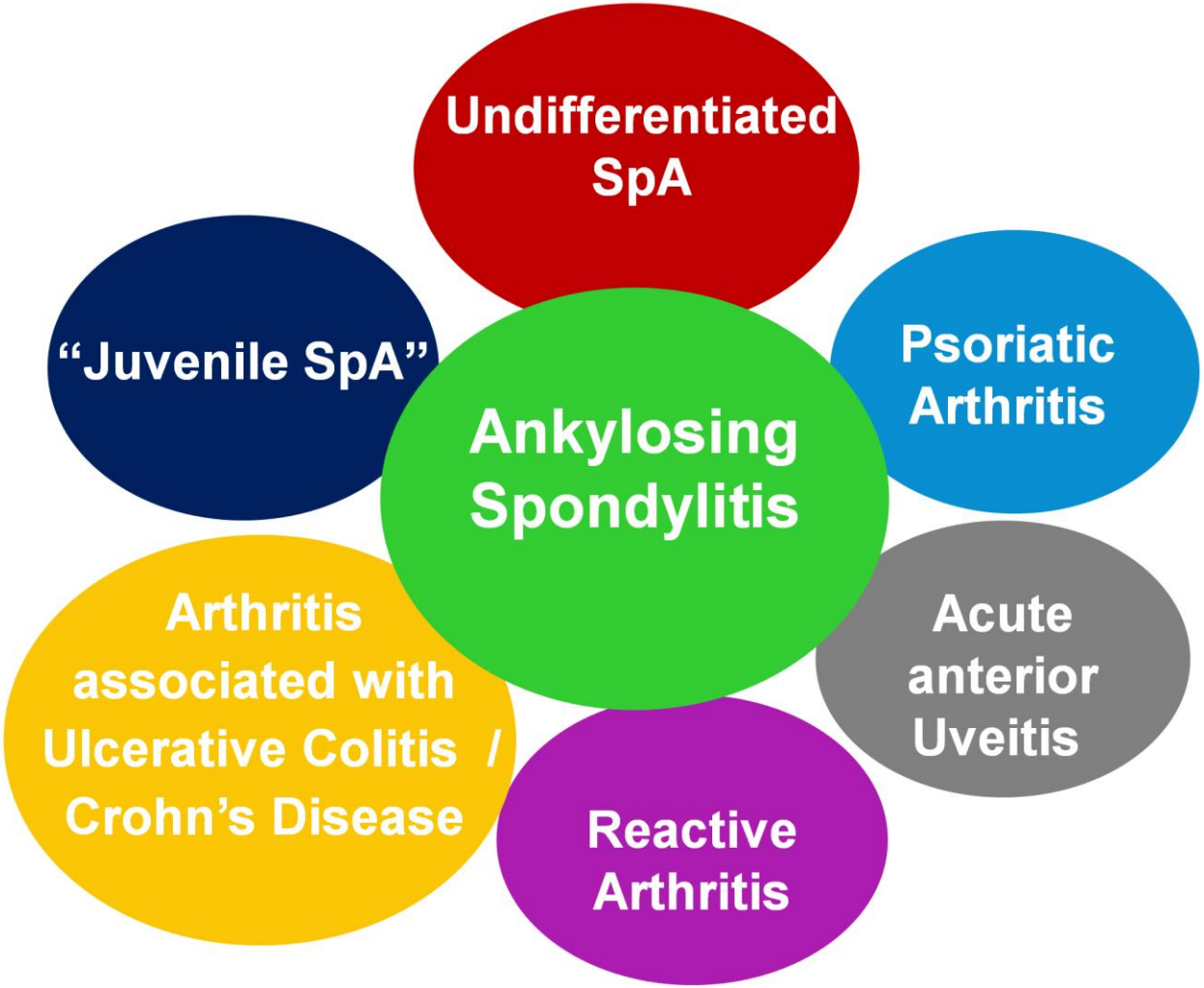
Spondylarthritides

Rudolf Horváth, M.D., Ph.D.
Andrea Čaničová, M.D.
Dpt. of pediatric and adult rheumatology
Faculty Hospital Motol
Prague

