Body defense mechanisms

Body Defense Mechanisms Body Defense Mechanisms Innate immune system or the non-specific immune system is the first bodily response to pathogens. The system consists of cells and mechanism that react to body infections in a non-specific way. Innate immune system is not long-lasting. Innate system recognizes and reacts to infections in a general way. Innate immune system is found in animals and plants and is made up of humoral and cell-induced immunity components (Grasso, Gangolli & Gaunt, 2002). This type of defense mechanism is the oldest evolutionary mechanism found in small animals like insects, plants and fungi, among other organisms. Innate immune system does not have any specialized cells but uses other cells to identify threats like bacteria, react to infections, and provide means of clearing the infections from the body. The system however switches on other immune systems in an antigen presentation method. This function is carried out by special white blood cells. Innate body mechanism forms a physical and chemical barrier that protects the body (Janeway, Travers, Walport, & Shlomchik, 2001).

In contrast, adaptive immune system is found in vertebrates only and comprises of highly specialized cells. Also known as the acquired immune system, the system prevents growth of pathogens through the use of systemic cells. Adaptive immune system acts as a memory system, reacting to a similar infection when incited. Adaptive system is acquired through various ways like immunization. As opposed to innate system whose reaction is in the germline, adaptive system is developed throughout life through reactions to specific infections that create pathogen-specific receptors. The system acquires it name; adaptive immune system, through its ability to enable the body to react to future similar infections. Adaptive immune

system is enabled by genetic mutation which occurs in all cells of the body giving it more awareness and reactionary strength to fight infections (Janeway, Travers, Walport, & Shlomchik, 2001).

Primary innate body defense mechanism include; inflammation, mucous clearance, physical and chemical barriers. Inflammation involves cutting blood supply to the infected area, walling off the pathogens, and forming fibrous tissue of the area among others. Mucous clearance provides coverage of the epithelial layer of the trachea. Physical barriers like the skins functions like barriers when they are not infected. When the skin is intact, it provides one of the best barriers to infections. Nose hairs filter out particles or any other substances that the body considers harmful (Knowles & Boucher, 2002). The skin secrets anti-bacterial and anti-fungal chemical substances like sebum and sweat to block pathogens entry. The body also facilitates passage of urine using only one way, which reduces entry of pathogens and clears the way.

Additionally, the body may react in advance before the pathogens gains entry into the body. This forms the major primary innate body defense mechanism which detects and fights off pathogens. Secondary innate body defense mechanisms include; white blood cells defense activities. The white blood cells in the body perform both innate and specific defense mechanism functions. There are several white blood cells that perform innate body mechanism functions. White blood cells or leukocytes are not attached to any organ and therefore move freely attacking any pathogenic organisms. Innate leukocytes do not reproduce. Leukocytes that perform these functions include: natural killer cells, dendritic cells, macrophages, and phagocytic cells among other cells. Due to their mobility, leukocytes can move freely

and function by identifying and destroying harmful organisms and attacks in the body. Mostly leukocytes function as independent cells. They are produced in the bone marrow. Lymph nodes trap foreign particles and assist in immunity. Lymph nodes are more than 500 hundred with the highest concentration being in the axillary region of the body. The stomach regions have also high concentration of lymph nodes and networks (Bruce, 2002).

References

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