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CURRENT PRINCIPLES OF DIAGNOSIS AND TREATMENT OF ANKYLOSING SPONDYLITIS

Summary

In the article the current views on the etiology, pathogenesis, diagnosis, treatment and prognosis of ankylosing spondylitis are discussed.

Keywords

Ankylosing spondylitis, classification criteria, diagnosis, treatment, prognosis.

Ankylosing spondylitis (AS, also known as Bechterew's disease, Marie-Strümpell disease) is a chronic systemic disease of connective tissue which primarily affects joints, ligaments of spine, peripheral joints, internal organs (heart, aorta, kidney) and it has a tendency to progressive course with the development of limited mobility of the spine due to ankylosing of apophyseal joints, formation of syndesmosis and calcification of spinal ligaments [3, 5, 12, 19, 22, 24].

Epidemiology. The prevalence of AS in different countries is 0,2-1,1%, and incidence is 2-6 per 100,000 population. The peak incidence is between the ages of 15 and 30 years. It is believed that men suffer in 3-5 times more often than women [18, 26, 38].

Etiology and pathogenesis. Causes and mechanisms of AS remain uncertain, but there is mounting evidence that it is a result of complex interplay of genetic, environmental and immunological factors. The trigger role of infectious factors (streptococci, chlamydia, mycoplasma), hypothermia, chronic inflammatory diseases of urogenital system or gastrointestinal tract, spinal trauma, pelvic bones injuries, the influence of hormonal factors is assumed. Genetic determinacy of AS is associated primarily with HLA-B27 carrier. According to the hypothesis of antigenic mimicry, similarity between HLA-B27 and microbial antigens may contribute to its long-term persistence in the patient organism and stimulation of the development of an autoimmune process. The disease begins with the destruction of the sacroiliac joints; intervertebral, edge-vertebral joints, intervertebral discs and ligaments are affected later [7, 8, 14, 34, 39, 40, 45].

Classification. Classification of AS developed by the Ukrainian Rheumatologic Association is used in the clinical practice in Ukraine (Tab. 1) [9].

Clinical course. The onset of AS is almost always invisible, the course of the disease is chronic, progressive, with periodic exacerbations and remissions. The predecessors of lesion of the spine can often be iritis, iridocyclitis and episcleritis that are resistant to conventional treatments. At the beginning of the disease morning stiffness of the spine is presented, it disappears during the day. Often during the initial examination reduced respiratory excursion of the chest, barely noticeable dorsal kyphosis are revealed. Particularly pain in the buttocks and in the dorsal part of thigh, that can spread to the entire lower limb, reminding sciatica, is typical. Depending on the disease progression during the period from 2 to 10 years or more the entire spine and often the joints of the extremities, especially lower, are affected. In the late stage of the disease pain in lumbosacral part is usually absent, as there ankylosis has already developed [2, 3, 51].

Typical symptoms of AS are:

- Symptoms of bilateral sacroiliitis. Complaints of inflammatory pain in the coccyx, buttocks, the back side of the thigh, resembling lumbar-coccygeal sciatica are typical. Pain is bilateral, permanent, becomes stronger in the second half of the night. Often atrophy of the gluteal muscles of tension is presented.
- Pain and stiffness in the lumbar spine. The pain is stronger in the morning, but decreases after exercise and hot shower. Stiffness in the lumbar spine appears. Flatness or complete disappearance of lumbar lordosis is revealed.
- Lesions of thoracic region are characterized by pain, often radiating to the ribs. Chest excursion reduces due to the formation of ankylosis of sternocostal joints.
- In patients with lesions of the cervical part the main complaint is the significant limitation of motion (almost complete immobility) and pain during movements of the head [5].

