Systemic lupus Erythematosus (SLE)

Introduction:

It is a multisystem autoimmune disease **that can affect any part of the body** affect young women. The disease occur **9:1** in women than in men. Characterized by presence of autoantibodies to **nuclear antigens (DNA,RNA,Histonproteins)**, the immune system attacks the body's cells and tissue, resulting in inflammation and tissue damage.

SLE most often affects the **joints, skin, lungs, heart, blood vessels, liver, kidneys, and nervous system. SLE can be fatal** causing death from cardiovascular disease.

- **Etiology:** SLE develops by number of genetic and environmental factors.

1- SLE-disease develops with **inherited deficiencies** of classical pathway of complement system **(C1q, C4 or C2)** genes are located in chromosome 6.
2- hormones :- oestrogen may be regulates the severity of SLE.
3- Genetic factors: (In 30%),also associated with HLA-DR2 DR3.
4- Ultraviolet light (UV) and infections (Epstein-Barr virus),
5- drugs : - Sulfa drugs, such as: (trimethoprim-sulfamethoxazole) ,Penicillin :-amoxicillin;
6- defect in apoptosis and the clearance of damaged cells.

Types of lupus disease:-

1-**Systemic lupus erythematous** : It is marked by chronic inflammation, especially of the kidneys, joints, and skin. The cardiovascular and nervous systems can also be affected.

2-**Lupus Limited to the Skin** :The term refers to a specific form of lupus that is limited to the skin, chronic cutaneous lupus erythematosus (CCLE) (also known as Discoid Lupus Erythematosus [DLE])

3-**Drug-Induced Lupus Erythematosus :** Certain drugs can cause lupus-like symptoms in people who do not have SLE**. It is temporary and** of the time that the medication is stopped.

4- **Neonatal Lupus Erythematosus** affect the babies of women with certain **autoantibodies, Like (anti-Ro, anti-La, and anti-RNP.**

5- **Childhood Lupus** Children affects in the same manner as adult lupus, organs affected, (kidneys)

Pathogenesis "

One manifestation of SLE is abnormalities in apoptosis,

- Autoimmune reactions directed against constituents of cell nucleus, DNA
- Antibody response related to B and T cell hyperactivity.

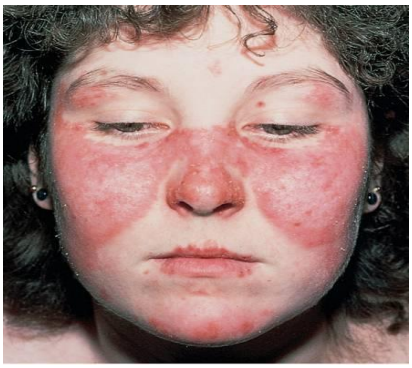
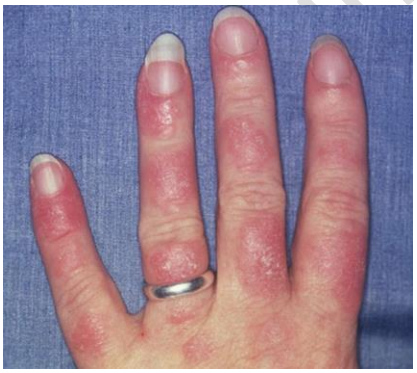
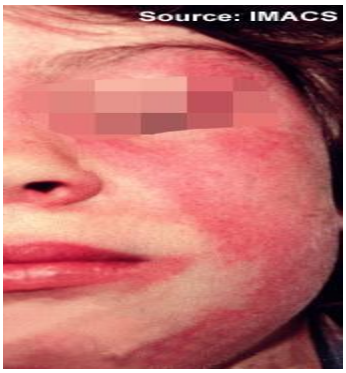
1- Immune responses against **endogenous nuclear antigens** are characteristic of SLE. **Autoantigens** released by apoptotic cells (programmed cell death) are presented by **dendritic cells (DC)** to T cells leading to their activation.
2- T cells Activate B cells to produce antibodies to these **self-constituents**
3- Immune complexes and complement activation pathways mediate effectors function and tissue injury by **inflammatory cytokines** such as **IFNα** and tumour necrosis factor (**TNF).**

Clinical Features : Lupus- can be further classified as**:**

1-Acute rashes-malar rash. 'butterfly'rash presents as an erythematous, pruritic or painful, in a malar distribution, commonly by exposure to sunlight.

2- Subacute cutaneous lupus erythematosus (SCLE). Patients with SCLE may present with psoriasiform skin lesions, and this is strongly associated with anti-Ro (SS-A) and anti-La (SS-B) antibodies. Patients have a high incidence of photosensitivity.

3-Chronic rashes : characterized by plaques covered by scale. They are oft en seen on the face, neck, and scalp, then heal, leaving depressed central scars, atrophy, and dyspigmentation

Main Criteria of SLE :

1- **Malar Rash and Discoid rash**
2- **Photosensitivity**
3- **Non-erosive arthritis**
4- **Renal disease**
5- **Antinuclear antibody**
6- **Antibody to ds-DNA/extractable nuclear Ag/anti-phospholipid Ab**

Diagnosis of SLE: . Blood test work and other tests can also help monitor the disease and treatment.

1-Hematologic disorders:

- **-Hemolytic anemia**
- **-Leukopenia ,(Lymphopenia)**
- **-Thrombocytopenia**
- Erythrocyte sedimentation rate **ESR** : and **C-Reactive Protein (CRP):** These tests looks for inflammation, which could indicate active lupus.

2-Kidney and liver functioning. Lupus can affect these organs.

3-Urinalysis. increased protein level or red blood cells in the urine,

4-Immunological tests:

1-**Antiphospholipid antibodies** (APL) (lupus anticoagulant [LA], IgG and IgM anticardiolipin [aCL] antibodies; and IgG and IgM anti-beta2-glycoprotein [GP] I)

2- **decrease** levels of C3 and C4 or CH50 complement levels

3- Anti nuclear antibodies (ANA)

4 -Anti-dsDNA highly specific for SLE seen in approximately 70 percent of patients with SLE.

B –Extractable nuclear antigens (ENA)

1-Anti-Sm (smith) antibodies are highly specific for SLE, but lack sensitivity (30%)

2- Anti-Ro/SSA and anti-La/SSB antibodies are present in 30 and 20 percent of patients with SLE, respectively; however, both antibodies are commonly associated with Sjögren's syndrome .

3-Anti-U1 RNP antibodies are observed in SLE and mixed connective tissue disease (MCTD) .

4-Anti-ribosomal P protein antibodies have a high specificity for SLE, with low sensitivity .

Management and Treatments :- No permanent cure for SLE: treatment relieves symptoms

1-NSAIDs (non-steroidal anti-inflammatory drugs) Aspirin ,ibuprofen for inflammation ,pain

2-Corticosteroids : Reduce inflammation Used after significant organ damage

4-DMARDs (disease-modifying antirhematic drugs) : rituximab Suppress B cell development,