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Morphofunctional Features of the Lymphatic Bed of the Small Intestine of Rats at the Stages of Postnatal Ontogenesis

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ABSTRACT: The article considers the morphology features of the intraorgan and extraorgan lymphatic bed of the small intestine of rats at the stages of postnatal ontogenesis, and also found that the morphometric parameters of all links of the lymphatic bed of the small intestine of rats increase in direct proportion to the age of the animal.

KEYWORD: ontogenesis, lymphatic capillaries, lymphatic postcapillaries, lymphatic vessels, lymphatic bed, lymph nodes, lymphatic system.

The intestine is one of the most important immunocompetent organs, since the surface of the mucous membrane of the digestive tube is a place of active interaction with a variety of substances. A powerful barrier has been put in the way of harmful compounds and pathogens of various infections, which can be combined into a "common intestinal immune system", which is a huge protective force and supplies about a third of the number of all lymphocytes in the body.

The study of the absorption processes in the digestive tract cannot be complete enough without studying the composition of the lymph flowing from its various departments. But due to the considerable difficulty in working with the lymphatic system, methods for obtaining lymph from a number of organs either do not satisfy researchers, or are completely absent.

However, in the available domestic and foreign literature, we have not found exhaustive information about the structure of the lymphatic bed of the small intestine of the crcs in postnatal ontogenesis [1-10].

The purpose of the work. The study of morphometric parameters of lymph nodes and a detailed study of the patterns of architectonics of the lymphatic bed of the small intestine of rats at the stages of postnatal ontogenesis from the standpoint of the construction of the structural and functional unit of the lymphatic vessel - lymphangion.

Material and methods of research. The studies were conducted on 60 mongrel rats without signs of infectious diseases and pathology of the gastrointestinal tract.

The lymphatic bed of the small intestine of rats was studied on animals of the following age periods: newborns (1-3 days), infantile (2 months), juvenile (6 months) and physiologically mature rats of the reproductive period (from 1 to 3 years).

The results of our own research. As a result of the study, it was found that the lymphatic channel of the small intestine of rats is represented by intra-organ and extra-organ lymphatic channels.

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The intraorgan lymphatic bed consists of lymphatic capillaries, postcapillaries and intraorgan vessels of three orders. The initial link of the intra-organ lymphatic bed of the small intestine is the lymphatic capillaries. The next element of the lymphomicrocirculatory bed of the small intestine of dogs are lymphatic postcapillaries lying in all the membranes of the organ, and it is noted that they lie in close proximity to the circulatory postcapillaries and almost always have a similar orientation to them. Intra-organ lymphatic vessels are formed due to the fusion of lymphatic postcapillaries and vessels, are divided into vessels of three orders. Lymphatic vessels of the first, second and third order, anastomosing with each other, form plexuses of polygonal shape with the orientation of the longs along the longitudinal axis of the organ.

The length and diameter of intraorgan lymphatic vessels of all orders increase in direct proportion to the age of rats and their order. Studying the tortuosity of the vessels, we did not find a certain pattern. Vessels have a tortuosity coefficient, which varies regardless of their order and periods of postnatal ontogenesis, in dogs from 35.2 to 55.1, and this suggests that they have both an almost rectilinear and tortuous course.

The composition of the extraorgan lymphatic bed of the small intestine of rats includes afferent lymphatic vessels that introduce lymph into regional lymph nodes and efferent lymphatic vessels that carry lymph out of them in different directions. As a result of the study, it was found that the length of extraorgan lymphatic vessels, depending on the junction of intraorgan lymphatic vessels to the regional lymph nodes of the first stage, varies in newborns from 1 to 3 mm, in 2-month-olds - from 3 to 8 mm, in 6-month-olds - from 5 to 14 mm, in adults - from 7 to 23. The coefficient of tortuosity of these vessels varies from 49 to 57. This indicates a rather pronounced non-rectilinear topography of the collector lymphatic vessels. The length of efferent lymphatic vessels of the regional lymph nodes of the small intestine of rats varies in newborns from 2 to 5 mm, in 2 months from 3 to 9 mm, in animals 6 months from 6 to 15 mm and in adult rats from 7 to 18 mm. The coefficient of tortuosity in newborns is 35-55, in 2-month-olds 31-60, in 6-month-olds - 50-72 and in adults - 62-86. From here it can be seen that the named vessels at each age can have a course both almost rectilinear and with pronounced tortuosity. The diameter of efferent lymphatic vessels of regional lymph nodes varies within the following limits: in newborns - from 0.28 to 0.52 mm; in 2-month-olds, from 0.40 to 0.71 mm; in 6-month-olds - from 0.74 to 0.94 mm; in adults - from 0.95 to 1.2 mm.