The ***central form*** (Fig. 1) is the most common; it is characterized by affected spine. The symptom of sacroiliitis is pain in the sacro-lumbar joints that is manifested by Kushelevsky's symptom. The limita-

Table 1. Clinical classification of AS (Ukrainian Rheumatologic Association, 2004)

Form	Central (axial)	Lesions of the spine and axial joints (shoulder, hip) without lesions of peripheral joints
	Peripheral	Lesions of peripheral joints alone or in combination with lesions of the spine and axial joints
	Visceral	The combination of central and peripheral forms with lesions of internal organs (aortitis etc.)
Clinical course	• slowly progressive; • slowly progressive with periods of exacerbation; • rapidly progressive.	In the short term leads to new ankylosis
Clinical and radiographic stages	I (initial or early)	Moderate limitation of movement in the spine or in the affected joints, radiographic changes are absent or irregularity and roughness of sacroiliac joints, foci of subcartilaginous osteosclerosis, expansion joint gaps are detected
	II (moderate injury)	Limitation of movement in the spine or peripheral joints, narrowing the spaces of sacroiliac joints, or its partial ankylosing, narrowing of the intervertebral joint spaces or signs of ankylosis of the joints of the spine
	III (late)	Significant limitation of movement in the spine and large joints of the extremities due to ankylosing, bone ankylosis of sacroiliac joints, spinal and edge-vertebral joints with the presence of ossification of ligaments
Activity	0 (absent)	Lack of stiffness and pain in the spine and joints of the extremities, ESR is up to 20 mm/h, CRP is «-»
	I (minimal)	Insignificant stiffness, pain in the spine and joints of the extremities, ESR is up to 20 mm/h, CRP is «+»
	II (moderate)	Constant pain in the spine and joints of limbs, morning stiffness which lasts few hours, ESR is up to 40 mm/h, CRP is «++»
	III (significant)	Constant pain in the spine and joints of the limbs, stiffness lasts throughout the day, exudative changes in joints, mild pyrexia of the body, visceral manifestations, ESR is above 40 mm/h, CRP is «+++/++++»
Functional insufficiency	I	Changes of physiological flexures and limitation of movement of the spine and joints of the extremities, self-care ability is preserved or slightly impaired
	II	Significant limitation of movement of the spine and joints of the extremities causing the necessity to change the type of profession by the patient, self-care ability is significantly impaired
	III	Ankylosis of all parts of the spine and hip joints, loss of capacity for work, inability to self-care
Radiographic stages of sacroiliitis	0	Normal
	I	On the background of osteoporosis the foci of sclerosis are revealed, in the subchondral part the joint space is uniformly expanded, articular surfaces lose clearness (joint space is fuzzed)
	II	Subchondral sclerosis is increased, locking plates are fragmented, joint spaces are irregularly narrowed, ossification of the sacroiliac ligaments, it is similar to «a strand of pearls»
	III	Erosions, a significant narrowing of joint space, ankylosis of partial sacroiliac joints, ossification of ligaments
	IV	Ankylosis of sacroiliac joints

tion of mobility in the thoracic spine can be detected by Otto's test, lumbar spine – by Schober's and Tomayer's symptoms.

In 17-18% of cases AS is characterized by the development of spondyloarthritis and sacroiliitis and lesion of shoulder and hip joints. In the case of involvement of the shoulder joints the course of the disease is more favorable and dysfunction is rare. The lesion of the hip joints (single or bilateral) develops simultaneously with sacroiliitis or over several period and it is an indicator of unfavorable prognosis and early disability.

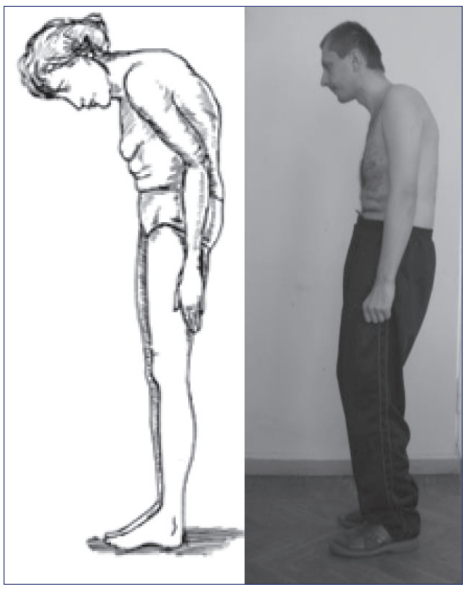

Fig. 1. Posture of a patient with AS (central form)

The ***peripheral form*** of AS is characterized (except lesion of sacroiliac joints) by arthritis of elbow, knee, ankle and small joints of the limbs, which in some cases develops before the onset of symptoms of sacroiliitis.

The frequency of this form is very variable – from 20 to 50% of all cases of AS. Arthritis is often subacute, asymmetric, with the development of deformation, limited mobility and muscle contractures.