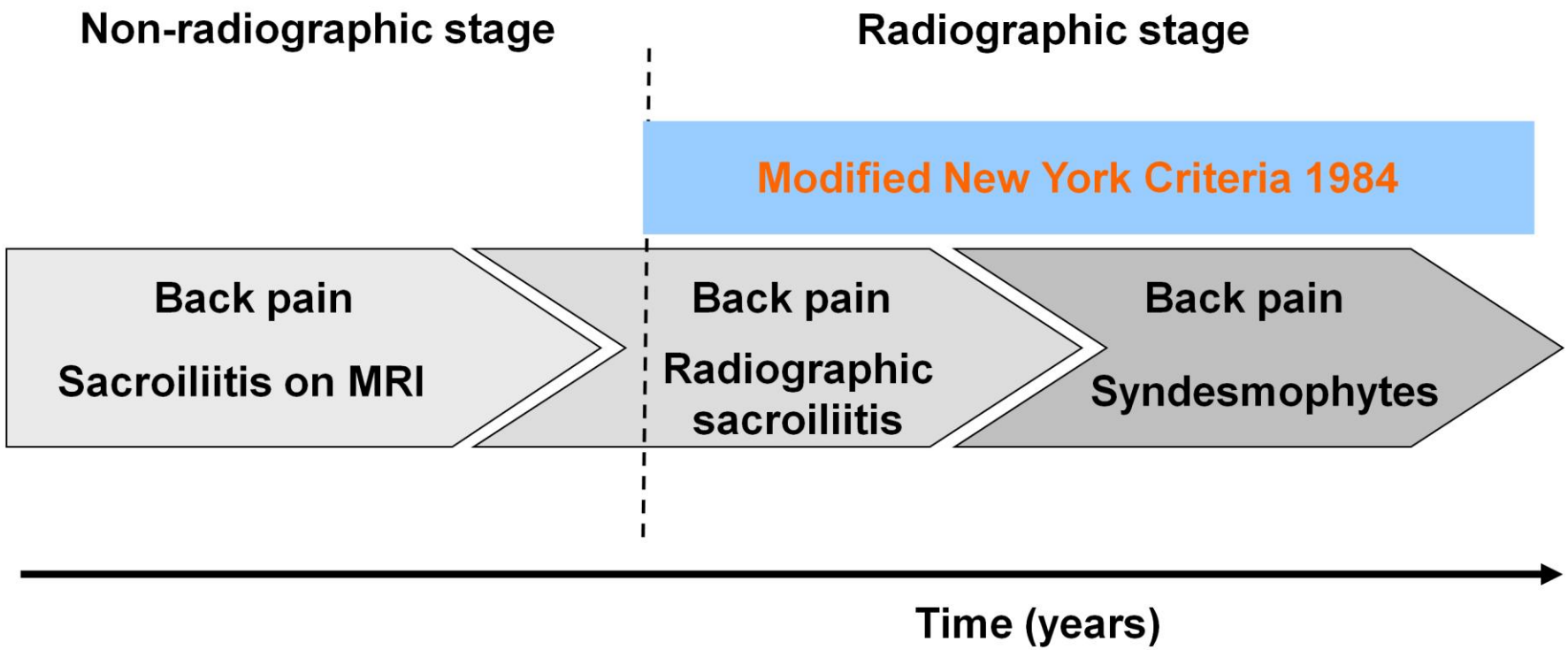
Spondylarthritides – basic concept

- Spondyloarthritis comprises a **group of inflammatory disorders** with overlapping clinical manifestations and shared genetic markers.
- Clinical manifestations include **inflammatory back pain, peripheral arthritis that is usually asymmetric and affects the lower limb, enthesitis, dactylitis, and uveitis.**
- The entire group of spondyloarthritides has a prevalence of 0.5% to 1.9%.
- Ankylosing spondylitis is largely genetically determined, with HLA-B27 being the major single contributing gene.

Spondyloarthritides (SpA)



Axial Spondyloarthritis



Rudwaleit M et al. Arthritis Rheum 2005;52:1000-8 (with permission)

ASAS Classification Criteria for Axial Spondyloarthritis (SpA)

In patients with ≥3 months back pain and age at onset <45 years

Sacroiliitis on imaging* **plus** **≥1 SpA feature**	**OR**	**HLA-B27** **plus** **≥2 other SpA features**

SpA features:
- inflammatory back pain
- arthritis
- enthesitis (heel)
- uveitis
- dactylitis
- psoriasis
- Crohn's/colitis
- good response to NSAIDs
- family history for SpA
- HLA-B27
- elevated CRP

***Sacroiliitis on imaging**
- **active (acute) inflammation on MRI highly suggestive of sacroiliitis associated with SpA**
- **definite radiographic sacroiliitis according to the modified New York criteria**

n=649 patients with back pain;

Overall
Sensitivity: 82.9%, Specificity: 84.4%
Imaging arm alone
Sensitivity: 66.2%, Specificity: 97.3%
Clinical arm alone
Sensitivity: 56.6%, Specificity: 83.3%

Rudwaleit M et al. Ann Rheum Dis 2009;68:777-783 (with permission)

ASAS Classification Criteria for Peripheral Spondyloarthritis (SpA)

Arthritis or enthesitis or dactylitis

plus

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

Peripheral arthritis: usually predominantly lower limbs and/or asymmetric arthritis
Enthesitis: clinically assessed
Dactylitis: clinically assessed

IBP: Inflammatory back pain

Sensitivity: 77.8%, Specificity: 82.2%; n=266

Rudwaleit M et al. Ann Rheum Dis 2011;70:25-31 (with permission)

Ankylosing spondylitis (AS)

