Autoimmune diseases
Learning objectives: At the end of lecture, the students should be able to:
1-Define autoimmunity.
2-Identify the main requirements of autoimmune disease.
3-Classify autoimmune diseases.
4-Define immunologic tolerance.
5-Identify the groups of immunologic tolerance.
6-Discuss briefly the central tolerance.
7-Explain briefly the peripheral tolerance.
Autoimmune diseases
-Definition of autoimmunity.
-Concept.
Autoimmune diseases
-requirements.
1-The presence of an autoimmune reaction.
2- The reaction is not secondary to tissue damage, but is of primary pathogenetic significance.
3- The absence of another well-defined cause of the disease.
Autoimmune diseases
-Classification.
1-On one end of the spectrum,immune response against single organ(Type I diabetes mellitus and Multiple sclerosis).
2-In middle of spectrum, immune response against basement membrane of the lung and kidney (e.g. Goodpasture syndrome).
3-On the other end of the spectrum. Immune response against widespread antigen (e.g. systemic lupus erythromatous).
-Concept.
Immunologic tolerance
-Definition of immunologic tolerance.
-definition of self-tolerance.
Immunologic tolerance
-Types.
1-Central tolerance.
2-Peripheral tolerance.
Central tolerance
-Definition: deletion of autoreactive T and B-lymphocytes during their maturation in the central lymphoid organs(the thymus for T cells and the bone marrow for B cells).
-Concept.
-The role of autoimmune regular(AIRE) protein in central tolerance.
-Intrathymic negative selection(apoptosis) of T lymphocytes.
-Apoptosis of self-reactive B-lymphocytes.
Peripheral tolerance
-Definition.
-Mechanisms.
1-Clonal anergy:
*Two signals.
*CTLA-4.
2-Suppression by regulatory T cells.
*CD4+ cells.
*CD4 CD25+ regulatory T cells.
*Cytokines(IL-10, and TGF-beta).
*Transcription factor(FOXP3)-----IPEX.
3-Clonal deletion by activation-induced cell death.
*Fas(CD95):member of the TNF-receptor family(Lymphocyte).
*FasL(activated lymphocytes).
4-Antigen sequestration.
-Concept.
-Immune privileged sites.
-Examples.
*Post-traumatic orchitis.
*Post-traumatic uveitis.