Visceral form of AS regardless of the stage of spinal lesions and distribution of joint syndrome is characterized by lesions of internal organs (eyes, heart, aorta, lungs, kidneys).

In the later stages of the disease pathological process affects all parts of spine. The progressive process of ankylosis reaches a high degree: vertebral bodies are fused with each other (X-ray – a symptom of «bamboo spine») [13].

Diagnosis and differential diagnosis. ***Laboratory data.*** Increased levels of erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) are observed in more than 70% of cases and correlate with disease activity. Sometimes there is a normocytic, normochromic anemia. In case of high activity the concentration of IgA is often increased. Antinuclear factor and rheumatoid factor are not detected. The detection of HLA-B27 is important for early diagnosis of AS in young men with typical clinical but not radiological sacroiliitis and it is associated with severe course of the disease [7, 8, 51].

Radiographic studies are most helpful in establishing a diagnosis. The radiographic findings rep-

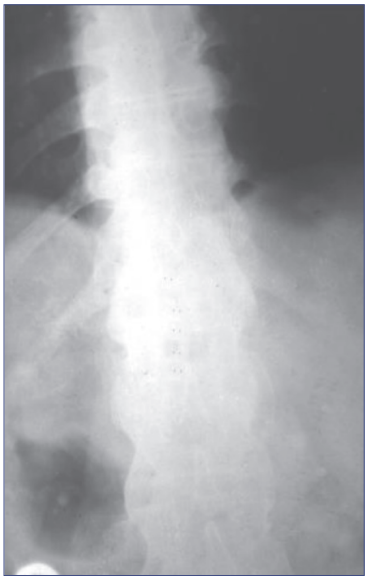

Fig. 2. X-ray of the lumbar spine in AS: a symptom of «bamboo spine»

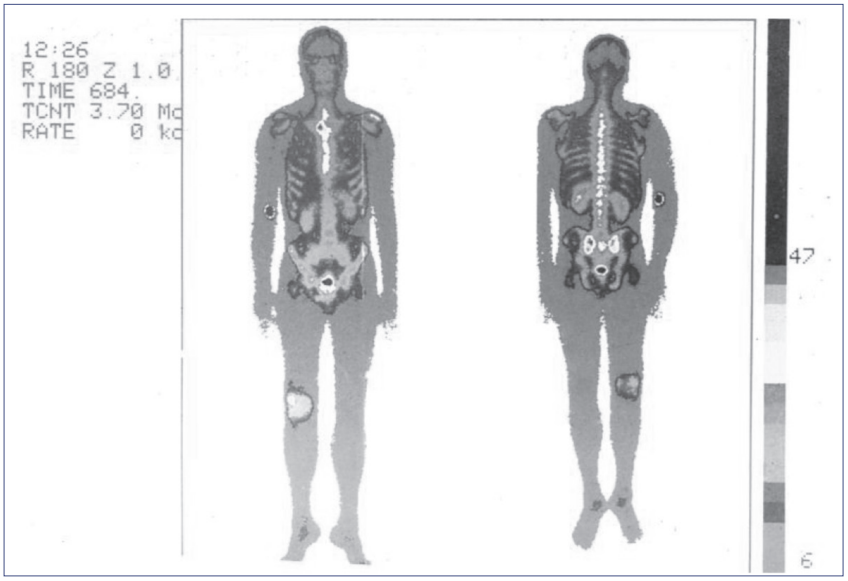

Fig. 3. Scintigraphy in AS

resent reparative changes in response to earlier acute inflammation. As such, the appearance of radiographic abnormalities is typically delayed (up to 10 years or more). In the spine, there is progression from reactive sclerosis («shiny corner»), squaring and erosions at the edge of the vertebral bodies to syndesmophyte formation and bony bridging. The classic «bamboo spine» (Fig. 2) is characteristic of advanced AS [29, 35, 46].

Magnetic resonance imaging (MRI) or computed tomography (CT) are often considered when X-rays are normal but there is a clinical suspicion of AS. Active inflammatory lesions such as bone marrow oedema/osteitis, synovitis, enthesitis and capsulitis associated with AS can be detected by MRI. Among these, the clear presence of bone marrow edema/osteitis was considered essential for defining active sacroiliitis and spondylits (>3 lesions). Structural damage lesions such as sclerosis, erosions, fat deposition and ankylosis can also be detected by MRI [23, 31].