- Chronic systemic inflammatory rheumatic disorder with a **predilection for axial skeletal involvement**
- **Sacroiliitis** is its hallmark.
- Clinical features include chronic **inflammatory low back pain**, as well as stiffness and **limitation of spinal mobility and chest expansion.**
- There is an association with acute anterior uveitis or other less common extra-articular manifestations, psoriasis, chronic inflammatory bowel disease, and reactive arthritis in some patients.
- The prevalence of ankylosing spondylitis (AS) is 0.1% to 1.4%.
- **Male : female = 7-10 : 1, HLAB27 positive in ≥ 90%.**

AS – clinical signs

- **Inflammatory back pain:**
  - Dull low back pain, usually in the **buttocks** (or hips, as interpreted by the patient), **insidious** in onset, that is **chronic** (lasting > 3 months).
  - It is **worse** in the later part of the **night** (between 2 and 5 am) and **early morning**, when it is associated with morning stiffness lasting at least 30 minutes and often hours, **relieved** with **exercise** or activity (i.e., limbering up), **worsened** by **rest**, and usually **improving** with the use of non-steroidal anti-inflammatory drugs (**NSAIDs**)**.**

- **Hip and shoulder involvement -**up to 50% of patients and is more common than involvement of the more distal joints. – rhizomelic form

- **Peripheral arthritis:** is usually an **asymmetric oligoarthritis** presenting predominantly in **the lower extremities**.

- **Enthesitis:** The **enthesis** is the insertion of a tendon, ligament, capsule, or fascia into bone. Enthesitis is inflammation of the origin and insertion of ligaments, tendons, aponeuroses, annulus fibrosis, and joint capsules and is a characteristic feature of SpA.

AS – extra-articular manifestations

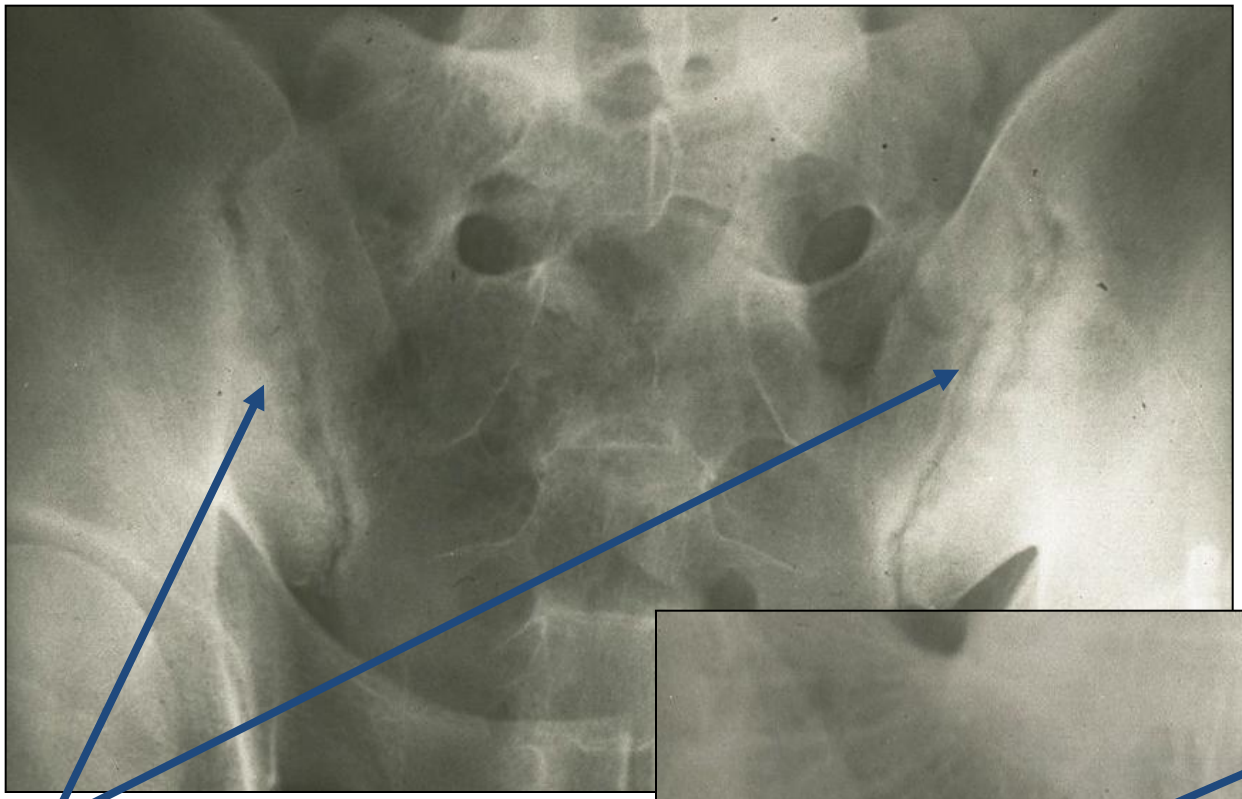
- **Uveitis:** anterior uveitis or iritis.
- **Gastrointestinal manifestations: up to 50%** of patients with AS have both macroscopic and microscopic ileal and cecal inflammation seen on ileocolonoscopy. Moreover, two thirds of patients with undifferentiated SpA have histologic gut inflammation.
- **Cardiac manifestations: aortitis**, aortic regurgitation, and conduction abnormalities that are seen in up to 9% of patients with AS followed over many years.
- **Pulmonary manifestations:** Involvement of the lung parenchyma is a distinctly uncommon yet well-recognized extra-articular manifestation of AS. The most frequently recognized manifestations are **upper lobe fibrosis**
- **Fusion of the costovertebral** joints caused by inflammation and ankylosis of the thoracic spine can lead to **restrictive ventilatory impairment** on pulmonary function testing.

