Lecture

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ANKYLOSING SPONDYLITIS

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Etiologic, epidemiologic, pathogenic and clinical description of ankylosing spondylitis are discussed in the lectures. Basic approaches to diagnostics, medical treatment and prophylaxis of disease are represented.

KEY WORDS: ankylosing spondylitis, etiology, clinics, diagnostics, medical treatment and prophylaxis

АНКІЛОЗУЮЧИЙ СПОНДИЛІТ

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У лекції представлена етіологічна, епідеміологічна, патогенетична і клінічна характеристика анкілозуючого спондилоартриту. Висвітлено основні підходи до діагностики, лікування та профілактики захворювання.

КЛЮЧОВІ СЛОВА: анкілозуючий спондилоартрит, етіологія, клініка, діагностика, лікування та профілактика

АНКИЛОЗИРУЮЩИЙ СПОНДИЛИТ

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В лекции представлена этиологическая, эпидемиологическая, патогенетическая и клиническая характеристика анкилозирующего спондилоартрита. Освещены основные подходы к диагностике, лечению и профилактике заболевания.

КЛЮЧЕВЫЕ СЛОВА: анкилозирующий спондилоартрит, этиология, клиника, диагностика, лечение и профилактика

Chronic lumbar pain is the problem of current importance in modern clinical medicine. More frequently it has an inflammatory character and is determined by spondyloarthropathies [1].

Spondyloarthropathies is a group of interconnected inflammatory arthritis which includes ankylosing spondylitis (AS), reactive arthritis, psoriatic arthritis, Crohn's disease, undifferentiated spondyloarthropaties and juvenile spondylitis [2, 3].

AS (rheumatoid spondylitis, Bechterev-Shtrumpel-Marie disease) is a system inflammatory disease of connective tissue with predominant deprivation of the joint ligamentous apparatus of the spine and periphery joints with the involvement of internal organs (heart, aorta, kidneys) [4, 5].

Archeological digging revealed the remains of the spine skeleton of the Egyptian mummy 5000 years of age with the features of «bamboo rod» [6].

AC was first described by anatomist and surgeon Realdo Colombo in 1559 [7] in his treatise «Anatomy». In 1691 Bernar Connor [8] gave the description of the human skeleton with the signs of scoliosis in which sacrum, pelvic bone, lumbar vertebra and 10 thoracic vertebras with ribs are merged in single bone.

The disease called «spine numbness with curvature » was first described by V.M. Bechterev in 1892 [9, 10]. In 1897 A.Strumpell [11] gave to it the definition «chronic inflammation of spine and sacral-iliac joint», and in 1898 P. Marie [12] described one of its forms – spine deprivation with involvement of

hip and shoulder joints into the process and called it rhysomyelitic spondylitis.

EPIDEMIOLOGY

Prevalence of AS comprises 0,01 – 6 % of the population. It more often affects men (90 %) at the age of 20-40 years old. Possibly the morbidity of women is understated because of less expressed symptomatic.

Social significance of AS dictated by the development of the disease in young productive age and progressive course of it with the development of disability [13, 14].

RISK FACTORS, ETIOLOGY, PATHOGENESIS

Genetic predisposition, sex (men suffer more frequently), age (20-40), overcooling, presence of chronic infection in the organism belong to AS risk factors.

The connection of HLA-B27 with AS was first descried in 1973 [15, 16], though it does not explain the cause of the disease**.** More than 90 % of Europeans with AS are the carriers of HLA-B27, though most of HLA-B27-positive people remain healthy, thus prompting the idea, that there are other genes, taking part in the development of susceptibility to the disease. Thus carriage of HLA-B27 is the risk factor of AS development only in 20-50% [17, 18]. Identification of new genes - ARTS1, IL23R and IL1A gave the ground to suppose that susceptibility to AS development can also be connected with genes which are not included into the main complex of human histocompatibility [19, 20].

