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V.K. Syrtsov, I.N. Maslova**DYNAMIC OF THE LYMPHOID FORMATIONS' DISTRIBUTION OF THE RATS' MAJOR SALIVARY GLANDS AFTER ANTENATAL ANTIGEN ACTION***Zaporizhzhie State Medical University.*

Syrtsov V.K., Maslova I.N. Dynamic of the lymphoid formations' distribution of the rats' major salivary glands after antenatal antigen action // Український морфологічний альманах. – 2014. – Том 12, № 2. – С. 89-91.

Evidence in imaging role of the lymphocytes such as factor of morphogenesis are not clarify understood. Based on previous researches that intrauterine antigen influence causing the undifferentiated cytotoxic T-lymphocytes' premature migration from thymus to the peripheral organs was decided to investigate the rat's major salivary glands at various age periods. This cross sectional study examines the quantitative changes of rat's major salivary glands lymphocytes in compare groups after intrauterine antigen action and intact. Antigen action leads to increase number of major salivary glands' lymphoid formations and lymphocytes in early postnatal period.

Key words: major salivary glands, the introduction of antigen in the amniotic fluid, antigenic action, the rat, lymphocytes, lymphoid formations.

Сирцов В.К., Маслова І.Н. Динаміка лімфотических утворень великих слинових залоз після антигенної дії в антенатальному періоді // Український морфологічний альманах. – 2014. – Том 12, № 2. – С. 89-91.

Дані про уявлення ролі лімфоцитів, як фактору морфогенезу, до теперішнього часу залишаються неповністю з'ясованими. Спираючись на результати попередніх досліджень щодо впливу антигенів, який є причиною передчасного виходу недиференційованих цитотоксичних Т-лімфоцитів з тимусу до периферійних органів, вирішено було дослідити великі слинні залози щурів в різні вікові періоди. Теперішні дослідження оцінює кількісні зміни лімфоцитів великих слинних залоз щурів при порівнянні антигенпремійованої та інтактною груп. Антигенна дія призводить до підвищеного вмісту лімфоїдних скопчень та лімфоцитів великих слинних залоз в ранньому постнатальному періоді.

Ключові слова: великі слинні залози, введення антигену в навколішньооплідні води, антигенна дія, щури, лімфоцити, лімфоїдні скопчення.

Сирцов В.К., Маслова І.Н. Динамика лимфотических образований больших слюнных желез после антигенного воздействия в антенатальном периоде // Український морфологічний альманах. – 2014. – Том 12, № 2. – С. 89-91.

Данные о представлении роли лимфоцитов, как фактора морфогенеза, в настоящее время остаются неполностью выясненными. Опираясь на результаты предыдущих исследований касательно влияния антигенов, которое является причиной преждевременного выхода недифференцированных цитотоксических Т- лимфоцитов из тимуса в периферические органы, решено было изучить большие слюнные железы крыс в различные возрастные периоды. Настоящее исследование дает оценку количественным изменениям лимфоидных скоплений и лимфоцитов больших слюнных желез крыс при сравнении антигенпримированной и интактной групп. Антигенное действие приводит к повышению количества лимфоидных скоплений и лимфоцитов больших слюнных желез в раннем постнатальном периоде.

Ключевые слова: большие слюнные железы, введение антигена в околоплодные воды, антигенное действие, крысы, лимфоидные скопления, лимфоциты.

The work is the fragment of SRW of the chair of Anatomy, Operative Surgery and Topographic Anatomy and the chair of Histology, Cytology and Embryology of Zaporizhzhya State Medical University «Lectin histochemical characteristics of morphogenesis of the organs and tissues in early postnatal period in norm and experiment» (2008-2012, № state. Registration 0109U 003986).

Introduction. The study of lymphocytes' influence as a cause of morphogenesis on formation of the organs' structures as the action of antigens, which come into the organism of fetus and cause the lymphocytes' migration to the peripheral organs of immune system (M.A.Voloshin, 1991-2003; T. Cupedo, 2002), is actual last tenth years. It is connected with the increase of antigen action as on the fetus as on the newborns (G.O.Lezhenko, 2004; M.L.Vidyakina, 2006). Nowadays in the organism of

pregnant woman the substances with antigen action and pathogens of different diseases more often penetrate through the hematoplacental barrier cause the immune tolerance. Pathology of the newborn rats childhood and even the all period of life can be caused by antigen' influence in intrauterine period. By the way, it is known, that during the pregnancy is the tough band between the same organs of mother and fetus. The main part of the research is devoted to the histological structure of the adults and animals. That why it is necessary to deep the existing knowledge due to the age of morphofunctional peculiarities and reaction of the large salivary glands after birth, description of topography, quantitative and qualitative composition of lymphocytes, in norm and response to the antigen action in antenatal period.

