations make the pain may radiate to the extremities, causing their numbness. In two-thirds of the patients back pain and stiffness occur with the greatest seriousness in the morning [3].

The main symptoms of hyperostosis of the spine may include: rigidity, which is typically higher in the morning:

Pain, especially in the upper part of the body.

Limited range of motion of the spine.

Hoarseness or a problem with swallowing when the nerves of the neck are compressed.

Tingling or numbness of the lower extremities resulting from the oppression of the nerve roots in the lower part of the spine.

Possible paralysis as a result of the development of spinal canal stenosis and spinal cord, although symptoms of spinal cord compression are rare.

Rarely, large osteophytes anterior cervical spine can affect the esophagus or throat and cause pain, difficulty in swallowing [4].

THE RADIOLOGICAL SYMPTOMS

The DISH is usually diagnosed accidentally when performing Imaging tests for other reasons. However, the stiffness of the spine and his reduced mobility are symptoms sufficient to order and complete the axial Imaging musculoskeletal system.

Diagnostic evaluation of physical tests in addition to DISH the functionality of the spine is based mainly on the results of radiological tests defined by Resnick and Niwayan [5]. Proposed by these criteria allow you to vary the DISH with osteoarthritis and ankylosing spondylitis. In accordance with this definition, the presence of calcification and ossification mainly along the Antero-Lateral part of the anterior longitudinal ligament at least 4 adjacent vertebrae including 3 spaces intervertebral disc height with preserved and lack of disease degenerative disk is a sensitive indicator of the condition. No ankylozy or inflammatory changes of the sacroiliac joints is the last criterion. Sometimes the ossification of anterior longitudinal ligament may be related to ossification (The posterior longitudinal ligament. Ossification of the posterior longitudinal ligament - OPLL). These changes often occur in different regions of the spine (cervical, thoracic, lumbar).

Radiological image meets the criteria for analysis can be applied to the classification system established by the Mat in 1998. In this connection, that the degree of the disease process of spinal ligaments is variable, it is using this system, you can evaluate the degree of ossification of each level of vertebrae and storage bridging [6].

Scoring system Mat [7]:
0: without ossification
1: ossification without bridging
2: ossification half-bridging
3: ossification with bridging.

Changes on radiographs of the spine gives the image of pouring wax on the Antero-lateral surface of the vertebral bodies, as best seen in the thoracic spine.

Radiological image is quite distinctive for bringing disease diagnosis, which is characterized by hyperplasia of the bone.

A distinctive feature of the radiological DISH is a continuous linear calcification along the Antero-Lateral part of the thoracic spine. Calcification and ossification occur most often on the right side of the spine. The exception is dextrocardia, where the calcifications occur on the left side, which argues for the fact that the movements of the aorta associated with wave blood flow due to the work of the heart muscle to prevent excessive formation of bone outgrown [8] .

At the edges of the vertebral spine bone growths are formed. Osteophytes. They occur most often in the cervical and thoracic vertebrae.

Radiography of the spine (cervical, thoracic and lumbar) is the most useful way of imaging in the diagnosis of DISH. CT scan (CT) can be used to assess complications such as fracture of vertebrae or symptoms that may be a consequence of pressure on the trachea, esophagus and the blood vessels or nerve root compression and pressure on the tyro hard core. Shall also scan using magnetic resonance imaging (MRI), but does not play a significant role in diagnosing DISH [9, 10].

VARYING

In the differential diagnosis DISH must be taken into account:
a group of diseases known collectively seronegative Spondyloarthropathies. inflammation of the joints of the spine with absentee factor Rheumatoid (among others, ankylosing spondylitis Spondylitis-ankylosing spondylitis),
degenerative joint disease.

Feature to facilitate the diversification of osteoarthritis is the behavior of the space between the the intervertebral rings, and unlike the sacroiliac joints ankylosing spondylitis and facet (apophyseal) in this disease are valid (table 1).

In addition, AS you may notice some genetic predisposition and the seizure by the disease process non-musculoskeletal system organs, what no in the case of this disease.