Three hypothesis of AS pathogenesis are defined:

- molecular mimicry between amino acid successiveness of infection agents and HLA-B27 (got no acknowledgement);
- receptor (HLA-B27 and virus antigens form circulating immune complexes possible to cause pathologic reactions, providing for AS clinics);
- changed HLA-B27 (some microorganisms can change molecular structure of HLA-B27, which activated T-killers for its destruction). More thorough study of AS pathogenesis is necessary for improvement of modern methods of treatment and increase of the patients' quality of life [21, 22];

Inflammation usually begins in sacroiliac junctioning and spreads on upper section of the spine. Later reflex spasm of paravertebral muscles appears which strengthens pain syndrome and causes blood circulation disorder. In time inflammation in intervertebral junctions causes the development of ankylosis with ossification of joint apparatus and degenerative changes of hyaline layers and bodies of the vertebra.

CLASSIFICATION

LCH 10

M45 Ankylosing spondylitis.

M45.1 Ankylosing spondylitis: Localization – Occipital section, first and second neck vertebras

M45.2 Ankylosing spondylitis: Localization – Neck section

M45.3 Ankylosing spondylitis: Localization – Cervical-thoracic section

M45.4 Ankylosing spondylitis: Localization – Thoracic section

M45.5 Ankylosing spondylitis: Localization - Lumbar-thoracic section

M45.6 Ankylosing spondylitis: Localization – Lumbar section

M45.7 Ankylosing spondylitis: Localization - Lumbar-sacral section

M45.8 Ankylosing spondylitis: Localization – Sacral and sacral-coccyx section

M45.9 Ankylosing spondylitis: Localization – Unknown localization

Clinical classification Masurov V. I. 2008 [23].

Course:

1. Slowly progressing,
2. Slowly progressing with exacerbation periods,
3. Quickly progressing,
4. Skeptical variant.

Stages:

1. Minimal signs of sacroileitis – tiny areas of erosion and sclerosis without joint fissure width change,
2. Signs of the 1 stage but in connection with join fissure contraction,
3. Defined signs of sacroileitis: moderate or pronounced sacroileitis, occurring by erosions, prominent sclerosis, expansion, contraction or partial ankylosis of the joint fissure,
4. Complete ankylosis.

Inflammatory process degree of activity:

1. minimal – tiny stiffness and spinal pains in the morning, ESR – to 20 mm per hour, CRP – more than 6 g/l;

2. moderate – constant spinal and joints pain, morning stiffness for some hours, ESR – to 40 mm/h, CRP – more than 12 g/l;

3. pronounced – strong constant pains, stiffness for the whole day, subfebrile temperature, visceral manifestations, ESR – more than 40 mm/h, CRP - more than 12 g/l.

Degree of functional joints deficiency (FJD):

1. change of physiological spine flexures with the limitation of spine and joints mobility;

2. sufficient limitation of spine and joints mobility which causes the patient to change the profession;

3. ankylosis of all spine and joints regions, causing absolute loss of employability;

AS forms:

1. - central – only spine is affected

а) kyphosis of the spine thoracic region, hyperlordosis of the neck region (kyphosis look),

б) absence of lumbar region lordosis, back looks like a board (rigid look);

2. - rhysomielitic – besides spine root (shoulder and hip) joints are affected;

3. – periphery – periphery joints (knee and ankle) and spine are affected;

4. – Scandinavian – wrist and feet joints, spine are affected.

European Spondyloarthropathy Study Group (ESSG) classification criteria for spondyloarthritis (sensitivity of 75 %) [24].

Inflammatory spinal pain or synovitis (asymmetrical, predominantly in lower limbs), and any one of the following:

Positive family history
Psoriasis
Inflammatory bowel disease
Alternate buttock pain
Enthesopathy

ESSG criteria were created as a classification and cannot be widely used in clinical practice. Their sensitivity in patients with the history of the disease less than 1 year comprises less than 70 % [25]. Alternative scheme classification was suggested by Amor et al. [26] and is considered more sensitive and specific (up to 90 %) because it takes also into account manifestations beyond the joints.