AS – extra-articular manifestations

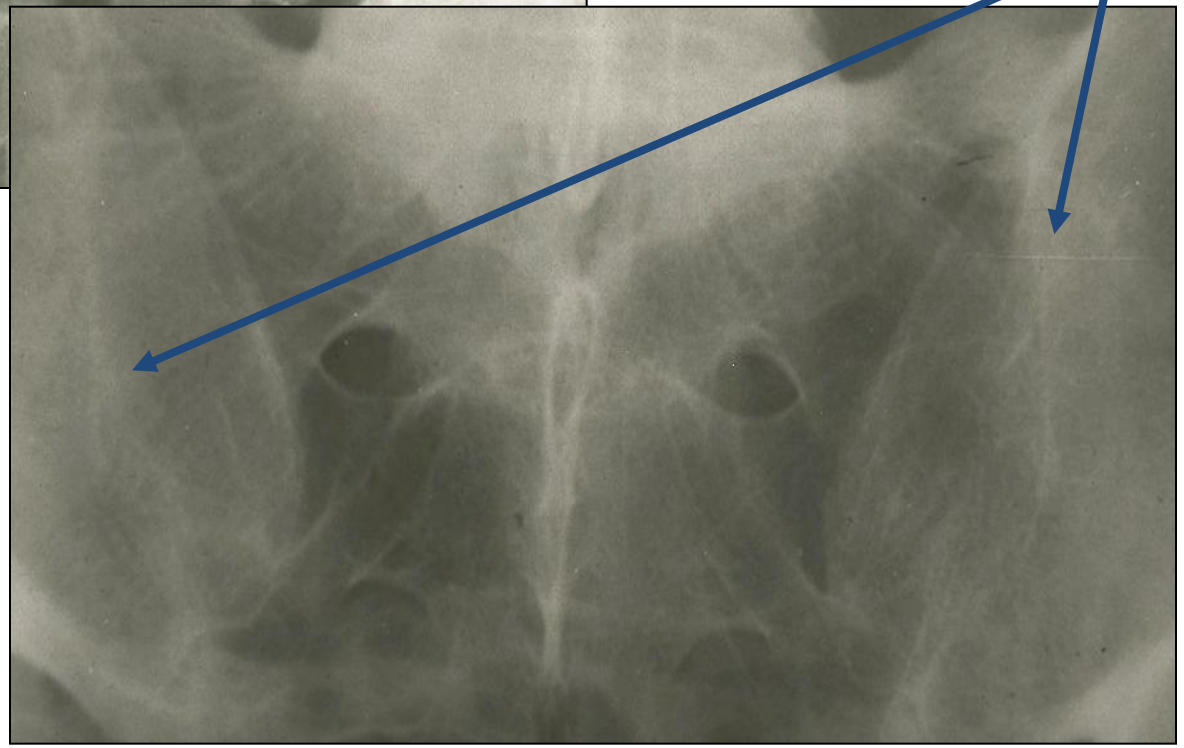
- **Renal involvement** is uncommon.
- **Renal amyloidosis** is the most common cause of renal involvement in AS, occurring in 4% to 9% of AS patients, usually as a complication of long-standing disease, and is associated with peripheral joint involvement, elevated erythrocyte sedimentation rate (ESR), and hypergammaglobulinemia.

- **Spondylodiscitis and spinal fractures :** An uncommon but well-recognized complication of AS is spondylodiscitis, a destructive discovertebral lesion.
- Typically, these lesions are confined to the thoracic and lumbar spine, sometimes with multiple-level involvement.
- The estimated prevalence of vertebral fractures in AS varies from 4% to 18%.

- **Atlantoaxial subluxation:** Spontaneous atlantoaxial subluxation (AAS) is a well-recognized complication in about 2% of patients with AS, presenting with and without signs of spinal cord compression.



