

2016 New York Revised Criteria for too Early Diagnosis of Ankylosing Spondylitis (AS)

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Abstract

Ankylosing Spondylitis (AS) is a chronic inflammatory systemic disease belonging to the SpondyloArthritides with axial joint involvement and enthesitis, with or without peripheral arthritis and systemic involvement.

We know that the clinical/paraclinical judgement of an expert Rheumatologist is the gold standard for diagnosis of AS.

It is mentioned that the 1984 modified New York criteria is applied for classification of AS and it is not a good instrument for early detection of disease.

The author by this letter delivers a new criteria called 2016 New York revised criteria that is applied for too early diagnosis of AS.

With the addition of pelvic MRI, HLA-B27 positivity, positive family history of AS, Enthesitis/arthritis and positive sacral push test to the 1984 modified New York criteria and deletion of limited chest expansion from it, this new criteria has been created.

Keywords: Ankylosing Spondylitis; 2016 New York Revised Criteria; Pelvic MRI; HLA-B27 Positivity

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Letter to Editor

Ankylosing Spondylitis (AS) is a chronic inflammatory systemic disease belonging to the SpondyloArthritides with axial joint involvement and enthesitis, with or without peripheral arthritis and systemic involvement [1].

The previous names of AS were Marrie Strumle disease and Bechterev disease.

Nowadays Ankylosing Spondylitis is not a compatible name for early stage of the disease. On the other hand this name is preferred for late stages of the disease when the ankylosis of spinal and sacroiliac joints can be seen.

AS is the prototype member of the SpondyloArthritides (SpA). The SpA are characterized by [2]:

- Spondylitis
- Sacroiliitis
- Enthesitis
- Arthritis
- HLA-B27 positivity
- Usually RF negativity

This group of the diseases are including:

- Ankylosing Spondylitis: AS
- Reactive arthritis (Reiter's syndrome): ReA
- Psoriatic arthritis: PsA
- Enteric (IBD-related) arthritis: IBD-rA
- Undifferentiated SpA: USpA
- Juvenile SpA: JSpA

AS usually occurs in young adults with ages less than 40 and it may be more common in men [3]. Its common musculoskeletal manifestations are including [4]:

- Inflammatory back pain and stiffness [especially Low Back Pain (LBP)]
- Inflammatory buttock pain
- Inflammatory neck pain and stiffness
- Spinal Limitation of Motion (LOM) in all directions (especially lumbar LOM)
- Positive sacral push test (with $\geq 2+$ tenderness) or clinical sacroiliitis
- Enthesitis especially plantar fasciitis, Achille tendinitis, costochondritis and paravertebral enthesitis

- Peripheral arthritis especially hip and shoulder arthritis

Its common systemic manifestations are including:

- Uveitis: especially acute, anterior asymmetric uveitis
- Cardiac involvement ; especially aortic regurgitation and heart blocks
- Renal involvement; especially IgA nephropathy and renal Amyloidosis
- Gastro-intestinal involvement; especially subclinical ileocolitis
- Pulmonary involvement; especially apical fibrosis of lungs
- Nervous system: cervical myelopathy due to atlantoaxial subluxation, spinal canal stenosis and cauda equina syndrome

Low Back Pain (LBP) is a common symptom. About 5% of the chronic LBP are inflammatory.

The AS patient is involved in definite inflammatory LBP when LBP has been lasting for more than 3 months with at least 4 out of 5 below characters:

- Age at onset <40 years
- Insidious onset
- Improvement with activity/exercise
- No improvement with rest
- Pain at night with improvement upon getting up

In practice about 25% of the AS patients are involved in a type of LBP that is not definite inflammatory but it has some characters of it. By the author this type of LBP is called probable inflammatory LBP. In practice there are two types of probable inflammatory LBP; type I and type II [5].

In the cases of LBP lasting for ≤ 3 months with 4-5 out of 5 above characters there is probable inflammatory LBP type I, whereas LBP lasting for more than 3 months with 2-3 out of 5 above characters is of type II probable inflammatory LBP.

A study in Iran shows that about 90% of the patients with AS have inflammatory LBP in initial presentation of the disease; 65% definite and 25% probable [5].

In this study other initial presentations of AS are including [5]:

- Lumbar LOM in all directions: 75%
- Positive sacral push test with buttock pain: >20%
- Enthesitis: about 30%
- Arthritis: 40%
- Limited chest expansion: <2%

There was not any systemic manifestation in initial presentation and early stage of AS in this study.

According to experts' opinion in comparison with the normal range for age and sex; lumbar LOM can be detected in all directions of flexion/extension, right and left bending and right and left rotation. Positive Schober's test is applied for LOM in flexion [6].

Positive sacral push test or on the other hand > 2+ tenderness on sacroiliac joints or the buttock elicited by direct vertical pressure over the center of sacrum in prone position is the best test for detection of clinical sacroiliitis [7].

Bilateral symmetric sacroiliitis is the hallmark of AS in imaging whereas unilateral or asymmetric sacroiliitis is a compatible feature in other axial SpA [8].

