

ASSIGNMENT(NSC 306)

NAME: OGUNLANA OMOPARIOLA

MATRIC NO: 17/MHS02/067

COURSE: NSC 306

DEPARTMENT: NURSING

QUESTIONS

Immunology

1. Explain the role of the immune system.
2. Describe the two types of immunity.
3. Explain the different types of antibodies and their roles.

ANSWER

Immunology refers to a branch of lifescience which deals with cellular and molecular event occurring in the body after encounter with micro-organisms and other pathogens.

ROLE OF IMMUNITY SYSTEM

The immune system plays important role in human system, it role include fighting foreign bodies(defence), homeostasis balance, tissue repair.

1. AS A DEFENSIVE MECHANISM

The immune system depend on its ability to discriminate between foreign(non self) and host(self) cells. When foreign matter enters the bodies, our defense system tends to recognize it through the immune system. The body processes lymphatic system which helps in cleansing the cellular environment, and returning protein, pathway for the absorption of fats and fat - soluble vitamins into bloodstream and, most importantly defending the body from foreign bodies.

The body processes many T cells(thymus - dependent cells), and the T cells are important in fight against disease. It also activate white blood cells in fight against foreign bodies. The immune system respond to antigens by producing cells that directly attack the **pathogen, or by producing special proteins called antibodies**. Antibodies normally attach itself to an antigen and attract cells(phagocyte) that will engulf and destroy the pathogen.

2. AS HOMEOSTASIS

Homeostasis is the process in which body maintain normal, healthy range for temperature, energies, growth. Immune system plays a role in fight against pathogens and healing process. When the body is exposed to infections, the immune system cause the body to develop fever and an increase in blood flow to bring oxygen to where the body is infected with infection. It helps in wound healing, to reform the correct barriers in organs so that they participate in homeostasis.

3. TISSUE REPAIR

Injury in the body causes the body immune system to recruit several immune cells at the

site of injury. The immune cells secrete cytokines, growth factor, and enzyme to establish an inflammatory milieu. They also secrete anti-inflammatory proregenerative cytokines to promote resolution of inflammation as well as tissue repair. A transient inflammation often get rid off cause of tissue injury. However, uncontrolled or persistent inflammation promote remodeling of tissue injury or fibrosis.

TYPES OF IMMUNITY

There are 2 types of immunity which include; innate immunity and adaptive or specific immunity.

1. **Innate immunity:** also known as natural or native immunity, providing first stage defense against microbial organisms in the human body. They act as cellular or biochemical event in the body which react to microbes and their products in order to terminate them out of the body. The main component of innate immunity are;

- Barriers - (skin, and outer epithelial surface).
- Scavenger - macrophages, neutrophil, dendritic cells and natural killer cells.
- Complement system.
- Cytokines
- Chemical mediator.

Microbial agents tends to have molecule on their surface that act as foreign substances. PAMP(pathogen associated molecule pattern are recognize by specific protein and biochemical substances produced by innate immunity.

2. **Adaptive or specific immunity:**

The adaptive immunity is stimulated by constant exposure to microbes.

The most known features of adaptive immunity is **memory** against repeated infection.

The central component of adaptive immunity are;

- Lymphocytes and their secreted product e.g antibodies
- Foreign substance that triggers specific immune response.

TYPES OF ANTIBODIES AND THEIR ROLES

Antibodies are proteins produce by immune system in life - form which helps in defense or fight against invader such pathogens. Antibodies belong to large family of molecules known as immunoglobulin.

Different antibodies plays different roles in human immune system. They include; IgG,IgA,IgM,IgE, IgD.

- **IgG:** is the most abundant iso type in human blood(plasma) about 70- 75% of human immunoglobulin(antibodies). IgG detoxifies harmful substances and is important in the recognition of antigen - antibody leukocytes and Macrophage.

ROLE OF IgG

- It marks microbes that are met to be terminate out of the body.
- **IgM:** is circulates in the blood, according for about 10% of human immunoglobulin. IgM structures are linked together in 5 basic Y- shaped molecules. B cells produce IgM first in response to microbial infection/ antigens invasion.

ROLE OF IgM

- An antibodies used in killing microbial or pathogen.
- It enhances ingestion of cells by phagocytosis.

- **IgA:** is abundant in serum, nasal mucus, saliva, breast milk, accounting for about 10 - 15% of human immunoglobulin.

ROLES OF IgA

- In breast milk it is used to protect neonates from microbial.
- It mixes with fluid, such as saliva to protect gateways of microbial into the body.
- It is first stage defense of mucosal region such as intestine tract, lungs.

- **IgE:** is present in low blood level, it account for 0.001% immunoglobulin. It cause allergic reaction in human.

ROLE of IgE

- Protect against parasites.

- **IgD:** it involves in induction of antibodies in the production of B cells. It account for 1 percent of human immunoglobulin.

ROLES

- It helps in the induction of B cells in immune response.