Paper –VIII

Immunology and

Immunodiagnostics (IID)

PG- MB (08)- S2-T4

Course outcomes:

After successfully completing this course, students will be able to:

- Understand in detail about immune system.
- Learn in detail about complement system, inflammation, Cell Mediated Immunity, Antibody-dependent cell mediated cytotoxicity etc.
- Understand various immunodeficiency disorders, autoimmune diseases in detail.
- Learn about different immunodiagnostic techniques like RIA, ELISA, Immunofluorescence.

UNIT-I: -Overview of the Immune system and CMI

Cells involved in Immune system: Hematopoiesis, Lymphocytes, mononuclear phagocytes, Antigen Presenting cells, Granulocytes.

Lymphoid organ: Lymphatic system, Primary and Secondary lymphoid organs.

Complement System: Pathways of complement activation, regulation of complement system, Biological functions of complement system.

Inflammation: Intracellular cell adhesion molecules, Mechanism of cell migration, Inflammation. Pathways of antigen processing and presentation.

Cell Mediated Immunity: General properties of effector T cells, CytotoxicT Cells, Natural Killer cells, Antibody-Dependent cell mediated cytotoxicity. T-Cell dependent and T-cell in dependent defense mechanisms.

UNIT-II: -Cancer and transplantation immunology.

Cancer: Origin and Terminology, Malignant Transformation of cells, oncogenes and cancer induction, Tumor Antigens, Immune surveillance theory, Tumor evasion of the Immune system, Cancer Immunotherapy

Tolerance: Central and peripheral tolerance to self antigens, Mechanism of induction of natural tolerance

Transplantation Immunology: Immunological basis of Graft Rejection, Mechanism of Graft rejection. Immunosuppressive therapy: General and specific. Clinical Transplant.

UNIT-III: -Immune Dysfunction

Immunodeficiency disorders:- Phagocytic cell defect(Chediak-Higashi syndrome); B-cell deficiency

(Bruton's X-linked hypogammaglobulinemia); T-cell deficiency disorder (DiGeorge Syndrome); Combined B-cell &T-cell deficiency disorder (SCID-Severe combined immunodeficiency diseases, Wiskott-Aldrich syndrome); Complement deficiencies and secondary immunodeficiency conditions carried by drugs, nutritional factors &AIDS.

Autoimmunity and autoimmunediseases:-General consideration, Etiology, Clinical categories, Diagnosis and treatment. RA(Rheumatoid arthritis); SLE (Systemic Lupus Erythematosus); Guillain- Barre Syndrome; Multiple sclerosis; Mysthenia gravis; Grave's disease; Good pasture syndrome, Autoimmune haemolytic disease; Pernicious anaemia.
Hypersensitivity:-Type I, Type II, Type III & TypeI V

UNIT-IV:-Immunodiagnostics

Precipitation reactions: Immunodiffusion, immunoelectrophoresis,

Agglutination reactions: Bacterial Agglutination, Hemagglutination, Passive agglutination, Reverse passive agglutination and agglutination inhibition.

Immunodiagnostic techniques: Radioimmunoassay, ELISA, Chemiluminiscence immuno assay, Western blotting technique, Complement fixation test, Immunofluorescene, Immunoelectron microscopy.