

AFULA Unity Ukwun

17/MHS02/012

Nursing Science

Medical surgical nursing (NSC306) Assignment

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Question:

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

Answer 1.

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

When a foreign matter enters the body, our defence 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 sugar that serves to identify the cell to the immune system. Foreign objects lacks the identifiers that all of the foreign cell's 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 there have 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.

Answer 2

The two types of immunity are:

- Innate (non-specific) immunity
- Adaptive (specific) immunity

Innate (non-specific) immunity

Host defence mechanism that act from the start of an infection but do not adapt to a particular pathogen.

Factors of non-specific immunity are:

- Anatomic barriers (Skin, mucous membrane).
- Physiologic barriers (temperature, pH).
- Phagocytic barriers (cells that eat invaders).
- Inflammatory barriers (redness, swelling).

Adaptive (specific) immunity

It has affinity for specific antigens ; it is self recognition. There is immunological memory of antigens, for example, when you firstly have chicken pox, the immune system already knows about it so by the next encounter, the immune system will be able to fight against it and neutralizes the second exposure.

Part of specific immunity

There are two part of immunity;

- Humoral immunity
- Cell mediated

Humoral immunity

- Immunity mediated by antibodies.
- Can be transferred by a non-immune recipient by serum.

Cell mediated immunity

- Immune response in which antigen specific T cells dominate.

Answer 3

The human antibodies are classified into five isotopes. These are;

- IgG
- IgM
- IgA
- IgD
- IgE

IgG

Structure: Monomer

Percentage serum antibodies: 80%

Location: Blood, lymph and intestine

Half-life in serum: 23 days

Complement fixation: Yes

Placental transfer: Yes

Known Functions: Enhances phagocytosis, neutralizes toxins and viruses, protects fetus and newborn.

IgM

Structure: Pentamer

Percentage serum antibodies: 5-10%

Location: Blood, lymph and B cell surface (monomer)

Half-life in serum: 5 days

Complement fixation: Yes

Placental transfer: No

Known Functions: First antibodies produced during an infection. Effective against microbes and agglutinating antigens.

IgA

Structure: Dimer

Percentage serum antibodies: 10-15%

Location: Secretions (tears, saliva, intestine, milk), blood and lymph

Half-life in serum: 6 days

Complement fixation: No

Placental transfer: No

Known Functions: Localized protection of mucosal surfaces. Provides immunity to infant digestive tract.

IgD

Structure: Monomer

Percentage serum antibodies: 0.2%

Location: B-cell surface, blood and lymph

Half-life in serum: 3 days

Complement fixation: No

Placental transfer: No

Known Functions: In serum function is unknown. On B cell surface, initiate immune response.

IgE

Structure: Monomer

Percentage serum antibodies: 0.002%

Location: Bound to mast cells and basophils throughout the body, blood

Half-life in serum: 2 days

Complement fixation: No

Placental transfer: No

Known Functions: Allergic reactions. Possibly lysis of worms.