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Commentary

Secondary lymphoid organs and its variants

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DESCRIPTION

Secondary lymphoid organs serve as a kind of "monitoring station" for the contents of extracellular fluid, such as blood, lymph, and tissue fluid. This is also where lymphocytes are activated. Secondary (or peripheral) Lymphoid Organs (SLOs), which include the lymph nodes and spleen, support mature naïve lymphocytes and initiate the adaptive immune response (Jia T, 2009). Secondary lymphoid organs are sites of activation of lymphocytes by antigens. Activation leads to clonal expansion and affinity maturation. Mature lymphocytes circulate between the blood and secondary lymphoid organs until they encounter their specific antigen.

Spleen

The main functions of the spleen,

1. produce immune cells to fight antigens.

2. to remove solid particles and old blood cells, mainly red blood cells.

3. produce blood cells during intrauterine life.

The spleen synthesizes antibodies in its white pulp and removes antibody-coated bacteria and antibody-coated blood cells by circulating blood and lymph nodes. A study published in 2009 using mice showed that the spleen contains half of the body's red pulp monocytes in its reserve (Maoz A, 2019). These monocytes, moving to a damaged tissue (for example, the heart), transform into dendritic cells and macrophages, simultaneously promoting tissue healing (Natale G, 2017). The spleen is the center of activity of the mononuclear phagocyte system and can be considered an analogue of a large lymph node, as its absence causes susceptibility to certain infections.

Like the thymus, the spleen has only efferent lymphatic vessels. It is supplied with blood by both short gastric arteries and the splenic artery (Peyrot SM, 2010). The germinal centers are supplied by arterioles called penicillary radicles (Ruddle NH, 2009).

By the fifth month of intrauterine development, the spleen produces red blood cells; after birth, the bone marrow is solely responsible for hematopoiesis. As the major lymphoid organ and a central player in the reticuloendothelial system, the spleen retains the ability to produce lymphocytes. The spleen stores erythrocytes and lymphocytes. It can store enough blood cells to help in an emergency. Up to 25% of lymphocytes can be stored simultaneously (Skattum J, 2012).

Lymph nodes

A lymph node is an organized collection of lymphoid tissue through which lymph passes on its way back into the blood. Lymph nodes are located at intervals along the lymphatic system. Several afferent lymphatic vessels bring lymph, which percolates through the substance of the lymph node and is then drained by an efferent lymphatic vessel. Of the nearly 800 lymph nodes in the human body, about 300 are located in the head and neck region (Swirski FK, 2009).

Many of them are clustered in different regions, such as the armpits and abdomen. Clusters of lymph nodes are usually located at the proximal ends of the extremities (in the groin, armpits) and on the neck, where lymph collects from areas of the body that may be infected with pathogenic microorganisms as a result of trauma. Lymph nodes are especially numerous in the interstitium in the chest, neck, pelvis, armpits, inguinal region and in connection with the blood vessels of the intestines (Yin C, 2009).

The substance of the lymph node consists of lymphoid follicles in the outer part, called the cortex. The inner part of the node is called the medulla, which is surrounded by the cortex on all sides except for a part known as the hilum. A lymph node is an indentation on the surface of the lymph node, causing the spherical lymph node to become bean-shaped or egg-shaped. An external lymphatic vessel directly exits from a lymph node in the chest. The arteries and veins that supply the lymph node with blood enter and exit through the portal. An area of the lymph node, called the paracortex, immediately surrounds the medulla. Unlike the cortex, which contains mainly immature T cells or thymocytes,

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the paracortex has a mixture of immature and mature T cells. Lymphocytes enter the lymph nodes through specialized high endothelial venules located in the paracortex.

Lymphatic follicle is a dense collection of lymphocytes, the number, size and configuration of which change depending on the functional state of the lymph node. For example, follicles expand significantly when they encounter a foreign antigen. The release of B-cells, or B-lymphocytes, occurs in the germinal center of the lymph nodes.

REFERENCES

1. Jia T, Pamer EG (2009). Dispensable but not irrelevant. Science.325:549-50.
2. Maoz A, Dennis M, Greenson JK(2019). The Crohn's-like lymphoid reaction to colorectal cancer-tertiary lymphoid structures with immunologic and potentially therapeutic relevance in colorectal cancer. Front Immunol. 10:1884.
3. Natale G, Bocci G, Ribatti D(2017). Scholars and scientists in the history of the lymphatic system. J Anat. 231:417-29.
4. Peyrot SM, Martin BL, Harland RM(2010). Lymph heart musculature is under distinct developmental control from lymphatic endothelium. Dev Biol. 339:429-38.
5. Ruddle NH, Akirav EM (2009). Secondary lymphoid organs: responding to genetic and environmental cues in ontogeny and the immune response. J Immunol.183:2205-12.
6. Skattum J, Naess PA, Gaarder C(2012). Non-operative management and immune function after splenic injury. Br J Surg. 99:59-65.
7. Swirski FK, Nahrendorf M, Etzrodt M, Wildgruber M, Cortez-Retamozo V, Panizzi P, Figueiredo JL, et al (2009). Identification of splenic reservoir monocytes and their deployment to inflammatory sites. Science. 325(5940):612-6.
8. Yin C, Mohanta S, Maffia P, Habenicht AJ(2017). tertiary lymphoid organs (TLOs): powerhouses of disease immunity. Front Immunol. 8:228.