CT allows visualization of the same pathological processes as conventional radiography (erosion, osteoporosis/sclerosis and new bone formation/ankylosis) with the added benefit of multiplanar imaging free from superimposition of overlying structures [16, 35].

MRI and CT may be useful in selected patients but, for reasons of expense, are not typically part of routine evaluation in Ukraine.

Ultrasonography is useful in detecting active enthesitis. Its role in the detection of sacroiliitis remains to be determined as this modality is largely operator-dependent. In addition, colour Doppler ultrasound may be useful to assess changes in inflammatory activity at entheses during institution of new therapies [29, 32].

Bone scintigraphy (Fig. 3) is an alternative method to detect sacroiliitis but the sensitivity and specificity is lower than with other imaging techniques. Areas of increased uptake of radioisotope may suggest pseudoarthrosis or fractures that may complicate the clinical course in patients with advanced disease [23, 49].

The Rome, New York and Modified New York criteria have been used for decision making in clinical practice for a long time (Tab. 2) [8, 11, 46].

The Modified New York criteria have significant limitations, including their singular focus on axial features of disease, omission of other clinically relevant features, and an emphasis on restrictions in spine mobility and chest expansion that generally occur in later stages of disease as a consequence of chronic, rather than early or active, inflammation. Therefore, these criteria can be useful for classifying definite cases of AS but should not be used in everyday clinical practice to identify patients with early stages of the disease [6, 20].

Early diagnosis is essential because it has been shown that the burden of early disease is substantial and comparable to that of later stages. The new Assessment of SpondyloArthritis international Society (ASAS) criteria for axial spondylarthritis (SpA) have made it possible to diagnose early non-radiographic axial SpA as well as established SpA [1, 4, 41, 47, 48].

The ASAS criteria (2009) can be fulfilled through 1 of 2 pathways: by imaging or clinical, although both require the presence of chronic back pain (≥3 months) and onset of symptoms before the age of 45 years.

The imaging pathway requires only one clinical parameter plus sacroiliitis: the sacroiliitis should show definite radiographic disease at grade 2 bilateral or grade 3 to 4 unilateral or there should be active (acute) inflammation of sacroiliac joints on MRI, highly suggestive of sacroilliitis associated with SpA. The clinical parameters are inflammatory back pain, arthritis, enthesitis, uveitis, psoriasis, Crohn's disease/ulcerative colitis, good response to non-steroi-

Table 2. Classification criteria for AS

Rome criteria (1961)	New York criteria (1966)	Modified New York criteria (1984)
Clinical criteria:		
1. Low back pain and stiffness > 3 months not relieved by rest. 2. Pain and stiffness in thoracic region. 3. Limited motion in lumbar spine. 4. Limited chest expansion. 5. History or evidence of iritis or its sequelae.	1. Limitation of motion of the lumbar spine in all three planes: anterior flexion, lateral flexion, and extension. 2. A history or the presence of pain at the dorsolumbar junction or in the lumbar spine. 3. Limitation of chest expansion to 2,5 cm or less, measured at the level of the fourth intercostal space.	1. Low back pain and stiffness > 3 months that improves with exercise but is not relieved with rest. 2. Limitation of motion of the lumbar spine in both the sagittal and frontal planes. 3. Limitation of chest expansion relative to normal values corrected for age and sex.
Radiologic criterion:		
Radiograph showing bilateral sacroiliac changes characteristic of ankylosing spondylitis (this would exclude bilateral osteoarthritis of the sacroiliac joints).	Grade 3-4 sacroiliitis.	Sacroiliitis grade ≥ 2 bilaterally or grade 3-4 unilaterally.
Definite ankylosing spondylitis:		
• Bilateral sacroiliitis (radiograph) and 1 or more clinical criteria, or • Four of the five clinical criteria.	• Grade 3-4 bilateral sacroiliitis and 1 or more clinical criteria, or • Grade 3-4 unilateral sacroiliitis or grade 2 bilateral sacroiliitis with clinical criterion 1 or both clinical criteria 2 and 3.	• The radiologic criterion is associated with at least one clinical criterion.

dal anti-inflammatory drugs (NSAIDs), family history of SpA, elevated CRP and presence of HLA-B27.