Amor classification criteria for spondyloarthropathy

Clinical symptoms or past history of:

Lumbar or dorsal pain at night, or lumbar or dorsal morning stiffness = 1

Asymmetrical oligoarthritis = 2

Buttock pain (buttock pain = 1, alternating buttock pain = 2)

Sausage-like finger or toe = 2

Heel pain = 2

Iritis = 2

Non-gonococcal urethritis or cervicitis accompanying, or within 1 month before, the onset of arthritis = 1

Acute diarrhea accompanying, or within 1 month before, the onset of arthritis = 1

Presence of history of psoriasis and/or balanitis and/or of inflammatory bowel disease (ulcerative colitis, Crohn's disease) = 2

Radiological findings

Sacroileitis (grade >2 if bilateral, grade >3 if unilateral) = 3

Genetic background

Presence of HLA-B27 and/or family history of ankylosing spondylitis, reactive arthritis, uveitis, psoriasis or chronic inflammatory bowel disease = 2

Response to therapy

Definite improvement of musculoskeletal complaints with non-steroidal anti-inflammatory drugs (NSAIDs) in less than 48h or relapse of the pain in less than 48h if NSAIDs discontinued = 2

A patient is considered as having a spondyloarthropathy if the sum of the scores is 6 or more.

CLINICAL PICTURE

In 75 % of cases AS begins with sacral and spine pains, in 20 % - with pains in periphery joints, in 5 % - with eyes affection (iritis, iridocyclitis). In most cases A begins imperceptibly withc lumbar-sacral and/or neck regions of the spine affection. The beginning often coincides with hypothermia or acute virus infection.

Several variants of AS beginning are defined:

- AS starts from constant appearance of typical pains of inflammatory character in the region of sacro-iliac junctioning under initial localization of the process, pains can become stronger and combine with pains in junctions;

- only subacute monoolygoarthritis often asymmetric and unstable can be observed under initial junctions affection (often in youth) in debut phenomena of sacroileitis join later;

- the beginning with migrating pains sometimes with tiny swelling in periphery joints is possible in children and adults which

is necessary to differentiate with acute rheumatic fever;

- seldom AS begins with acute fever syndrome, arthritis join only in 2-3 weeks;

- the beginning is possible from eyes affection (iritis, iridocyclitis) or from, aothitis or carditis (seldom) in connection with high indices of inflammatory process activity, in this case joint syndrome and symptoms of sacroileitis appear only in some months.

Early features of spine affection are pains irradiating into inguinal area which can disturb either under physical loading or weather change or appear under lasting stay in one stable position at rest. Sometimes pains in the heal bone, ligaments are marked, migrating pains in various (shoulder, knee) junctions, often on the background of subfebrile temperature.

Some patients mention morning stiffness of the spine which disappears during the day. Weakness, loss of body mass, raised fatigue and appetite lowering can disturb. The disease is diagnosed in some years after the beginning because of tiny complaints.

At the beginning of the disease abnormalities from physical norms are not marked in the condition of intact periphery joints under the patient examination the walk can be gentle in condition of strong pains. Painfulness of sacroilial, sternocleidal, sternocostal junctionings in the places of tendon attachments can appear under palpation.

Kushlevsky symptoms testify about sacroiliac junctions affection. In this purpose the patient is put down on the back, one leg is asked to be maximally withdrawn aside and bent in knee junction and put the heel on the forward area of the knee junction of the other leg which is not bent. Pains appear under the pressure of one hand on the bent knee junction and another hand – on the ridge of iliac bone from the opposite side on the side of withdrawn leg.

Under involvement of thoracic section of spine into pathological process intercostals neuralgia begins to disturb with circular pains in ribcage which become stronger in breath and cough. Pains can irradiate into stomach region, kidneys and heart.