As can be seen from the above, the length of the extra-organ transport routes of the lymph of the small intestine of dogs increases in direct proportion to their age. The diameter of these vessels correlates with age. The tortuosity coefficient indicates the non - linear topography of the vessels .

During the study, a small intestinal group of regional lymph nodes of the small intestine of dogs was identified.

The small intestinal group includes up to three lymph nodes, which often merge into one, are located in the mesentery of the jejunum, at the beginning of the artery of the same name.

Morphometric parameters (length, width and thickness) of the lymph nodes of the small intestine of rats in postnatal ontogenesis are the most important parameters.

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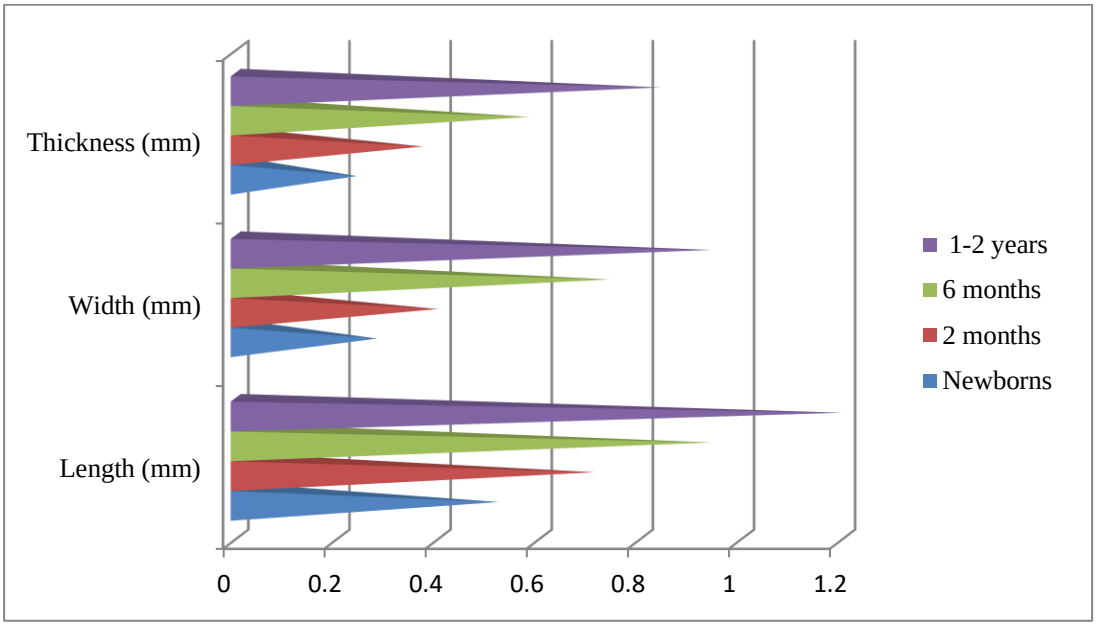

Morphometric parameters of small intestinal lymph nodes of rats in postnatal ontogenesis

Morphometric parameters of the regional lymph nodes of the small intestine displayed in the diagram (length, width, and thickness), show that they increase in postnatal ontogenesis is directly proportional to the age of the animal (high confidence ($P<0.001$).

From the lymph nodes lymph is collected in efferent lymphatic vessels, which come out of the gate of the lymph node and carry lymph in different directions. During the study, it was found that the number of afferent lymphatic vessels always prevails over that of efferent ones.

For a detailed study of the morphology and functions of any organ, it is necessary to isolate its structural and functional unit. For lymphatic vessels, such a unit is a lymphangion - a section of a lymphatic vessel between two valves, in which the central valve belongs to this lymphangion, and the peripheral valve belongs to the next one. During the study, it was found that the quantitative and structural parameters of the lymphangions of the small intestine of rats have local and age-specific features.

Thus, the lymphangions of adult rats have a rounded, triangular or cylindrical shape, and the lymphangions of young rats are more rounded.