The clinical pathway requires a positive HLA-B27 test plus two other clinical parameters.

In **the differential diagnosis** the most important is to distinguish AS from osteochondrosis and spondylosis. Degenerative changes in the spine occur mainly in patients over 40 years, the pain occurs or increases after exercise at the end of the day. In patients with AS, in contrast, pain is increased at rest or after prolonged stay in one position, especially in the second half of the night.

Radiological findings in case of degenerative process changes are localized primarily in the thoracic spine, while in case of AS early changes are detected in the sacroiliac joints. Sacroiliac arthritis is rare, but in case of absence of degenerative lesions of other parts of spine it is difficult to differentiate from the original form of AS.

In case of spondylosis the limitation of movement occurs due to significant pain syndrome and development of secondary radiculitis, whereas early symptom of AS is back muscle strain, followed by the gradual development of atrophy and limitation of motion of the lumbar spine.

Pain in the lower back in the case of central form of AS is characterized by negative Lasegue symptom in contrast to sciatic nerve neuralgia.

Ankylosing hyperostosis of the spine (Forestier's disease) is characterized by lesions of four thoracic vertebrae located alongside. In the late stage of hyperostosis severe changes of posture of the patient don't occur, and even common ossification of ligaments on the X-ray looks like a «bamboo spine», ligamentary type of syndesmophytes distinguishes this syndrome from AS.

Especially it is difficult to differentiate AS from Reiter's syndrome, which often starts with increased body temperature, deterioration of general condition, inflammatory changes in joints. Sacroiliitis for a long time remains one-sided, with no tendency to become more severe or development of ankylosis. Sometimes syndesmophytes can occur but in contrast to AS ossification of the fibrous ring is absent.

In cases when the disease starts from the lesions of the peripheral joints and has a recurring course with increasing temperature and increased ESR, rheumatic fever should be excluded.

Tuberculous spondylitis is characterized by local destruction of one or more vertebrae; very rare intervertebral joints are involved in the pathological process, the signs of decay and sequestration of the vertebral bodies are manifested in the early stages.

In case of rheumatoid arthritis the ossification of paravertebral tissue is absent, motion in the thoracic spine is not limited, peripheral arthritis of small joints is accompanied by significant exudative component, morning stiffness and severe destruction of articular surfaces of bones, rheumatoid factor is often positive.

Psoriatic lesions of spine as well as AS are associated with the presence of HLA-B27 and are characterized by severe unilateral sacroiliitis with marginal erosions. In case of bilateral lesions the changes can be presented with varying degrees of severity. The presence of symptoms of psoriasis and typical lesions of small joints of hands (vertical type of lesion with heteraxial deviations) are helpful for diagnosing.

The development of Brucellar spondylitis is associated with the intermittent fever, enlargement of the spleen, often the liver and lymph nodes, Brucella detection in blood, and the positive Right and Byurne reactions. Predominantly the lumbar spine is affected; it is also characterized by the destruction of the intervertebral discs and calcification of the longitudinal ligaments of the spine.

In enteropathic arthropathies the articular symptoms are clearly correlated with the severity of inflammation in the intestines and it is also characterized by migratory mono- or oligoarthritis [5, 13].

Treatment. The treatment of AS should be complex, long-term and regular. The overarching principles of the management of patients with AS are [15, 17]:

- AS is a potentially severe disease with diverse

manifestations, usually requiring multidisciplinary treatment coordinated by the rheumatologist.
- The primary goal of treating the patient with AS is to maximize long term health-related quality of life through control of symptoms and inflammation, prevention of progressive structural damage, preservation/normalization of function and social participation.
- Treatment of AS should aim at the best care and must be based on a shared decision between the patient and the rheumatologist.
- The optimal management of patients with AS requires a combination of non-pharmacological and pharmacological treatment modalities (Fig. 4).