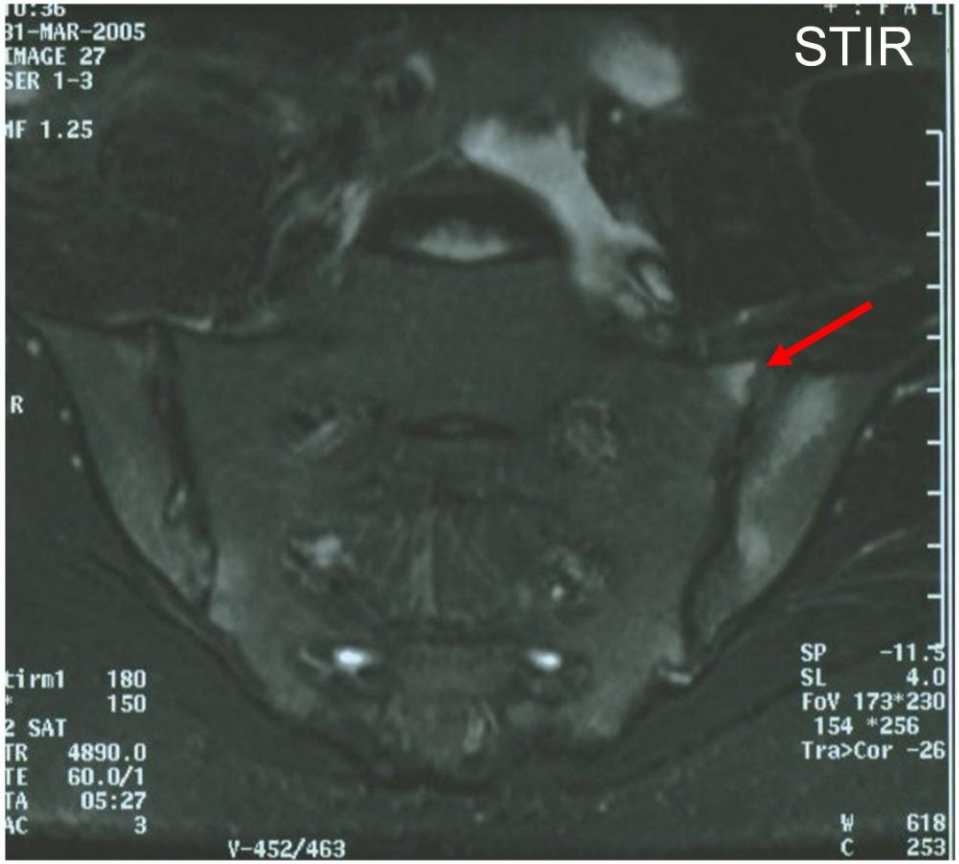
Sacroiliac joint obliteration = late changes



Subchondral bone resorption, irregular joint space, sclerosis = early changes

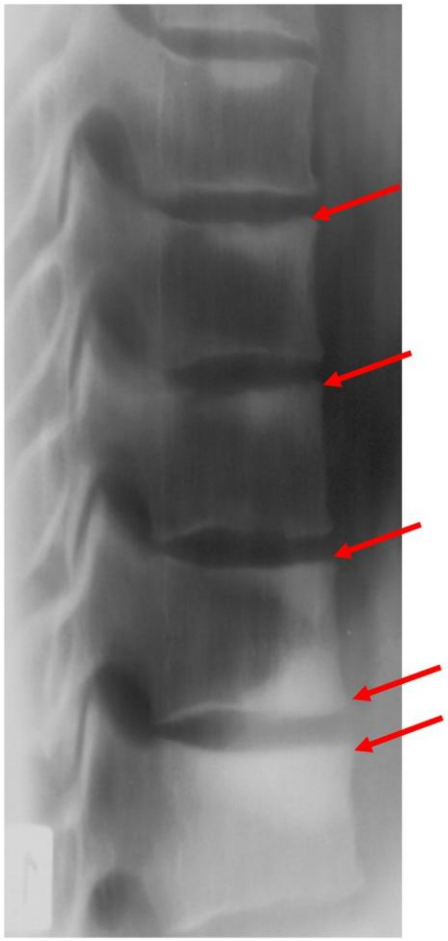
Bone Marrow Edema (BME) / Osteitis

Bone marrow edema may be associated with structural changes such as erosions.

