

Academic Year 1428 – 1429 H.

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II- Specific Objectives:

Week 1:-

Introduction to Immunology and classification of Immunity

At the end of this lecture, the student should be able:

- 1- To know full description of the course; general objective, specific objective, and grading policy.
- 2- To define the discipline of immunology
- 3- To give a historical background about the development of the discipline of immunology.
- 4- To introduce some immunological terms.
- 5- To recognize the classification of immune system

Chapter – 1 and Glossary

Week 2:-

**Natural (innate) Immunity
Elements of Innate Immunity**

At the end of this lecture, the student should be able:

- 1- To identify components of the natural immune defense system.
- 2- To describe how natural immunity functions.
- 3- To differentiate between the main features of natural and adaptive immunity

Chapter 1

Week 3:-

The Lymphoid System and Immune Cells

At the end of this lecture, the student should be able:

- 1- To describe the organs , tissue , cells of the immune system which include; thymus gland , bone marrow , primary and secondary lymphoid organs.
- 2- To describe how B and T lymphocytes are developed.
- 3- To identify and understand the functions of different receptors on B and T lymphocytes.
- 4- To identify different subpopulation and subsets of T lymphocytes.
- 5- To recognizes the location of B and T cells in the secondary lymphoid organs and their interactions.

Chapter - 2

Week 4:-

(I) Immune response

At the end of this lecture, the student should be able:

- 1- To describe the main differences between adaptive and natural immunity which include the concepts of: recognition , specificity , diversity and memory.
- 2- To illustrate how the immune response is induced.
- 3- To describe the factors that influences immune response.
- 4- To explain the differences between primary and secondary immune response.

Chapter – 1

(II) MHC System

At the end of this lecture, the student should be able:

- 1- To introduce major histocompatibility complex and its components.
- 2- To explain the relationship between MHC and HLA.
- 3- To understand the influence of MHC molecules on immune response.
- 4- To describe MHC class I and MHC class II and their distribution and respected function in the immune cells.

Chapter – 7

إجازة رمضان وعيد الفطر

Week 5:-

(I) Humoral Immunity

At the end of this lecture, the student should be able:

- 1- To identify and appreciate the classification of a adaptive immunity into Antibody Mediate Immunity (AMI) and Cell Mediated Immunity (CMI).
- 2- To describe how the antibody mediated immunity (AMI) is initiated involving predominantly B lymphocytes.
- 3- To explain the concept of T-dependent and T- independent in the activation of B lymphocytes.
- 4- To describe the transformation of activated B cells into plasma cells.
- 5- To recognize that plasma cells are the cells that synthesize Immunoglobulins (antibodies).

- 6- To describe the control mechanism of antibody mediated response.

Chapter – 11

(II) Immunoglobulins (antibodies): Structure and function

At the end of this lecture, the student should be able:

- 1- To describe the prototype of Immunoglobulin (Ig) structure.
- 2- To discuss the different components of Ig molecule in relation to its function.
- 3- To introduce different classes and subclasses of Immunoglobulins.
- 4- To identify different features of Immunoglobulins in relation to their distribution in different body fluids and compartments.
- 5- To understand how Immunoglobulins perform their protective function including ; interaction with antigens , interaction with receptors on inflammatory cells and other molecules.
- 6- To explain the role of Immunoglobulins in disease process.
- 7- To know techniques of Immunoglobulins measurement.

Chapter – 4

Week 6:-

Cell Mediated Immunity (CMI)

At the end of this lecture, the student should be able:

- 1- To identify and appreciate the classification of adaptive immunity into AMI and CMI.
- 2- To describe how cell mediated immunity is initiated involving predominantly T lymphocyte.
- 3- To understand the activation of different T lymphocyte subpopulations and subsets.
- 4- To compare T Cell Receptor (TCR) and B Cell Receptor (BCR) to show similarity and dissimilarity in relation to function.
- 5- To understand how CMI perform its protective role.
- 6- To appreciate the involvement of other cells in CMI response (e.g. Macrophage, NKcells).
- 7- To describe the mechanism of cytotoxicity by cytotoxic T lymphocyte (CTL) and other cell.
- 8- To understand the control mechanism of CMI response.