In the later stage of AS all regions of the spine are involved into pathological process. Pain syndrome becomes less prominent but constant especially under physical loading. Lasting rest is worsening the AS symptoms which are the main difference from other arthritis the symptoms of which weaken at rest.

The ability to work sharply decreases, dyspnea is disturbing especially after meals because of breathing excursion decrease of the chest as a result of inflammatory process and further costovertebral junctions ankylosis.

Typical posture changes pay attention at later stages of the disease. Kyphosis or kyphoscoleosis of thoracal region, hyperlordosis of the neck region of the spine, smoothness of lumbar lordosis are detected. The patient moves with the legs set wide apart and shaking his head because of the pronounced atrophy of the back muscles. A «supplicant pose» is typical for AS under which the body is fixed in the bending position and the head is lowered.

Zatsepin samples (pressing on X, XI, XII ribs to vertebras places of fixation causes pain) and Verschakovsky samples (pressing by the кистью into the space between lower ribs and iliac ridge bone causes resistance of stomach muscles and back because of inflammation in intervertebral joints) are directed to the objectivities of pain syndrome. When neck section of the spine is involved into pathological process pain and activity limitation disturb while head turning and cause neck fixation in the bending forward position. In this case the head is immersed and the chin touches the chest.

Neck section of the spine is estimated according to the ability of the patient to press the chin to the chest (normally there is no distance between them) and prominence of neck kyphosis like the distance between the wall and the occipit when the patient is standing tightly pressed to the wall.

While AS progressing limitation of the thoracic wall excursion with the decrease of life capacity of lungs is marked. Maximal breathing excursion of the thoracic wall in intervertebral space on the chest circumference change becomes less than 5 sm the breathing range – less than 2,5 sm.

The thoracic section of the spin mobility is estimated according to Otte symptom. In this purpose two points are marked in the patient in vertical position of the body: first on the level of VII neck vertebra and the second - 30 sm lower. Then the distance change between the points under maximal body bending is measured. In healthy people it

increases up to 34–35 sm, while in patients with AS it sharply decreases or remains stable.

Estimation of the lumbar section of spine function was done with the use of Schober symptom. Two points are marked in the patient in vertical position of the body – over V spinous process, lumbar vertebra and 10 sm higher. While bending in healthy people the distance between the points grows in 4–5 sm and changes insufficiently in the patients.

Spine and junctions can be affected in various sequences. Hip and knee junctions are affected more often. The hardest affection is chronic coccsitis with the following ankylosis which causes disability.

The number of affected junctions in one patient can change with mobility limitation in one and ankylosis in other junctions.

In women AS has some peculiarities, it usually starts imperceptibly and develops slowly with improminent pains in junctions. Inflammation of ileo-sacral junctionings demonstrates tiny painfulness in sacrum area under palpation. Prominent deformation of the spine is absent on roentgenograms. Its function preserves for a long time. In AS other organs and systems can be involved into the process.

Very often affection of vegetative nervous system can be observed in the patients, which is manifested by the appearance of skin paleness and high sweating. Patients are nervous, emotionally labile, subjected to depression. Affection of periphery nerves most often is manifested in the way of secondary radiculitis – neck, chest or lumbar. Subluxation of atlant-axial joint can meet in destruction of transverse atlant ligament. Fracture of neck vertebra after a tiny trauma with paralysis development can appear as a result of pronounced osteoporosis of neck section of the spine. The syndrome of “horse tail” can be met more seldom as a result of spine hard envelope affection which leads to the affection of hip organs functions.

Mialgias, muscular contractures and further muscular atrophies occur from the part of muscular system.

Inflammation of upward aorta section is often found in AS which leads to dilatation and aorta valve insufficiency. Violation of conductance can occur up to absolute transversal heart blockade.

Lungs are seldom affected in AS.