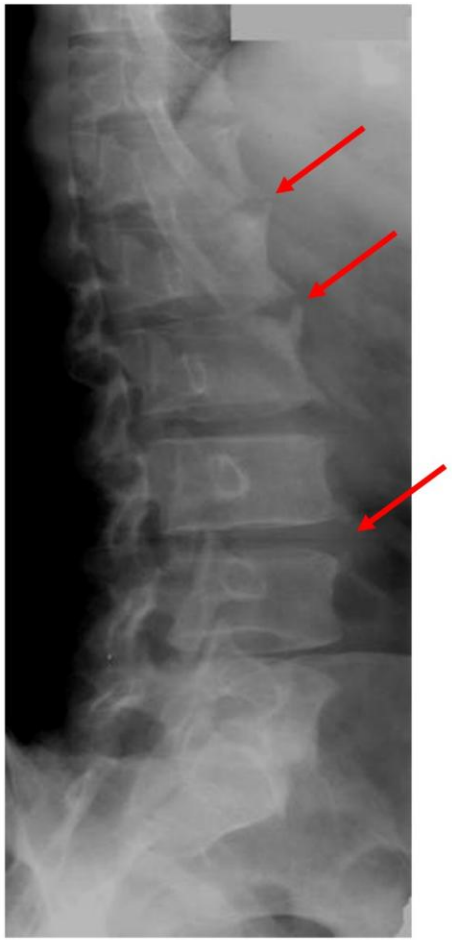


ASAS handbook, Ann Rheum Dis 2009;68 (Suppl II) (with permission)

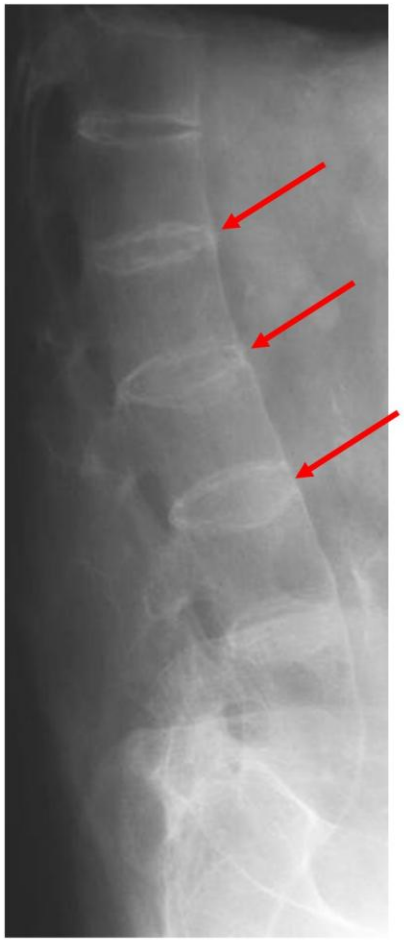
Evidence of Chronic Spinal Changes in Ankylosing Spondylitis



Sclerosis
„shiny corners“



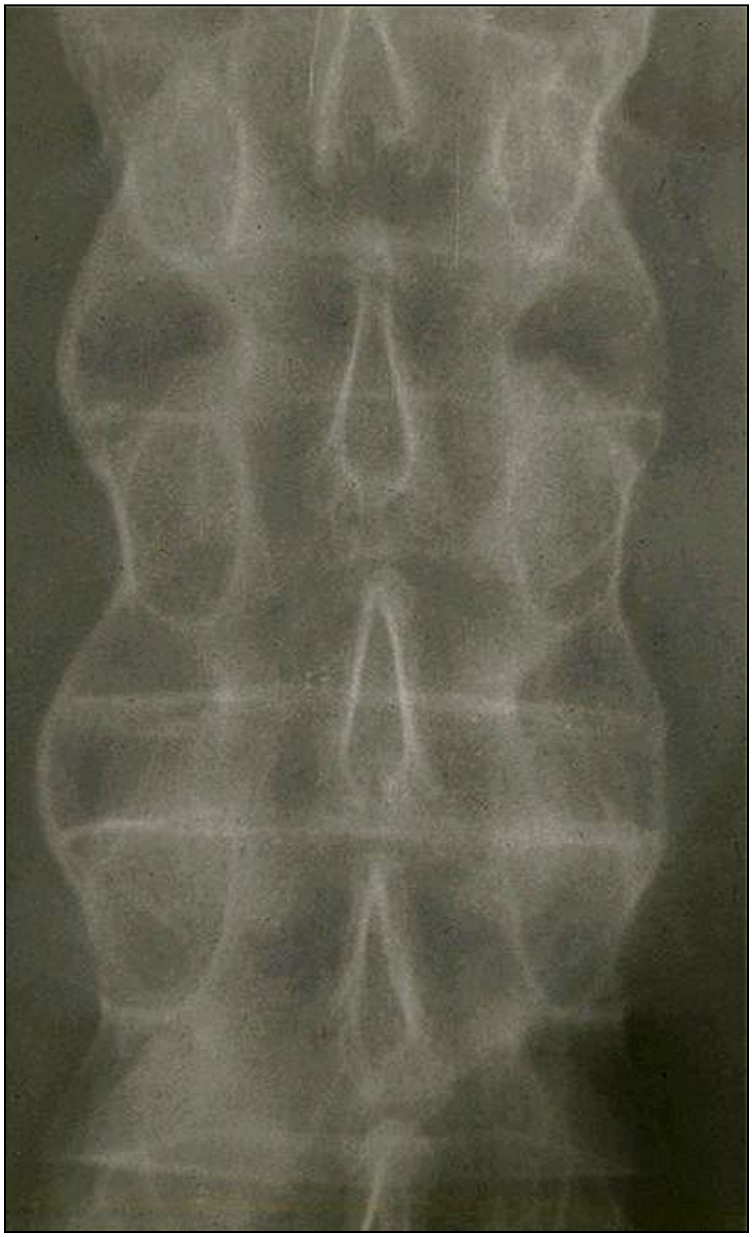
Syndesmophytes
(and spondylophytes)



