




Lymph nodes and their role in immunity

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Abstract

Lymph nodes play crucial role in the immune system cell development and response. The spleen, mucosa-associated lymphoid tissue and lymph nodes are the secondary (peripheral) lymphoid organs, but they constitute the immune system. It is known that lymph nodes in the class of secondary (peripheral) lymphoid organs with different functions have different shapes (round, oval or bean-shaped). Lymph nodes connected to each other by lymphatic vessels are located in different regions (thorax, axilla, abdomen, inguinal region and neck region). Lymph nodes are important to generate immune response against foreign molecules in our body. In this proceeding study, we will be reviewing the lymph nodes and their functions in the immunity.

Introduction

The environment necessary for the defense against a pathogen invasion is provided by the immune system, and the organs that make up this system are categorized as primary (central) lymphoid organs and secondary (peripheral) lymphoid organs. The thymus and bone marrow are considered as the primary (central) lymphoid organs, while the spleen, mucosa-associated lymphoid tissue and lymph nodes are considered as the secondary (peripheral) lymphoid organs. T lymphocytes are produced in the bone marrow and complete their development in the thymus, while B lymphocytes are produced and developed in the bone marrow. T lymphocytes developing in the thymus and B lymphocytes developing in the bone marrow migrate into the secondary (peripheral) lymphoid organs with different functions after this development [1-4].

The development of secondary lymphoid organs can occur during embryogenesis as well as in the early postnatal period, and most of the interactions in this development, both molecular and cellular, are well understood. However, not all of these interactions are fully understood [5].

The lymph nodes, which are connected to each other by lymphatic vessels, that is, located along these vessels and located between the secondary (peripheral) lymphoid organs, can have a round or oval shape or be in the form of beans [5, 6]. There may be approximately 300-500 lymph nodes in the body [6, 7]. It is stated that lymph nodes are abundant in the thorax, axilla, abdomen, inguinal and neck region [8].

Results

With the entry of foreign substances into the body, the lymph nodes have a role in the necessary defense against these substances. They are involved in both the adaptive and innate immune response to eventually create the effectiveness of the vaccines [3, 7]. In addition to their immune functions, lymph nodes also have roles as filters for both tissue fluids and tissues [9].

Lymph nodes allow the encountering of the dendritic cells and T cells. This event takes place in order to initiate the immune response. The immune response is directed to an antigenic stimulus [10].

In some cases, the enlargement of the lymph nodes may occur. This event may be caused by an antigenic stimulus. Changes that occur in the shape, size and number of lymph nodes are described as lymphadenopathy. In the case of lymphadenopathy, lymph nodes that are found to have grown to sizes that would be considered abnormal can be seen. Various reasons may play a role in the occurrence of lymphadenopathy, which is very common in childhood. Some fungal infections, some viral infections including measles and rubella, toxoplasma infection which is a parasitic infection, some bacterial infections including syphilis and tuberculosis, some autoimmune diseases, some drug reactions are among the causes of diffuse lymphadenopathy. In addition, some reasons play a role in the emergence of regional lymphadenopathy. Some infections are known to be a common cause of regional lymphadenopathy [3, 11].

Conclusion

The aging state, which has many effects on both tissues and organs, can also affect the immune system at a level that can be considered as critical for the overall health. Effect of the aging include decreased response to vaccines and increased incidence of both cancer and certain autoimmune disorders. Depending on this situation, irregularity may occur in the structures of the lymph nodes [7]. Lymph nodes are critical for the development of a proper immune response against the pathogens. The size as well as function of the lymph nodes decline by age [7].

In summary, more research and studies are needed in order to have more detailed information about the aging of the lymph nodes and to clearly understand and illuminate the mechanisms involved in the aging and loss of function in the lymph nodes [7]. In this way the development of late age chronic disorders, cancer and autoimmune diseases might be prevented.

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