Affection of kidneys is manifested by amyloidosis, developing under high inflammatory process activity with hard progressive course of the disease. Kidneys amyloidosis leads to hard kidneys insufficiency and uremia.

Eyes affection in AS results in iritis, uveitis, episcleritis, iridocyclitis. Eyes symptoms are manifested in about 2 -11 % of the patients some years before the beginning of pathological process development in spine and joints.

DIAGNOSIS AND DIFFERENTIAL DIAGNOSIS

The diagnosis in later stages of AS is not difficult at all, but early diagnostics is difficult because of poor clinical picture and often atypical or asymptomatic course. Identification of pains under loading on sacral-iliac junctions is of great importance. Such rear symptoms as arthralgia or arthritis in sternoclavicular and sternocostal junctions, iritis, pain in heels, muscles tension in lumbar section, smoothness of lumbar lordosis, feeling of difficulty in bending in lumbar section are very important.

Radicular pains, posture affection («supplicant pose» or «straight disk-shaped back»), arthritis of hip (or) knee joints, tension of back muscles («bowstring» symptom) or their atrophy, limitation of chest mobility in deep breathing are recently detected. Bilateral ankylosis of sacroiliac junction and intervertebral joints, syndesmophytis of spine are detected roentgenologically.

Diagnostical criteria are used in diagnosis detection [27].

Modified New York Criteria for AS (1984) [28].

Clinical criteria:

Low back pain and stiffness for more than 3 months, which improves with exercise, but is not relieved by rest;

Limitation of motion of the lumbar spine in both the sagittal and frontal planes;

Limitation of chest expansion relative to normal values correlated for age and sex;

Radiological criterion

Sacroileitis grade $\geq$ 2 bilaterally or grade 3–4 unilaterally.

Definite AS is present if the radiological criterion is associated with at least one clinical criterion.

The Assessment of Spondylo-Arthritis International Society (ASAS) worked out the

criteria for axial spondyloarthropaties in patients with or without roentgenological signs of sacroileitis (fig. 1) [29]. The given diagnostical criteria were based on the analyses of 649 patients data with chronic pain in spine in the history of disease (not less than 3 months), which debuted before 45 years old under presence of periphery symptoms or without them. As well as on the basis of the analysis of 226 patients data without pain in spine but with periphery manifestations of the disease (arthritis, enthesitis), appeared at the age of 45 new criteria were worked out for periphery spondiloartritis (fig. 2) [30, 31, 32].

IN PATIENTS WITH ≥ 3 MONTHS BACK PAIN AND AGE ≤ 45 YEARS

acroilsiitis on imaging[a] plus ≥1 SpA feature[b]	HLA-B27 plus ≥2 other SpA features

a sacroiliitis on imaging ✓ active (acute) inflammation on MRI highly suggestive of sacroiliitis associated with SpA ✓ definite radiographic sacroiliitis according to modified New York criteria	**b** SpA features IBP arthritis enthesitis (heel) uveitis dactylitis psoriasis Crohn's / colitis good response to NSAIDs family history for SpA HLA-B27 elevated CRP

IBD –inflammatory bowel disease, SpA –spondyloarthritis,
CRP –C-reactive protein, IBP –inflammatory back pain,
MRI – magnetic resonance imaging, NSAID – nonsteroidal anti-inflammatory drug

Fig. 1. ASAS classification criteria for axial spondyloarthritis

ARTHRITIS OR ENTHESITIS OR DACTYLITISPLUS

PLUS

≥1 SpA feature ✓ uveitis ✓ psoriasis ✓ Crohn's / colitis ✓ preceding infection ✓ HLA-B27 ✓ sacroiliitis on imaging	**OR**	≥2 other SpA features ✓ arthritis ✓ enthesitis ✓ dactylitis ✓ IBP (ever) ✓ positive family history for SpA

SpA –spondyloarthritis, IBP –inflammatory back pain

Fig. 2. ASAS classification criteria for peripheral spondyloarthritis

Besides olygoarthritis monoarthritis was included as well as genetic marker HLA–B27 for sensitivity diagnostic criteria. «Abaissment» of the patients with disease debut in 45 years of age and absence of clearness in the question of the participation

level of axial skeleton affection in patients with periphery form of the disease and vice versa can be carried to innovation failures. Modification of the given criteria particularly isolation of axial and periphery spondyloarthropaties is important for the given pathology diagnostics [33].

