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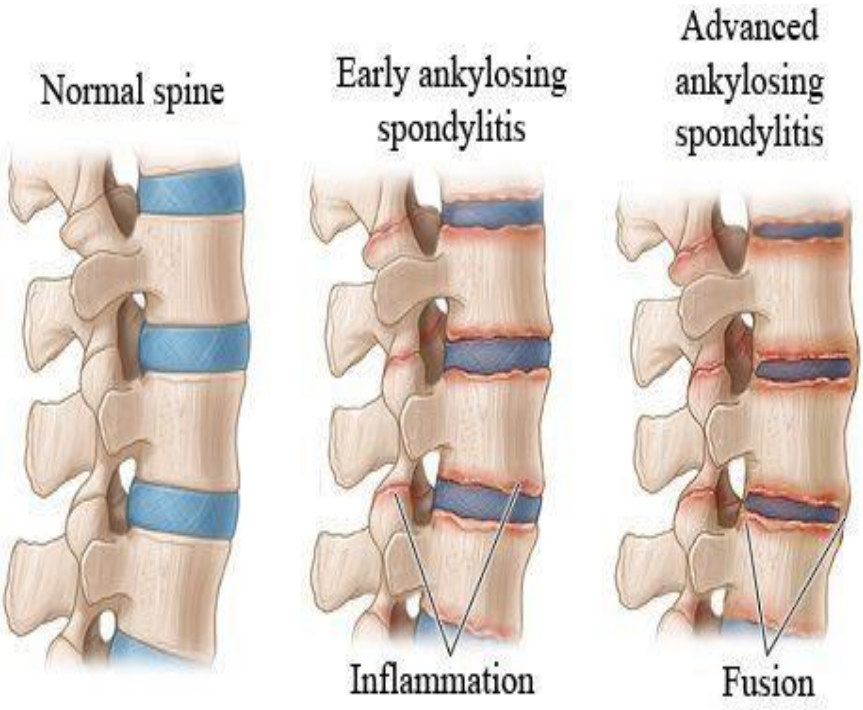
(5) Ankylosing Spondylitis

Ankylosing spondylitis (AS) (التهاب الفقرات التصلبي) is chronic inflammatory autoimmune disease, it is characterized by sacroiliitis(التهاب المفصل الحرقفي) and inflammation of the intervertebral discs(الاقراص مابين الفقرات) in the lumbar spine(العمود الفقري القطني), as well as an enthesitis(الالتهاب الارتكازي المرتبط بالمفصل) at sites of ligamentous insertions (الاربطة المتداخلة) into bone. Patients with AS develop calcification (تكلس) of the ligamentous insertions, back stiffness(تصلب الظهر) , and pain. The immunologic basis of the specific locations of inflammation in this disorder is not understood, but a strong association of the disease with particular HLA alleles, particularly HLA-B27, suggests a possible role for antigen presentation to T cells in the immunopathogenesis. Complete fusion results in a complete rigidity of the spine, a condition known as **bamboo spine(عمود فقري يشبه نبات الخيزران) .**

Spondyloarthropathies are a family of long-term (chronic) diseases of joints. These diseases occur in children (juvenilespondyloarthropathies) and adults. They include ankylosing spondylitis, reactive arthritis, psoriatic arthritis(التهاب المفاصل الصدفية), and joint problems linked to inflammatory bowel disease (enteropathic arthritis).



Epidemiology:

- Among whites, the estimated prevalence rate of AS is 197 per 100,000 in the United States.
- AS, in general, is diagnosed more frequently in **males**.
- Females, however, may have milder or subclinical disease.
- AS is more common in males with a male to female ratio of 3:1.
- The age of onset of AS is usually from the late teens to age 40.

Etiology(risk factors):

- **Gender.** Men are more likely to develop ankylosing spondylitis than are women.
- **Age.** Onset generally may be occurs in early adulthood.
- **Hereditary predisposition.** Most people who have ankylosing spondylitis have the HLA-B27 gene. But many people who have this gene never develop ankylosing spondylitis.

Clinical features (signs and symptoms):

Back pain (الم الظهر) is the most common symptom and the first manifestation in approximately 75 percent of patients with AS. The inflammatory back pain of AS has particular features(صفات مميزة) that differentiate it from mechanical back pain (الم الظهر الميكانيكي). These include insidious onset of the pain occurring over months or years, generally with at least three months of symptoms before presentation.

Symptoms include:

1. Morning stiffness lasting at least thirty minutes, improvement of symptoms with moderate physical activity.

2. Patients often experience stiffness and pain that awakens them in the early morning hours, a distinctive symptom (اعراض مميزة) not generally found in patients with mechanical back pain.

