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COURSE: MEDICAL SURGICAL NURSING 2

ASSIQNMENT 2

EXPLAIN THE ROLE OF THE IMMUNE SYSTEM

The role of the immune system is to protect our body from any foreign matters that might cause any damage or homeostatic imbalance. The success of the immune system depends on its ability to discriminate between foreign (non self) and host(self) cells. When an organism is threatened by microorganisms, viruses, or cancer cells, the immune system acts to provide protection. Normally the immune system does not mount a response against self. This lack of an immune response is called tolerance.

When a foreign matter enters the human body, our defense system recognizes this as foreign through the immune system. How the human body recognize foreign against itself employs a complex "I.D." system. Each cell in the human body carries on its surface a mixture of proteins and sugars that serve to identify the cell to the immune system. Foreign objects lack the identifiers that all of the body's cells have, but each one has unique features or antigens where the immune system attaches identifiers called antibodies. This is the basis for the specific defense mechanisms. Once you have built the antibodies for a specific antigen, the immune system will respond faster than if they had been no previous exposure to the antigen (i.e. you are immune to the pathogen, but only that specific pathogen, because your immune system responds faster.) The non-specific part of the immune system is mostly composed of phagocytes (eating-cells) which engulf and digest foreign substances like bacteria and viruses, which do not bear the body's specific identifiers.

THE TWO TYPES OF IMMUNITY

1 Passive Immunity:

As its name suggests, passive immunity is acquired "passively" from the mother. Immunoglobulins can be passed from the mother to the foetus through the umbilical cord. In simple terms, the umbilical cord is just the connection between the foetus and mother that provides nutrients and oxygen. Immunoglobulins can also be acquired passively through lactation and breast feeding. The passage of Immunoglobulins then leads to the creation of antibodies which are essential in the immune response.

2. Active Immunity: This is an active process and it is acquired through an infection where the body creates certain immune cells in response to a bacteria or a virus. This can also happen artificially, when you get vaccinated. Vaccines contained weakened forms of viruses or bacteria that cannot produce an infection, but that are enough to stimulate your immune system in order to produce immune cells against it.

As its name suggests, Active Natural Immunity refers to a natural infection that stimulates production of your immune cells. On the other hand, Active Artificial Immunity refers to immune cell growth in response to an Artificial.

THE DIFFERENT TYPES OF ANTIBODIES AND THEIR ROLES.

Antibodies are specialized proteins made by the immune system. They help the body fight against infections and disease by "recognizing" viruses, bacteria, and infected cells. Each antibody binds to a specific antigen associated with a danger signal in the body. This antigen is also known as the antibody's target.[1]

In addition to responding to different targets, antibodies also come in different types. These types are known as isotypes or classes. During the course of an infection, antibodies against a single antigen (target) will be produced as a variety

of different isotypes. The type of antibody produced depends on where they are needed in the body.

Antibody isotypes, or antibody classes, define the role of the antibody in the body. All classes are named using the convention Ig*, where Ig stands for immunoglobulin and * is the designation for the specific isotype.

There are five different antibody isotypes seen in humans: IgG, IgA, IgM, IgE, and IgD.[2]

- **IgG** is the antibody isotype that most people think of when they're talking about antibodies. It is the antibody that is built by immunization. It activates an immune cascade that can eliminate some forms of infection. IgG can also neutralize certain toxins.[3]
- **IgA** is the antibody isotype that is found in usually mucosal areas, such as the mouth and the vagina. It can also be found in saliva, tears, and breast milk. IgA is formed by two Ig subunits bound together. When IgA binds to a target, it can stimulate inflammation. In mucosal areas, IgA can also keep pathogens from sticking to epithelial cells.[4] The production of IgA against inappropriate targets is associated with certain autoimmune diseases, such as celiac disease.[5]
- **IgM** is one of the first types of antibody to be produced after a pathogen has entered the body.[6] Since it is made up of five Ig subunits bound together, it has very high avidity. In other words, it sticks very strongly to its target. IgM is very important in the early stages of an infection. IgM sometimes appears when an infection becomes reactivated, such as with a herpes outbreak. It can also appear when someone is reexposed to a disease they've previously gotten rid of.[7]
- **IgE** is the antibody that is responsible for the allergic response.[8] It is mostly found in the lungs, skin, and mucous membranes. When IgE binds to an allergen, it starts the histamine reaction. It's the histamine reaction that causes the symptoms of an allergy attack. This single subunit antibody also helps to protect the body from parasitic worms.

- **IgD** is important in the early stages of the immune response. Bound to B cells, it does not circulate.[9] Instead, it signals those cells to become active. This can help to stimulate inflammation. IgD is the least understood type of antibody, and its functions are still being discovered.