Magnetic Resonance Imaging (MRI) is the most sensitive (up to 95%) imaging for the early detection of sacroiliitis and radiography (standard AP plain X-Ray of the pelvis) can show it in intermediate to late stages of the disease. Whole Body Bone Scan or Bone Scintigraphy can help us detect subclinical or atypical forms of AS by showing inflammatory uptake in axial and peripheral joints along with enthesial sites [9].

The Grading of radiological sacroiliitis is including [10]:

- Grade 0: Normal Sacroiliac (SI) joints
- Grade 1: Suspicious changes of SI joints
- Grade 2: Minimal erosions or sclerosis of SI joints without alteration in the joint width
- Grade 3: Moderate to significant erosions, sclerosis, widening, narrowing, or partial ankylosis of SI joints
- Grade 4: Total ankylosis of SI joints

We know that AS has a strong genetic background especially HLA-B27 positivity and familial aggregation. The percent of HLA-B27 positivity in the White and Black patients with AS are 90% and 45% respectively while its percent in normal population is less than 10% [11].

In our study in Iranian patients with AS the percent of HLA-B27 positivity was 45% [5]. HLA-B27 positivity and positive family history of AS and other SpondyloArthritides can increase the chance of occurrence of AS. This chance in monozygot twins is more than dizygot and in first degree family is more than second degree. The risks of AS within the relatives of an AS patient are: monozygotic twins: 63%, first-degree families: 8.2% and second degree families: 1% [12]. It needs to be mentioned that the first degree family are including mother, father, sisters, brothers and

children and second degree family are including maternal and paternal grand parents, aunts, uncles, nieces and nephews.

We know that the prevalence of AS is estimated to be 0.2 to 0.5 percent. On the other hand the risk of AS within normal population is 0.2 to 0.5% but in the HLA-B27 positive groups it is about 5% [13].

We know that the clinical/paraclinical judgement of an expert Rheumatologist is the gold standard for diagnosis of AS the same as other Rheumatologic systemic diseases.

It is mentioned that the 1984 modified New York criteria

is applied for classification of AS and it is not a good instrument for early detection of disease due to its very low sensitivity (<50%) during early stages of the disease [5].

The author by this letter delivers a new criteria called 2016 New York revised criteria (table A) that is applied for too early diagnosis of AS.

With the addition of pelvic MRI, HLA-B27 positivity, positive family history of AS, enthesitis/arthritis and positive sacral push test to the 1984 modified New York criteria and deletion of limited chest expansion from it, this new criteria has been made.

Table A: 2016 New York revised criteria for too early diagnosis of Ankylosing Spondylitis (AS)^{a,b}

Clinical criteria	
Inflammatory Low Back Pain	
• Definite	2 points
• Probable	1 point
Positive family history of AS	Up to 3 points
• first degree	2 points
• second degree	1 point
• more than one family member	1 point
Lumbar limitation of motion in all directions*	2 points
Clinical sacroiliitis ^{c *}	1 point
Enthesitis and/or arthritis*	1 point
Imaging criteria	
Bilateral sacroiliitis (grade ≥ II)	3 points
Unilateral sacroiliitis (grade ≥ II)	2 points
HLA-B27 positivity	1 point

a. Entry criteria; the clinical/paraclinical feature of the patient is not better explained by another disease such as other SpondyloArthritidies and brucellosis.

b. The patients with at least 5 points out of above 13 points have definite diagnosis of AS.

c. Will be ignored in the presence of imaging sacroiliitis.

* In the absence of clinical spondylitis (lumbar LOM), clinical sacroiliitis and enthesitis/arthritis if there are evidences of them in bone scintigraphy (whole body bone scan) their points can be applied as a case of subclinical AS.

For making an accurate cost-effective diagnosis I propose a three steps practical Guideline approaching towards the diagnosis of AS too (table B). The physician must go through the steps one by one and if 2016 New York revised criteria for AS is not yet satisfied in each step, go through the next.

The 2012 Iran criteria and 2016 New York revised criteria for early diagnosis of AS, both are created by the author of this letter. The author thinks that; 2016 New York revised criteria is

easier and more practical than 2012 Iran criteria for early diagnosis of AS with the same structure but a little change. It is mentioned that in both criteria by application of Bone Scintigraphy we can detect the subclinical cases of AS.

Finally the corresponding author of this letter as the creator of Iran criteria for ankylosing spondylitis [5], 2016 Novel Criteria for Early Classification of SpondyloArthritidies [2] and Pre-Ankylosing Spondylitis State [14] would like to ask ACR,

EULAR, ASAS and all of the Rheumatologists in the world to evaluate this new criteria of AS. I would like to inform you that we can not evaluate it due to financial restriction, absence of proper research equipments and media.

Table B: Practical Guideline approaching towards the diagnosis of Ankylosing Spondylitis (AS)

Step I: - History and physical examination by an expert Rheumatologist - Antero-posterior X-Ray of pelvis - HLA-B27 checking
Step II: MRI of pelvis
Step III: Bone Scintigraphy (Whole Body Bone Scan)

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