

The LN ones have the complex (e.g. with the lymphoid tissue in the walls), or the lymphoid lymphangions structure, which, simultaneously, are being regulated the lymph volume and its composition. The LN capsule muscular network (e.g. the nodal lymphangion muscular cuff) is being connected with the LV lymphangions and the border valves with them, by means of the muscular bundles in the continuous lymphatic channel composition. The LPC valves are very thin, and they have a form of the cells' small thickening in the LPC of the first order. The LPC one is being consisted in the intervalvular segments without the myocytes presence just in the walls. The movable interendothelial contacts in the LC walls have been organized, as the intramural mini – valves. They are, constantly, being regulated the tissue fluid filtration just in the LC cavity – e.g. its outflow from the tissue channels into the lymphatic channel. The endothelium intramural valves are being found in the opening of the LC segments, and the LPC real valves – at the outlet just from the LC (network). The surrounding them tissues, including – the muscular ones, are being played the cuff role for the LC and the LPC intervalvular segments.

#### Conclusion

The lymphatic channel intervalvular segments with the different structure are being organized the lymph partial movement just from the organs to the veins, under the lymph flow proper energy deficiency conditions. The lymph flows channels are being taken their place only under the extravasal factors influence in the non – muscular sections (e.g. the tissue fluid flow pressure and the surrounding tissues), the LV and the LN contractive activity mechanism is being switched on, at their energy insufficiency just in the muscular sections.

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#### STRUCTURE OF THE BLOOD-TISSUE METABOLISM

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Substances move from metabolic microvessels to the tissue channels and back, through the endothelium in their areas of microvasculature. I suggest that this microvascular-tissue complex should be called a “domain of hemo-tissue metabolism”. Transport vessels unite the domains into a common system. Domain configuration is determined by the structure of a vascularized area. In the mesentery between two mesothelium layers is a loose connective tissue, veined with a network of different microvessels. A hollow organ can be presented as a sheet rolled in a pipe;

muscular layers divide it into membranes with a multi-layer microvasculature, and microcirculatory channels of external layers overlap the transport vessels, going from the inner layers. Formation of folds, villi, crypts, acinuses and lobules leads to an adequate deformation of the domain. They have a network structure: thin fascicles of connective tissue fibers and capillaries form loops of a microvascular-fiber network. Inside the loops, is a dense network of thinner connective tissue fibers and tissue channels. They unite blood and lymphatic microvessels as “functional anastomoses”: connective tissue fibers and hydrophilic amorphous substance act as an external cuff, restricting the tissue channels from widening and directing the substance current into the microvessels with a different wall permeability.

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#### LYMPHATIC AND LYMPHOID SYSTEMS

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While immunity is in the spotlight, lymphatic vessels are being regarded as appendage of the lymphoid system. In the international anatomic terminology (New-York, 1998), there is no such term as «lymphatic system». Section «Cardio-vascular system» describes lymphatic ducts and trunks, mentions lymph nodes, but their detailed description is given in section «Lymphoid system». In my opinion, lymphoid and lymphatic systems are interconnected in the peripheral parts and are specialized areas of a common cardiovascular system. The core of the lymphatic system are lymphatic vessels that transport the tissue fluid and large-grain particles, which did not get into blood channels. In the lymphoid system, the central position occupy blood vessels that provide lymphocyte circulation. Lymphocytes gather in the area invaded by antigens and along their pathway in the organism. Primary lymphatic tracts, capillaries and postcapillaries are characterized by higher wall permeability. That is why antigens penetrate into their openings, lymphoid nodes and patches form around the source (tissue channels) and roots of the lymphatic channel before and after human's birth, and lymph nodes – around lymphatic vessels with endothelial walls outside the organs, at a 3-5 month fetus.

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