Laboratory diagnostics

In general blood analysis the increase of ESR can be revealed in 50-60 % of the patients. Level of CRP is more sensitive and specific marker of the process activity and increases in 75 % cases.

In 15 % of patients moderate normocytar normochrome anemia and increase of lysosomal enzymes increase are found (alkaline phosphatase, acid protease).

Antinuclear factor and rheumatoid factor in AS are negative.

HLA-B27 carrying is correlated with more severe AS course.

Instrumental and functional diagnostics

On suspicion on AS it is necessary to de roentgenological examination. Roughness or fuzziness of joint surfaces can be referred to initial changes in sacroiliac junctions. Pseudoexpansion of joint space can be observed due to subchondral osteoporosis. Further it becomes narrower and at the final stage this process is finished by partial or absolute sclerosis of sacroiliac junctions.

There are three roentgenological stages of sacroileitis [34]:

I – expansion of sacroiliac joint fissure junctions due to osteoporosis, focal subcartilage osteosclerosis along the joint fissure;

II – contraction and fuzziness of joint fissure, its usuration (subcartilage osteosclerosis and partial ankylosis);

III – complete bone ankylosis of sacroiliac junctions.

In the initial stages of AS erosions in upper and lower forward longitudinal corners of vertebra bodies are revealed, further – ossification of the forward longitudinal junction (symptom of «vertebra quadrization»). Spine typical changes like «bamboo rod» determine bone bridges between the vertebra.

Signs of enthesopaties with destruction centers in the places of junctions attachment to processus spinosus, kneepans, collar bones and heel bones, ischiatic tubers, trochanter of femoral bones can be observed.

MRT has diagnostic and prognosis importance for spondyloarthropaties especially for «axial» affection [35, 36].

Scyntigraphy with technetium pyrophosphates shows the increase of its accumulation just in the initial sacroileitis which can be observed in other diseases (rheumatoid arthritis, spondylosis of lumbar and sacral section of the spine, metabolism disease).

AS level of activity is estimated with the use of summary Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) [37], which consists of fatigue estimation, axial pain, periphery pain, stiffness and entesopaties according to VAS (0 – 100 mm). the index allows to estimate the AS level of activity in average meaning of the sum of 5 clinical signs: pain in spine, pain in joints, duration and prominence of stiffness in spine (average meaning), fatigue and level of uncomfortable feelings, appearing in touching to any painful sections. The index volume varies from 1 to 100. Activity is considered high under BASDAI >40.

BASFI (Bath Ankylosing Spondylitis Functional Index) [38] is used for prominence of functional affections in AS estimation. It includes 10 points, allowing to estimate the patient's ability to fulfill everyday activity. Every point is presented in the way of VAS (0 – 100 mm). It is calculated as an average sum of 10 indices from 1 to 100. Functional affections are considered prominent under BASFI index > 40.

Differential diagnoses of AS is done with such diseases as spondilosis, rheumatoid arthritis, Forestier hyperstosis and other seronegative arthropaties.

Difficulties if differential diagnostics appear in early stages of AS when there is no clear clinical picture and typical roentgenological signs are absent. First of all it is concerned AS differentiation with spondylosis (dystrophic affection of spine) which develops preferably after 30-40 years of age. Pains in AS become stronger at rest or in long term keeping of one position especially in the second part of night. In spondylosis, on the contrary, they appear or become stronger after physical loading at the end of working day. In spondylosis in comparison with AS the movement

limitation occurs on the top of pain and radiculitis development, and is the pain is removed spin mobility restores. Roentgenological research in dystrophic process can reveal typical changes more often in thoracal section of spine while in AS early changes are found in sacroiliac junctions. Besides in AS signs of inflammatory process are found in blood in AS which are absent in spondylosis.