The aim of the work. To determine the pecu-

liarities of lymphoid formations' distribution, their topography and cellular composition in the rats' major salivary glands in norm and after the intrauterine action of antigen.

Methods. The object of the research was 112 major salivary glands of white laboratory rats. The rats were divided into 3 groups: the 1st group – intact rats, the 2d group – rats, which were introduced 0,05 ml solution of antigen in the amniotic fluid on the 18th day of pregnancy by the method of Voloshin M.A. (2011), the 3d group – control, the animals were introduced intrauterine 0,05 ml of physiological solution on the 18th day of pregnancy. The feeding of animals was carried out twice a day at the same time.

For the study of peculiarities of morphogenesis of the structures of large salivary glands of antigen's action on the fetus, was chosen the model of transuterine, transmembrane introduction of antigen in amniotic waters by the method of Voloshin M.A. (2011). For antigen was chosen split-vaccine (killed) Vaxigrip 2009. Keeping the animals and experiments were carried out accordingly to regulations of European convention about the defense of spine animals which are used due to the experimental and other scientific aims (Strasbourg, 18.03.86), general ethic principles of the experiments on the animals taken by the first national congress of Bioethics (Kiyev, 2001). The animals' killing and taking of the material were done from 13-00 till 14-00 on the 1st, 5th, 7th, 11th, 14th, 30th, 45th day of postnatal life. On every term in all groups of the animals were examined 5 - 6 animals. For the research the major salivary glands were used during some minutes after killing. The tissues samples was fixed in 10% solution of formalin, dehydrated, filled in paraffin mixture and produced serial paraffin sections, which were colored by Hematoxylin and Eosin. Calculation was done on increasing 10x100. In immersive of lymphocytes' microscope's increasing the number of cellular elements were determined on the conditional unit of square 10000 modifying net by the method of S.B. Stefanov (1988), the size of the cells was determined by means of micrometer MP-12.

The obtained results were processed by means of STATISTICA program 6.0 and considered reliable in $p < 0,05$.

Results and discussion. The rat's major salivary glands are represented by parotid, mandibular and sublingual salivary glands and they are complex alveolar and alveolar-tubular glands, which have lobed structure. Due to the impossible qualitative taking of the material on the early terms of postnatal life of parotid and sublingual salivary glands taking into account ontogenetic relationship, the research was carried on the mandibular salivary glands of laboratory rats. That why further data will be carried for gl. submaxillaris (according to the International veterinary anatomic nomenclature, 2005). In examining microscopy (x100) all structural elements of the salivary glands are differed strongly. Lymphoid formations are located perivascular and

periductal and they are represented, as diffuse divided lymphocytes, by small, middle and large forms, which differentiate among acinar cells large nuclear of irregular form, where is perinuclear lightening.

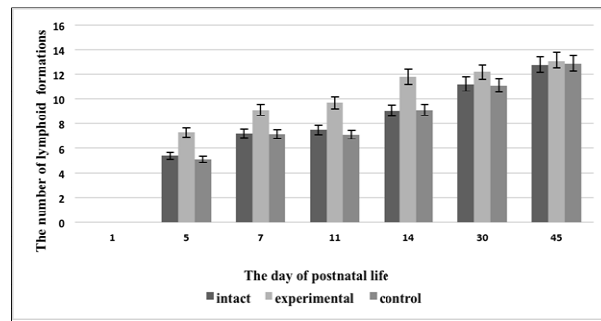


Figure 1. Average number of lymphoid formations of rat's major salivary glands on conditional unit of square

On the 1st day of postnatal life in intact, control and antigenpremium groups of animals lymphoid formations are't determined, but the number of diffuse located lymphocytes in experimental group is $22,78 \pm 0,1$ in comparison with intact group – $18,12 \pm 0,1$. Percentage forms' correlation of lymphocytes on the given term of monitoring for intact animals is as follows: $50,5 \pm 0,1$ - small lymphocytes, $36,6 \pm 0,1$ - intermediate and $18,8 \pm 0,1$ – large. In experimental group the percentage of small lymphocytes is $51,9 \pm 0,1\%$, intermediate - $30,2 \pm 0,1\%$, and large - $18,8 \pm 0,1\%$. For the control group indexes have other data. Is presented by $43,9 \pm 0,9$ percentage of small forms, $39,9 \pm 0,1\%$ - intermediate, $16,5 \pm 0,1\%$ - large lymphocytes.