In 2014 an international task force defined the treatment target for AS and developed recommendations for achieving the target, including a treat-to-target management strategy. These recommendations are follows [50]:
- A major treatment target should be clinical remission/inactive disease of musculoskeletal involvement (arthritis, dactylitis, enthesitis, axial disease), taking extra-articular manifestations into consideration.
- The treatment target should be individualized according to the current clinical manifestations of the disease.
- Clinical remission/inactive disease is defined as the absence of clinical and laboratory evidence of significant inflammatory disease activity.
- Low/minimal disease activity may be an alternative treatment target.
- Disease activity should be measured on the basis of clinical signs and symptoms, and acute phase reactants.
- The choice of the measure of disease activity and the level of the target value may be influenced by considerations of comorbidities, patient factors and drug-related risks.
- Once the target is achieved, it should ideally be maintained throughout the course of the disease.
- The patient should be appropriately informed and involved in the discussions about the treatment target, and the risks and benefits of the strategy planned to reach this target.
- Structural changes, functional impairment, extra-articular manifestations, comorbidities and treatment risks should be considered when making clinical decisions, in addition to assessing measures of disease activity.
- Validated composite measures of disease activity such as the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) plus acute phase reactants or the Ankylosing Spondylitis Disease Activity Score, with or without measures of function such as Bath Ankylosing Spondylitis Functional Index, should be performed and documented regularly in routine clinical practice to guide treatment decisions; the frequency of the measurements depends on the level of disease activity.
- Other factors, such as axial inflammation on MRI, radiographic progression, peripheral musculoskeletal and extra-articular manifestations, as well as comorbidities may also be considered when setting clinical targets.

The cornerstone of non-pharmacological treatment of patients with AS is patient education and regular exercise. Physical therapy with supervised exercises, land or water based, individually or in a group, should be preferred as these are more effective than home exercises. Daily therapeutic gymnastics should be 1-2 times a day for 30-40 minutes, swimming, playing volleyball, badminton and tennis. It is necessary always to keep the posture. The patient should sleep on a hard bed with a low pillow on the orthopedic mattress [11, 28, 36].

NSAIDs are recommended as first-line drug treatment for AS patients with pain and stiffness. NSAIDs reduce pain and stiffness effectively in most patients, are able to reduce systemic and local inflammation, and can inhibit progression of structural damage in the spine. Among different representatives of this group of drugs preference should be given to selective NSAIDs – celecoxib (200 mg/day per os), meloxicam (7,5-15 mg/day per os, intramuscularly or in suppositories), nimesulide (200 mg/day per os). But non-selective NSAIDs are also used: indomethacin (150 mg/day), diclofenac (150 mg/day) [12, 16, 37].

The combination of NSAIDs with central muscle relaxants can reduce muscle tension and prevent spinal deformity. For example, tolperyzon is prescribed in dose 50-150 mg 3 times a day per os or 100 mg 2 times a day intramuscularly. The drug may also be administered by slow intravenous single dose of 100 mg [13].

Continuous treatment with NSAIDs is preferred for patients with persistently active, symptomatic disease. The advantages of NSAIDs treatment, especially if continuous use is envisaged, should be weighted against possible gastrointestinal and cardiovascular disadvantages. In the presence of history of gastrointestinal complaints or a high cardiovascular risk, NSAIDs should be used with caution [25].

Analgesics, such as paracetamol and opioid (like) drugs, might be considered for residual pain after previously recommended treatments have failed, are contraindicated, and/or poorly tolerated.

Glucocorticoid therapy in patients with AS is less important than in the case of other rheumatic dis-

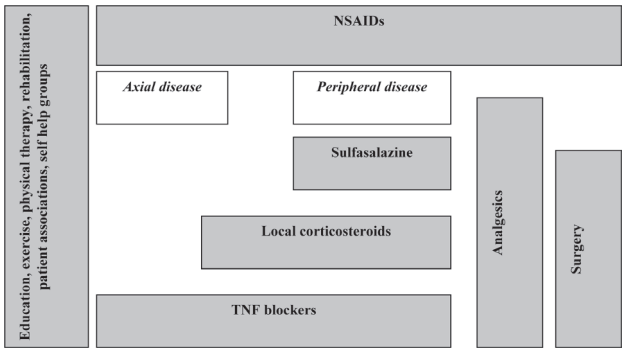

Fig. 4. Recommended management of AS (ASAS/EULAR, 2006)

eases. A local corticosteroid injection may be used in selected cases (significant peripheral arthritis with severe functional articular insufficiency, resistant coxitis, the maximum activity of AS during more than 3 months, resistance to therapy etc.).