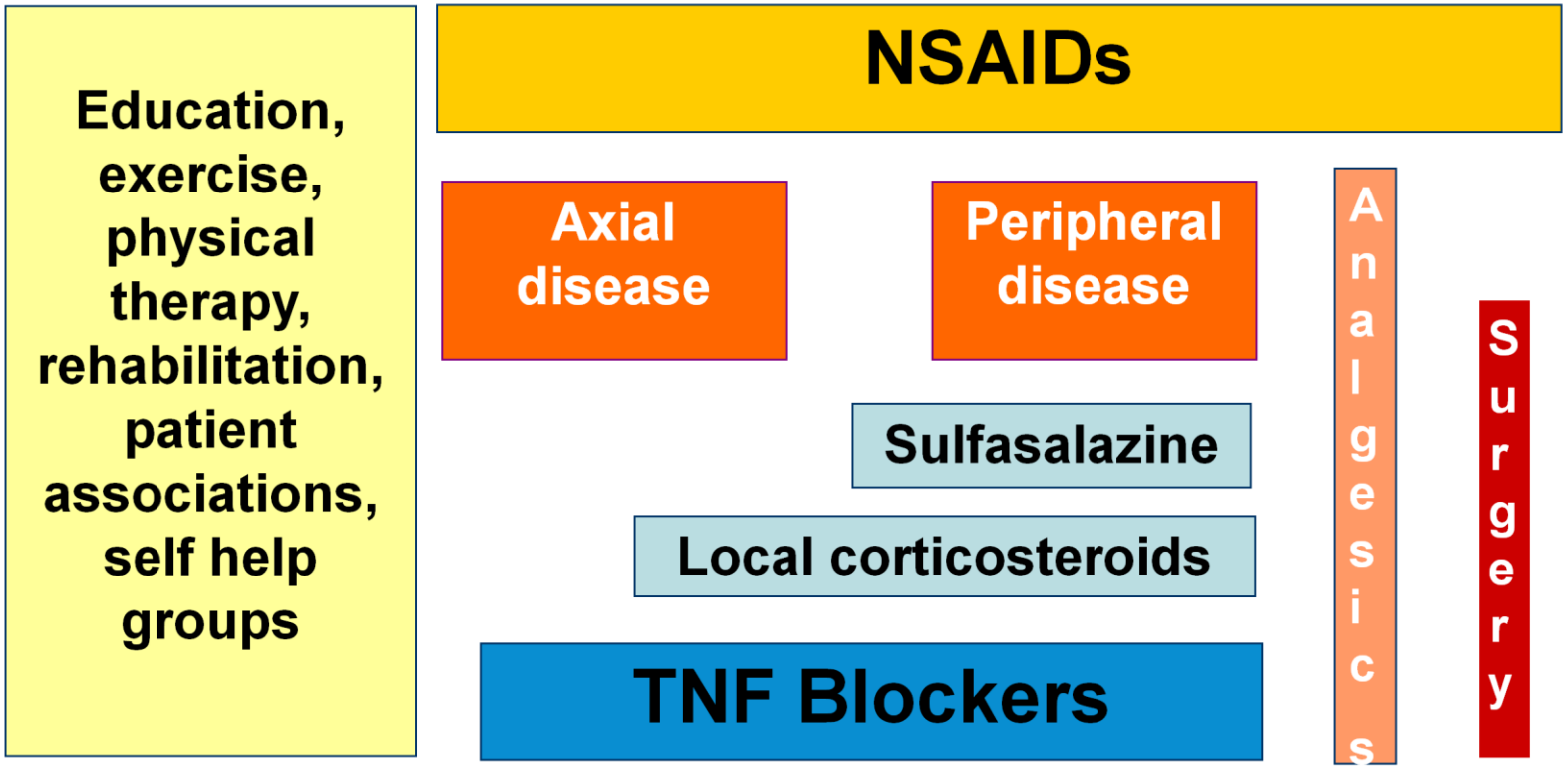
Bridging
syndesmophytes

„bamboo spine“

Lumbar spine –
antero-posterior projection –
syndesmophytes + osteoporosis
(ossification of lateral collateral ligaments)



ASAS/EULAR Recommendations for the Management of Ankylosing Spondylitis



Zochling J et al. Ann Rheum Dis 2006;65:442-52 (with permission)

Psoriatic arthritis (PsA)

Psoriatic arthritis

- Psoriatic arthritis is an **inflammatory arthritis associated with psoriasis**; rheumatoid factor is usually negative.
- The prevalence is 1 to 420/100,000 population, and the sex distribution is equal.
- **Fifteen** percent of patients develop psoriasis ***after*** onset of arthritis.
- **Nail changes** have the strongest **association with arthropathy**; the distal interphalangeal joints are particularly affected.