The number of lymphangions that make up the lymphatic vessel, as well as their linear and volumetric indicators increase in direct proportion to the age of the animal and the direction of the lymph flow.

The most important function of the lymphangions of the small intestine of rats is motor function, which is inextricably linked with the distribution of myocytes in their wall. Myocytes are detected in all lymphatic vessels of the small intestine of dogs, and their number increases with the age of the animal and the order of the vessel, and their content in the muscular cuff always prevails over that in the wall of the valvular sinus. The most important structural element of the lymphangions of all lymphatic vessels are valves that prevent the retrograde flow of lymph and ensure its progress towards the thoracic lymphatic duct. The valves of the lymphatic vessels of the small intestine of rats are a fold of the intima of the lymphangion of a semilunar shape. Basically, we met double-leaf valves.

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Structurally, a valve roller (the place where the valve is attached to the vessel wall) and a flap (free edge) are isolated in the valve.

During the study, it was found that the capsule of lymph nodes is represented by three layers: the inner one, consisting of endothelial cells, the middle one, containing smooth muscle tissue in its composition, and the outer one – connective tissue.

Thus, in postnatal ontogenesis, not only the growth of all structural elements of the lymphatic bed of the small intestine of rats occurs, but also the complication of the architectonics of the musculoskeletal tissue framework of the wall of lymphatic vessels and capsules of all regional lymph nodes, which is expressed by an increase in their contractile and depositing ability.

Literature

1. *Крыжановский В.А.* Лимфоидный аппарат тонкой и толстой кишок в постнатальном онтогенезе // Тр. ГУ НИИКиЭЛ СО РАМН. – Новосибирск, 2004. – Т.10. – Ч.1. – С. 216–220.
2. Ю. С., Х., и Б. С., С. (2021). Морфологические изменения внутренних органов при хроническом алкоголизме. *Среднеевропейский научный бюллетень* , *12* , 51-55.
3. Б Шокиров, Ю Халимова. (2021). Антибиотик-индуцированный дисбиоз микробиоты кишечника крыс и резистентность к сальмонеллам. Общество и инновации. 4/S (2021), 93-100.
4. *Борисов А.В.* Методика тотального препарата лимфатического сосуда: результаты и задачи // Проблемы экспериментальной, клинической и профилактической лимфологии: тр. НИИКиЭЛ СО РАМН / под ред. Ю.И. Бородина. – Новосибирск, 2002. – Т.9. – С. 55–57.
5. БС Шокиров. (2019). ВЛИЯНИЕ ПРОТИВОДИАБЕТИЧЕСКИХ ПРЕПАРАТОВ СИОФОР И ГЛИКЛАЗИД НА МОРФОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ТОЛСТОГО КИШЕЧНИКА ПРИ ЭКСПЕРИМЕНТАЛЬНОМ САХАРНОМ ДИАБЕТЕ. НЕДЕЛЯ НАУКИ–2019, 832-834.
6. Некоторые инъекционные и беспрепаровочные методы исследования лимфатического русла у овец / *Е.Ю. Складнева* [и др.] // Фундаментальные исследования. – 2004. – №2. – с. 56.
7. Khasanov, B. (2021). Maternal toxic hepatitis, structural and functional formation of the lean intestine of the offspring in the dynamics of early postnatal ontogenesis. *The Scientific Heritage*, (78-2), 33-37.
8. Б.С Шокиров. (2021). MORPHOLOGICAL FEATURES OF THE LYMPHOID TISSUE OF THE SMALL INTESTINE IN AN ADULT. Новый день в медицине. 5 (37), 240-242.
9. Burthanovich, K. B. (2021). Structural And Functional Features Of Immunocompetent Breast Cells Glands During Pregnancy And Lactation In Chronic Hepatitis. *Psychology and Education Journal*, *58*(2), 8038-8045.
10. Ю.С.Халимова. (2021). MORPHOFUNCTIONAL ASPECTS OF THE HUMAN BODY IN THE ABUSE OF ENERGY DRINKS. Новый день в медицине. 5 (37), 208-210.
11. B.S.Shokirov R.D.Davronov, G.R.Axmatova. (2020). Dynamics of the immune status of women in the treatment of human papilloma virus (HPV) of the cervix. Novateur Publication's Journalnx A Multidisciplinary Peer Reviewed journal. Volume 6, Issue 6, 733-735.

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