

MORPHOLOGICAL FEATURES OF THE LYMPHOID STRUCTURE OF THE COLON AND IT'S IN WHITE RATS IN THE DYNAMICS OF AGE

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Annotation: *The immune system largely depends on age, health, stress, environmental conditions and other factors. The study found that the length of the colon of rats of intact and irradiated groups showed that there was a decrease in its length, which is most pronounced at 3 months of age, in the following months of observation, these indicators were at almost the same level. Thus, studies have shown that the morphometric parameters of the colon (length, perimeter, thickness) increase unevenly with age.*

Key words: *colon, lymphoid structure, irradiation, white rats.*

Results: According to the results of the study, it was found that the length of the colon in newborn white mongrel rats in the control group ranges from 74 mm to 83 mm, on average - 78.5 ± 5.6 mm. And the total colon area of newborn baby rats ranges from 426.0 mm² to 815.0 mm², on average - 620.5 ± 2.1 mm².

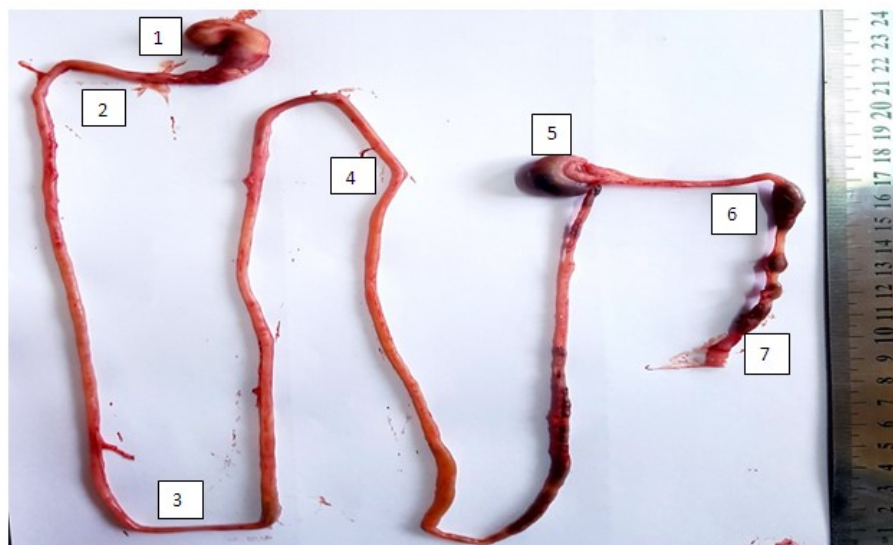
The wall thickness in the middle part of the cecum of newborn baby rats is in the range of -190-294 microns, on average - 260.2 ± 18.5 microns, in the middle part of the colon -170.4-260.0 microns, on average - 221.5 ± 16.4 microns, and in the middle part of the rectum ranges from 140.0 microns to 220.4 microns, in the average is 185.6 ± 14.9 microns.

The number of aggregated lymphoid nodules [ALN] throughout the colon ranges from 2 to 4 on average - 2.7 ± 0.216 . ALN in newborn rats begin to appear from 9-11 days of age. In the cecum, the number of ALN ranges from 1 to 2, on average - 1.2 ± 0.108 . The dimensions of ALN ranged from 0.3 x 0.4 mm to 0.65 x 0.7 mm, on average - $0.36 \times 0.60 \pm 0.01$ mm. The amount of ALN in the colon is from 1 to 3, on average - 1.6 ± 0.216 . In this part of the intestine, the dimensions of ALN were from 0.3 x 0.4 mm to 0.5 x 0.55 mm, on average $0.37 \times 0.45 \pm 0.027$ mm.

Throughout the intestine in the ALN, due to the fuzzy contours of the nodules, their number cannot be counted and it is impossible to distinguish the interstitial zones. ALN had mainly oval [58.7%] and rounded [41.3%] shapes. The total area formed by the ALN varied from 0.5 mm² to 0.8 mm², on average 0.6 ± 0.032 mm². This is 0.1% of the total area of the colon.

Single lymphoid nodules [SLN] in the colon of newborn baby rats are not detected.

Studies have shown that the colon length of 3-month-old white mongrel rats in the control group ranges from 223 mm to 274 mm, on average - 248.5 ± 5.6 mm. [Fig.1]. The diameter of the cecum ranges from 12.5 mm to 20.2 mm, on average - 16.35 ± 0.83 mm, the diameter of the colon is 9.5 mm to 14.65 mm, on average - 10.57 ± 0.56 mm, and the diameter of the rectum varied from 8.2 mm to 12.7 mm, on average - 9.45 ± 0.49 mm. The study showed that the diameter of the large intestine decreases from the proximal to the distal. The total area of the colon ranges from 2343.6 mm² to 4054.8 mm², on average - 3116.8 ± 3.5 mm².