Table 1. Differentiating factors in certain illnesses

| **Differentiating factors** | **Degenerative joint disease** | **DISH** | **AS** |
|---|---|---|---|
| **The age** | 40 < | 60 < | >40 |
| **Sex** | M < F | M > F | M > F |
| **Articular cartilage** | YES | NOT | NOT |
| **Articular capsule** | YES | YES | YES |
| **Ligamentes** | NOT | YES | YES |
| **Tendonitis** | NOT | YES | NOT |
| **Ankylosis of the sacroiliac joints** | NOT | NOT | YES |
| **Reducing the mobility of the spine** | YES | YES | YES |
| **Disease-symptoms** | symptomatic | asymptomatic | symptomatic |
| **Inflammation state** | YES | NO or little | YES |

TREATMENT

The main goals of treatment are to reduce pain and stiffness, as well as preventing, delaying or inhibiting the progression of the disease.

There are many ways to treat diseases that go with ossification soft tissue, but in any case, the principle of comprehensive treatment, which consists of simultaneous use of multiple forms of therapy. A holistic approach to the treatment of patients with DISH in addition to drug therapy, should also include an appropriate lifestyle, nutrition, medical rehabilitation (kinesitherapy, physiotherapy) and psychological care.

In the case when an unknown is cause of disease treatment should apply to suppress symptoms and course of illness, and when the etiology of the disease is unknown, it is possible to not only alleviate the ailments, but to eliminate the factor responsible for its development. All patients should be treated in a specific way, depending on the nature and course of the disease. The most important element of the conservative treatment should be considered drug-free procedure, from which to begin treatment of each case, but drug therapy is individual and depends on the course of the disease, severity of the symptoms, response to treatment.

Due to the possibility of inflammation in the spine, on pain relief and combating inflammation can be drugs from the group non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen or naproxen. Are also used mild painkillers, and sometimes, in severe cases, local injections of corticosteroids. Increasingly, calls attention to the fact that the use of NSAIDS, inhibit the development of calcification within the tendons and ligaments of the spine, which reduces the

formation of bony growths.

Disseminated idiopathic skeletal hiperostoza most often require conservative treatment, which in addition to the pharmacology is physiotherapy, which along with manual therapy show beneficial results, reducing pain and increasing range of movable property spine. Especially helpful in treatment is the use of physical therapy (kinesitherapy, electrotherapy, thermotherapy), as well as comprehensive treatment Spa with balneotherapy and the use of acupuncture. In order to maintain or regain range of motion is preferable to inclusion in rehabilitation exercises and stretching. Recommended are also regular walks – aerobic exercise. Local application of heat can be used to reduce the pain of temporary [11]. Cryotherapy, which is used in rheumatic diseases and degenerative disease also because of its analgesic nature has found application in the treatment of DISH.

In addition, the benefits it can bring appropriate nutrition based on balanced diet that excludes or reduces to a minimum the sugars, fats and highly processed products.

To relieve symptoms and prevent the severity of the disease it is recommended that you:

- Exercise and physical therapy. The exercises are necessary to reduce back pain and reduce stiffness and improve range of motion. Light aerobic activity strengthens the muscles that support the spine. It is recommended to recreational sports, such as cycling and swimming. Of particular benefit is swimming, which activates the entire body without the risk of injury, as is done in terms of relief.
- The heat. Can help relieve pain and stiffness in the morning.
- Control of body weight and blood sugar levels. Because the DISH is often associated with obesity and diabetes, it is crucial to maintain body weight and blood sugar levels in normal range.
- Orthotics. The supply of Orthopedic equipment such as canes, crutches, Walker, corset, insoles for footwear, as well as joint stabilizers can significantly facilitate the movement.
- Pharmacotherapy. Acetaminophen and non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen should be used only when they are really needed. If exercise and exercise does not relieve severe pain, an injection of corticosteroids may be an option. The purpose of the injection is to help.
- Surgery. Is considered only in the rare case where bone Spurs affect ability to swallow or cause stenosis of the vertebral Canal.

In advanced cases, changes in the spine should consider the surgical treatment. If the compression of the nerve roots or spinal dural used are treatments that were reserved until now for cervical spondylosis. Symptoms of dysphagia, or difficulty swallowing can be eliminated by osteofitectomia, which is the surgical removal of osteophytes [12].

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