Chapter - 14

Week 7:-

**Complement system
Pathophysiology of complement**

At the end of this lecture, the student should be able:

- 1- To introduce the complement system and its discovery.
- 2- To describe the complement nomenclature and terminology.
- 3- To understand different complement activation pathways: classical, alternative and lectin pathway.
- 4- To recognize the biological activity generated during the course of complement activation.
- 5- To understand control mechanisms of complement activation.
- 6- To become acquainted with the role of complement in health and disease.
- 7- To know techniques of complement measurements.

Chapter - 13

Week 8:-

**Introduction to Cytokines
Cytokines in health and disease**

At the end of this lecture, the student should be able:

- 1- To clarify the different terms for cytokines nomenclature.
- 2- To describe the classification, structure and function of different Cytokines.
- 3- To explain the mode of action and effects on immune functions.
- 4- To describe receptors and the different activation pathways of cytokines.
- 5- To explain the structure and function of chemokines.
- 6- To understand the role of cytokines in health and disease.

Chapter – 12

CAT Exam

Week 9:-

Immunodeficiency Primary and secondary ID

At the end of this lecture, the student should be able:

- 1- To identify that Immunodeficiency is due to a defect in the immune function.
- 2- To describe the classification of Immunodeficiency.
- 3- To explain the presentations of different types of Immunodeficiency (e.g. recurrent infections).
- 4- To understand the varieties of immune system deficiencies (T cell defects, B cell defects , phagocytes function defects, complement defects).
- 5- To understand the laboratory investigation for Immunodeficiency disorders.

Chapter – 19

Week 10:-

Hypersensitivity

At the end of this lecture, the student should be able:

- 1- To identify that hypersensitivity is an over reaction of the immune system leading to tissue damage.
- 2- To introduce the term "hypersensitivity" and its classification.
- 3- To describe with details ; type I , type II , type III and type V hypersensitivity reactions.
- 4- To appreciate the overlap between the different types of hypersensitivity reactions.
- 5- To know how to diagnose different types of hypersensitivities.

Chapter – 16

Week 11:-

Autoimmunity

At the end of this lecture, the student should be able:

- 1- To explain tolerance and the concept of self/non-self recognition.
- 2- To define autoimmunity and the different proposed underlying mechanisms.
- 3- To understand the classification of different types of autoimmune diseases; organ specific and systemic autoimmune diseases.

- 4- To understand the different mechanisms leading to tissue damage in autoimmunity; auto-antibodies, cell mediated immunity T_{DTH} or immune complexes.
- 5- To appreciate the link between hypersensitivity and autoimmunity in relation to immunopathology.

Chapter - 20

إجازة عيد الأضحى

Week 12:

Immunity to infection

At the end of this lecture, the student should be able:

- 1- To understand the immune response to different microbial infections including; bacteria, viruses, fungi and parasites
- 2- To recognize complications that may occur during the process of immune response
- 3- To know the different immune mechanisms that combat extracellular or intracellular infections
- 4- To appreciate the interaction of both the innate and acquired immunity in controlling infection.

Chapter- 17

Week 13:-

Transplantation Immunology

At the end of this lecture, the student should be able:

- 1- To recognize different types of tissue grafts.
- 2- To introduce immunological basis of graft rejection.
- 3- To recognize that the graft rejection occurs as first or second set rejection and underlying mechanisms involving T cells and memory.
- 4- To appreciate the donor and recipient matching procedures; ABO and MHC (HLA) typing.
- 5- To recognize clinical manifestation of graft rejection ; hyperacute , acute and chronic rejection reactions.
- 6- To understand the importance of general immunosuppressive therapy.

Chapter – 21

Week 14:-

Practical demonstration spots

+ To demonstrate to the students practical laboratory tests and their interpretation

Week 15:-

Revision

مع خالص الأمنيات بعام دراسي موفق
ودوام التفوق والنجاح في الدارين

مقرر المادة د/عادل المقرن