Starting from the 5-th day indexes of lymphoid formation' quantity, their topography and the number of the cells in the control group did't differentiate obtained indexes from the animals of intact group, that's why the data won't be given in the text further.

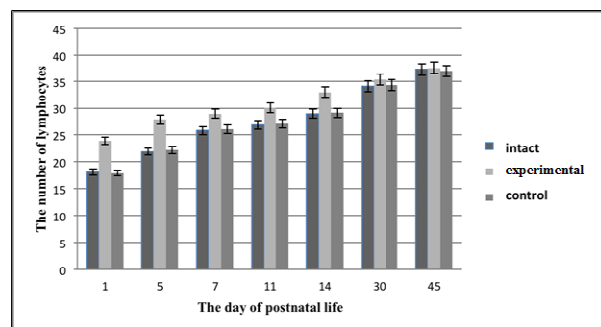


Figure 2. The average number of lymphocytes in lymphoid formations of rats' major salivary glands

For the 5 –th day of life is characteristically the appearance of lymphoid formations located in most cases perivascular – $7,0 \pm 0,1$ for antigenpremium and $6,0 \pm 0,1$ for intact animals, the number of cells in average is composed $27,87 \pm 0,1$ and $21,9 \pm 0,1$ correspondingly. In the group of rats, which were introduced antigen intrauterine, the percentage of small lymphocytes statistically bigger than the

analogous index of intact group – $68,3 \pm 0,1\%$ and $53,7 \pm 0,1\%$ respectively. But the percentage correlation of small forms till intermediate and large lymphocytes in intact group prevails in favor of the last ones (Fig. 3).

From the 7-th till the 11-th day the rats of both groups have the increasing of cell formations' number evenly, but the animals of experimental group is bigger and is composed $9,1 \pm 0,1$ and $7,2 \pm 0,1$ for intact group, but the number of lymphocytes isn't almost changed and in the average are $28,1 \pm 0,1$ and $22,88 \pm 0,1$. As to the percentage of small lymphocytes, the given index is reliably bigger for antigenpremium animals $70,2 \pm 0,1\%$ – $60,2 \pm 0,1\%$ correspondently to the intact ones. The capacity of small and intermediate forms of lymphocytes is at the same level in all researched groups in this period.

From the 14th day, except perivascular located lymphoid formations, are near the ducts - $11,08 \pm 0,1$ for antigenpremium and $9,08 \pm 0,1$ for intact animals, the number of lymphocytes is $28,93 \pm 0,1$ and $26,25 \pm 0,1$ correspondently. It's kept bigger percentage of small lymphocytes in rats' experimental group relatively intact group.

On the 30-th day of postnatal life the topography of lymphoid formations is unchangeable, but the difference in indexes' number between experimental and intact animals is reduced and composed $12,2 \pm 0,1$ and $11,1 \pm 0,1$ correspondently. The quantity of lymphocytes is $32,3 \pm 0,1$ for antigenpremium and $31,6 \pm 0,1$ for intact animals. Percentage correlation of different forms of lymphocytes has a tendency to the levelling in all groups of monitoring.

For the 45-th day of life the number of lymphoid formations and lymphocytes' capacity isn't practically changed in all researched groups.

The major salivary glands, parotid, submandibular, sublingual, contribute to over 90 percent of the saliva secreted. The submandibular saliva is mixed in nature is containing mucous and serous secretion. The unstimulated saliva is mainly produce of submandibular gland [7]. Early inflammation in male or female mice concurrently occurs in the submandibular and lacrimal glands at around the age of 6 weeks in the course of Sjogren's syndrome [4]. The results of our study show that increased number salivary glands' lymphocytes can cause development pathological process with different etiology. Furthermore, the obtained results are partially coordinated with the data, which are given in the works of T.A. Topolenko and is a reflection of the general tissues' reactivity to the intrauterine antigen action. But we at first, on the basis of the experiment's data have studied the peculiarities of lymphoid formations' distribution, their topography and cellular composition in the major rats' salivary glands in norm and after the intrauterine action of antigen.

Conclusion. Intrauterine antigen load causes the increasing of lymphoid formations, quantitative change of their cellular composition in comparison with intact group of animals. So the following regu-

larities are determined by us: the number of lymphoid formations in intact group of animals is probably lesser accordingly to the experimental one from the period of newborn rats till the 14 – th day of postnatal life; the number of lymphoid formations is reliably increased in the group of animals, which were intrauterine introduced the antigen on the 7 – th and the 11 – th day of postnatal life, with the increasing of the cells' number in them, that testifies to the reactive changes of the major salivary glands of antigen action in antenatal period; the increasing of the cells' number in lymphoid formations of the salivary glands is happened by means of the lymphocytes' small forms.

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