Spine affection is often preceded by periphery joints affection that is why it is necessary to differ early stage of AS from rheumatoid arthritis. Presence of morning stiffness in joints, their symmetric affection (preferably hands), stable joints changes with fast development of muscular atrophy, contractures, rheumatoid nuts, rheumatoid blood factor, early roentgenological changes are typical for the last one which is more often met in women.

Signs of inflammatory activity and sacroileitis are absent in Forestiye hyperostosis (ossification of junctions of spine in elderly people).

Symmetry of sacroileitis and spreading of pathological process on all spine sections are typical for AS in comparison with other arthropaties.

TREATMENT

Main principles of AS treatment assume prompt beginning with maximally possible preservation and rehabilitation of spine and junctions function.

Way of life modification

It is necessary to flatly refuse smoking.

Moderate tempering procedures are useful.

The bed of the patient must be hard. Pillow and under neck cushion must be removed (for neck lordosis not to develop). Later thin pillow is possible.

Emotional comfort, sufficient sleeping in comfortable position, sanitation of chronical infections centers are indicated.

Diets

Food ration must be balanced and compensate organism losses. Weight should be controlled because its raising can increase the loading on spine and junctions of lower limbs. Sufficient use of protein food is obligatory, preference is given to dishes from fish, milk products.

Medical treatment

Basic therapy of AS is directed on prophylaxis of structural changes progressing or existing lowering of their development rates.

Sulfasalazine is widely used as a basic preparation in daily doze 2-3 g for not less than 3-4 months [39, 40]. Methotrexate is also used, though its positive effect is typical only for a small number of patients [41, 42]. The preparations demonstrate higher efficacy on periphery arthritis symptomacy and lower – on inflammatory process in spine that is why they are preferable to be used in periphery or rhysomelic form of AS, preferably under short remoteness of the disease.

Bisphosphonates (pamidronate), having anti-inflammatory potential and being inhibitors of osteoclast-indirect resorbtion of the bone are used lately in basis therapy of AS. Treatment by bisphosphonates leads to inflammation decay and improvement of joints and spine function (according to BASDAI and BASFI indices) [43, 44].

Inhibitors ФНО-α are lately used in AS treatment, allowing to get sufficient and stable effect with high AS activity, if traditional preparations are ineffective [45].

Inhibitors of timorous necrosis factor alpha (ITN–a) are an additional means to methotrexate – infliximab [46, 47], etanercept [48, 49] adalymumab [50, 51], holymumab [52].

Symptomatic therapy of AS is directed to coping with the pain and suppression of inflammation and includes nonsteroidal anti-inflammatory drugs (NSAIDs), glucocorticoids (GK), simple analgetics and miorelaxants.

NSAIDs facilitate pain and allow keeping working ability [53]. Lowering of pain intensity promotes decrease of muscles hypervitality which form typical spine deformation together with structural changes. Preparations of changes are COX-2 NSAIDs (celexosib), due to decrease of side effect appearance risk [54, 55]. Pronounced pains in joints and spine in some patients are impossible to cope by the only NSAIDs and then they are supplemented with simple analgetics [56]. It should be mentioned that according to some data [57] in spite of high efficacy of NSAIDs in pain syndrome they do not stop further disease progress.

Local infections. GK are used in arthritis of peripheral joints and entesites. They are prescribed orally if necessary (uveitis, carditis and aortitis, fever, non stopping while receiving NSAIDs) [58]. Duration of GK receiving in these cases must be short (weeks, seldom - months). According to the study results intrajoint injections of triamcinolone acetate give good effect is sacra-iliac joints in the group of patients with NSAIDs intolerance [59, 60, 61].