- **Typical clinical features include the following:**
  - Distal interphalangeal joint involvement
  - Asymmetric sacroiliitis/spondylitis
  - Dactylitis
  - Enthesitis

- The number of joints involved can increase with disease duration.
- Patients with polyarticular involvement tend to have poorer long-term outcomes.

Clinical features

- **Articular involvement**
  - Joint involvement in psoriatic arthritis can vary considerably, from an isolated monarthritis to extensive destructive arthritis.
  - Tt can involve peripheral joints and the axial spine with varying frequencies.

- **THE MOLL AND WRIGHT CLASSIFICATION OF PSORIATIC ARTHRITIS**
  - Arthritis with distal interphalangeal joint involvement predominant (10%)
  - Arthritis mutilans (rare)
  - Symmetric polyarthritis—indistinguishable from RA (5%-20%)
  - Asymmetric oligoarticular arthritis (70%-80%)
  - Predominant spondylitis (5%-20%)

From Moll JMH, Wright V. Psoriatic arthritis. Semin Arthritis Rheum 1973;3:55-78.

Articular involement

- **Predilection involvement of DIP joints**
  - tends to be associated with nail affection
- **Mutilating form** with severe destruction of phalanges (osteolysis) – telescopic fingers
- **Asymmetric oligo- or mono- arthritis**
  - the most common form
  - DIP, PIP and MCP involved frequently
  - Typical feature: radial involvement of all joints of one finger
  - Inflammation of the sheath tendons – „sausage finger“, dactylitis
- **Symmetric polyarthritis -** RA-like, rather in female
- **Axial form** (isolated or with peripheral involvement), more often in male

Clinical features

- **Other musculoskeletal features**
  - **Dactylitis** or “sausage digit“.
  - **Enthesitis -**Inflammatory lesions at the insertion of tendon into bone.
  - Symptomatic enthesitis occurs in 20% to 40% of patients with psoriatic arthritis.
- **Skin changes**
  - There is a suggestion that patients with psoriatic arthritis may have more extensive psoriasis than patients with uncomplicated psoriasis only, but, in general, most patients with psoriatic arthritis have only mild to moderate skin disease.
  - There is also no correlation between the extent of skin disease and total joint scores in patients with psoriatic arthritis.

Clinical features

- **Nail involvement**
  - In contrast to skin disease, there is a close association between nail and joint involvement in psoriatic arthritis.
  - Anatomically, the nail is closely related to the distal phalanx by Sharpey's fibers that insert into bone in a manner similar to an enthesis. In addition, the extensor tendon enthesis inserts into the area adjacent to the nail root
  - Nail dystrophy is a risk factor for the future development of psoriatic arthritis. Nail involvement is seen in 20% to 40% of patients with uncomplicated psoriasis, whereas 60% to 80% of patients with psoriatic arthritis have nail involvement.
- **Other extra-articular features**
  - Ocular inflammation can occur, most frequently presenting as conjunctivitis. However, iritis has also been described in 7% of those affected by psoriatic arthritis. Additional uncommon complications such as oral ulceration, urethritis, and aortic valve disease have also been reported.

Classification of Psoriatic-Arthritis: CASPAR Criteria

To meet the CASPAR criteria for PsA, a patient must have inflammatory articular disease (joint, spine, or entheseal) and score ≥3 points based on these categories.	
	POINTS
1. Evidence of psoriasis Current psoriasis Personal history of psoriasis Family history of psoriasis	2 or 1 or 1
2. Psoriatic nail dystrophy Pitting, onycholysis, hyperkeratosis	1
3. Negative test result for rheumatoid factor	1
4. Dactylitis Current swelling of an entire digit History of dactylitis	1 or 1
5. Radiologic evidence of juxta-articular new bone formation Ill-defined ossification near joint margins on plain x-rays of hand/foot	1

CASPAR, **Cl**ASsification criteria for **P**soriatic **AR**thritis

Taylor W et al. Arthritis Rheum 2006;54:2665-2673

Treatment of psoriatic arthritis

- **NSAIDs, local glucocorticoids**
- Clinical trial data support the **mild-to-moderate efficacy of methotrexate, sulfasalazine, leflunomide, and cyclosporine** for peripheral arthritis that is unresponsive to non-steroidal agents.
- **The TNF antagonists** (etanercept, infliximab, adalimumab) have proven to be effective and relatively safe for treatment of **peripheral arthritis, psoriasis, enthesitis, dactylitis, and inhibition of structural damage.**
- **Infliximab is effective for dactylitis and enthesitis.**
- Potential new therapies for psoriatic arthritis include biologic agents that inhibit T lymphocytes and proinflammatory cytokines (anti IL-17, abatacept, apremilast).