3. Tenderness (الم الضغط)at tendon insertion points(عند نقاط تداخل الوتر) due to enthesitis, an inflammatory reaction, is a common complaint. Typical tender sites include the (heels الكعوب, costosternal junctions تقاطعات المفاصل القصية الضلعية, iliac crests القمم الحرقفية)

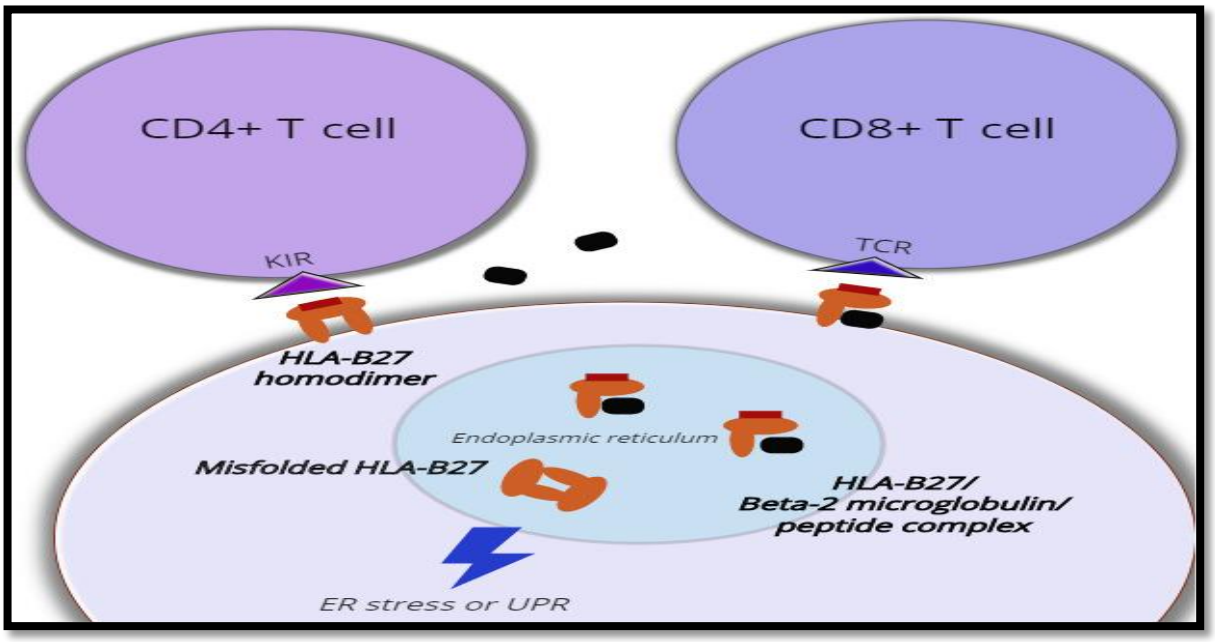
4. AS is also characterized by a number of extra-articular manifestations including uveitis(التهاب القزحية), occurring in 25–35 percent of patients during the course of the disease.

5. Manifestations of cardiac involvement include ascending aortitis(التهاب الابهر), aortic valve incompetence(عدم كفاءة الصمام الابهري), cardiomegaly(تضخم القلب), and pericarditis(التهاب التامور او شغاف القلب).

Pathogenesis

- The pathogenicity is understood yet.
- About 90% of the patients express the HLA-B27 genotype.
- Tumor necrosis factor-alpha (TNF α) and IL-1 are also implicated in ankylosing spondylitis. Autoantibodies specific for AS have not been identified.
- Anti-neutrophil cytoplasmic antibodies ANCA are associated with AS but don't correlate with disease severity.
- Interaction between HLA-B27 and CD8+ T-cells response
- Increased concentrations of T-cells, macrophages, proinflammatroy cytokines and TNF-α.
- Some microbial peptides such as (*Klebsiella* bacterial strain) are similar to self-peptides in body tissues and can activate the response of certain HLA-B27-specific CD8+ T lymphocytes (This idea is just a hypothesis).

- The T lymphocytes react with these HLA-B27-peptide complexes, leading to autoreactivity and autoimmune disease.



Laboratory Diagnosis:

Diagnosis of ankylosing spondylitis is usually based on signs and symptoms, but laboratory tests and imaging tests may also be used, including:

- CRP
- ESR
- CBC to check for anemia , chronic inflammation associated with ankylosing spondylitis and increased number of WBC.
- HLA-B27 (over 95% of patients are HLA-B27 positive).
- X-rays or other imaging tests: to look for changes in the joints and bones, although it may take several years before characteristic degenerative changes are visible.

The classification criteria of AS disease are:

1. Back pain for 3 months or longer.

2. Age at onset < 45 years.

3. Sacroiliitis on imaging (radiographs or MRI) plus one or more AS features.

4. HLA-B27(positive) plus two or more other AS features.

* MRI(Magnetic Resonance Imaging التصوير بالرنين المغناطيسي)