System application of GK is grounded on patients with AS with multiple joints affection and system manifestations with brightly pronounced exudative phenomena, refractive to other types of medical therapy as well as in persistent coxite, long term persistence of high concentrations of acute phase proteins, maximal activity of inflammatory process for three and more further months. The doze in calculation on prednisolone must not usually exceed 10–15 mg a day. Puls-therapy leads to frequent and sufficient decrease of inflammatory process in periphery joints and in less degree – in spine. But positive effect keeps for a short period, but in three months indices of inflammatory activity reach the former level, that is why the question about its use remains controversial [62, 63].

Myorelaxants are used in prominent muscles rigidity.

Physyotherapeutical treatment envisages hydrocortisone phonophoresis on inflammatory periphery and sacroiliac junctions, lasermagnetotherapy on the region of hip junctions, ionophoresis of lithium chloride in growing concentration (from 5 % to 10 %) on spine, biodynamic and sinusoidal–dynamic currents.

Surgical treatment

It is necessary to consider the variant of operative treatment under pronounced spine deformations in the way of correcting osteotomy with the distraction of back elements of one or more vertebras and setting the spine in more beneficial position. Endoprosthesis is done in severe forms of joints affection [64].

Rehabilitation

Rehabilitation program helps to decrease pain and inflammation, improve the spine flexibility and solidity, it helps to cope with everyday activity being the prophylaxis of deformations caused by AS [65]. The patients are recommended to stand, sit and walk with maximally rectified back and avoid long term bents. Therapeutic physical training course (TPT) is necessary the change every 4-6 weeks. Regular TPT allows keeping relatively good functional state and ability to work for a long time, no matter the severity of the disease.

Aims of therapeutic physical training under AS are:

1. decrease of ankylosis progressing;
2. deformations prophylaxis;
3. treatment of existing deformations;
4. increase of muscles strengthy of the weakened group of muscles;
5. decrease of muscle spasm and pain syndrome;
6. development of correct compensation, correct functional stereotype;
7. increase of breathing ability of lungs

Sanitary treatment is indicated.

Prognosis depends on AS form, stage and timeliness of the started treatment. As for disability the prognosis is usually unfavorable as for the life it worsens in cases of internal organs deprivation, especially kidneys.

MEDICO-SOCIAL EXAMINATION

Work connected with hard and moderate physical labor, forced position of the body, frequent bending, body vibration, demanding acute and tiny actions under periphery and Scandinavian forms of the disease, with long term standing on feet, in unfavorable meteorological conditions are counterindicated to the patients with AS.

Criteria of disability groups:

In employment with qualification decrease or shortening of the work volume to the persons occupied in professions with contraindicated factors the III-rd group of disability is defined. Under pronounced limitation of viability and employment under I and II stages of the disease, quick progressing of the disease course, with frequent and prolonged exacerbations, process activity of II and III degree, joints and spinal function violation of the II and III degrees, deprivation of internal organs, accompanied by organic insufficiency the II-nd group of disability is defined. The definition of the I-st group of disability is connected with severity and irreversibility of the joints (IFS of the IV degree) and spinal

changes (III stage of the disease). More often such patients are reverted to the bed and need constant care.

PROPHYLAXIS

At the expense of the fact that genetic factors play one of the main roles in AS development there is no specific prophylaxis. Though, knowing risk factors and first symptoms of AS, it can be identified on the early stage and the treatment can be prescribed in time which can help to keep physical activity for a long time under correct way of life as well as postpone the development of degenerative changes in spine and joints.

EXAMPLES OF CLINICAL DIAGNOSIS FORMULATING

1. Ankylosing spondylitis, central form, slowly progressing course, 1 stage, I stage of activity, FJF I.
2. Ankylosing spondylitis, visceral form, aortic valve insufficiency, myocardiodystrophy H0, iridocyclitis, II stage, II stage of activity, quickly progress, FJF II.

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