There is not enough evidence for the efficacy of disease-modifying antirheumatic drugs (DMARDs), including sulfasalazine [21] and methotrexate [33], for the treatment of axial disease. Sulfasalazine can be used in cases of peripheral arthritis in patients with AS.

Among biological agents for the treatment of AS tumor necrosis factor (TNF)-α blockers (infliximab, etanercept, adalimumab, golimumab) have been shown to be the most promising treatment, slowing the progress of AS in the majority of clinical cases [44]. It should be given to patients with persistently high disease activity despite conventional treatments according to the ASAS recommendations (2003, 2006) [17, 30]:

- Diagnosis: Patients normally fulfilling Modified New York Criteria for definitive AS.
- Active disease for > 4 weeks, BASDAI is > 4 and expert opinion of rheumatologist about the usefulness of TNF inhibitors prescription.
- Treatment failure:

- All patients must have had adequate therapeutic trials of at least two NSAIDs. An adequate therapeutic trial is defined as treatment for at least 3 months at maximal recommended or tolerated anti-inflammatory dose unless contraindicated; treatment for <3 months where treatment was withdrawn because of intolerance, toxicity, or contraindications.

- Patients with pure axial manifestations do not have to take DMARDs before anti-TNF treatment can be started.

- Patients with symptomatic peripheral arthritis should have an insufficient response to at least one local corticosteroid injection, if appropriate.

- Patients with persistent peripheral arthritis must have had a therapeutic trial of sulfasalazine.

- Patients with symptomatic enthesitis for whom appropriate local treatment failed.

There is no evidence to support a difference in efficacy of the various TNF inhibitors on the axial and articular/entheseal disease manifestations; but in the presence of inflammatory bowel disease a difference in gastrointestinal efficacy needs to be taken into account. Switching to a second TNF blocker might be beneficial especially in patients with loss of response [15].

IL-6, IL-17, IL-12/23 and B-cells are the most promising new targets in the treatment of AS [42, 43].

Physiotherapy is an integral part of the management of AS. It prevents the development of contractures, muscle atrophy and limitation of mobility of the spine, but they are contraindicated in the case of high activity and exacerbations of AS. After reduction of signs of inflammation inductothermy, dynamic currents, Bernard currents, magneto-and laser therapy are prescribed.

Sanatorium-and-spa treatment. At low activity of AS and in the phase of remission balneotherapy, mud therapy and massage are effective. Annual treatment with the help of radon, hydrogen and sulfide baths are recommended (Odessa, Evpatoria, Saki, Pyatigorsk, Sochi etc.). Massage reduces muscle back pain in the spine, relieves muscle stiffness and strengthens muscles [10, 27, 36].

Surgical treatment. Total hip arthroplasty is considered in patients with refractory pain or disability and radiographic evidence of structural damage, independent of age. In patients with severe disabling deformity spinal corrective osteotomy should be done [5].

Prognosis. Prognosis for life is favorable. In young patients with AS disability often is caused by high (resistant to the therapy) activity of the process. Low activity, especially at the onset of AS, is the cause of late diagnosis and treatment.

On average since the beginning of the disease to disability 18 years are passed. The following factors influence on the disability of patients with AS: the course of the disease (in the case of rapidly progressive AS the risk of disability increases 7-fold), regularity and quality of therapy (in the case of episodic treatment the risk increases 2,4 times), significant activity of AS and its duration (2,2 times) [11].

Also predictors of a poor prognosis in AS are [19, 24]: gender (male patients have more structural changes); X-rays (presence of one syndesmophyte predicts development of future syndesmopyhtes); degree of inflammatory sacroiliac lesions (MRI); persistently elevated acute phase reactants (ESR, CRP); smoking; manual work; young age at disease onset; hip involvement; cervical spine involvement; peripheral arthritis.

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СУЧАСНІ ЗАСАДИ ДІАГНОСТИКИ ТА ЛІКУВАННЯ АНКІЛОЗИВНОГО СПОНДИЛОАРТРИТУ

А.С. Свінціцький

Резюме

У статті наведено сучасні погляди на питання етіології, патогенезу, діагностики, лікування і прогнозу анкілозивного спондилоартриту.

Ключові слова: анкілозивний спондилоартрит, класифікаційні критерії, діагностика, лікування, прогноз.