Drawing. 1. Macromorphology of the gastrointestinal tract of a white rat. Macropreparation.

1- stomach, 2 - duodenum, 3 - jejunum, 4 - ileum, 5 - cecum, 6 - colon, 7 - rectum.

In the control group of 3-month-old rats, the thickness of the cecum wall ranges from 769 to 974.1 microns, on average - 871.5 ± 41.0 microns, in the middle part of the colon 813 - 854 microns, on average 833.5 ± 69.2 microns, and the middle part of the rectum is within 802-895 microns, on average - 848.5 ± 63.0 microns.

The number of single lymphoid nodules [SLN] throughout the colon ranges from 18 to 24 on average - 22.5 ± 0.76 [Fig. 3.1.2.]. The number of single lymphoid nodules of the caecum of 3-month-old white rats in the control group ranged from 3 to 8 per 1 cm² of the intestine area, on average 5.6 ± 0.54 their sizes range from 0.3x0.5 mm to 0.6x0.8 mm. On average, $0.4 \times 0.7 \pm 0.032$. The distance between the OLS is from 5 to 9 mm, on average, 7.3 ± 0.43 . In the colon, the amount of SLN per 1 cm² of the area ranges from 13 to 19, on average - 16.0 ± 2.29 , with dimensions from 0.4 x 0.52 mm to 0.46 x 0.68 mm. On average, $0.45 \times 0.60 \pm 0.04$. The distance between the OLS is from 3.2 to 10.5 mm, on average 7.25 ± 2.15 . In the rectum, the number of SLN ranges from 1 to 2, on average - 1.6 ± 0.4 . The sizes of SLN in this department range from 0.3 x 0.5 mm to 0.4 x 0.55 mm. On average, $0.4 \times 0.48 \pm 0.03$. The distance between the SLN is from 2 to 4 mm, on average 2.4 ± 1.79 . SLN are located along the entire wall of the colon and are mostly oval and rounded.



Drawing. 2. Single lymphoid nodules of the colon of a 3-month-old rat of the control group. Coloring by Zelman. Uv. 8 times.

1 – the wall of the colon, 2 - the lymphoid nodule.

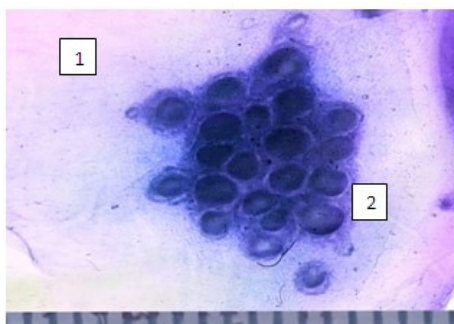
The number of grouped lymphoid nodules [GLN] throughout the colon ranges from 7 to 11, on average - 8.5 ± 1.3 .

In the cecum, GLN is from 1 to 3, on average - 2 ± 0.72 . In this part of the intestine, the dimensions of the GLN ranged from 3.0x4.5 mm to 5x7.8 mm, on average $4.9 \times 5.25 \pm 0.23$ mm. The distance between the GLN was from 12.0 mm to 20.0 mm on average 14.8 ± 5.9 mm.

The number of lymphoid follicles in each plaque in the cecum varied from 6 to 11, on average 7.5 ± 1.09 pcs. The sizes of lymphoid follicles ranged from 0.78 x 0.95 to 0.8 x 1.2 on average $0.86 \pm 0.05 \times 0.9 \pm 0.09$.

The distance between the follicles ranged from 0.8 to 1.2 mm, on average 0.95 ± 0.11 mm. The inter-nodular zone varied from 0.30 to 0.62, on average 0.42 ± 0.08 mm. The caecal lumps had a mostly rounded shape.

The number of colonic GLN is from 3 to 8, on average 5.5 ± 1.72 [Fig.9]. In this part of the intestine, the dimensions of the GLN ranged from 3.0x4.0 mm to 3.4x5.2 mm, on average $3.36 \pm 0.35 \times 4.25 \pm 0.46$ mm. The distance between the GLN was from 10 mm to 52 mm on average 31.86 ± 4.9 mm.



Drawing. 3 Aggregated lymphoid nodules of the oval shape of the colon of a 3-month-old rat of the control group.

Coloring by Zelman. Magnification 5 times.

1 - colon wall, 2 - lymphoid plaque.

The number of lymphoid nodules in each plaque of the colon varied from 6 to 25, on average 14.5 ± 1.73 pcs. The sizes of lymphoid follicles ranged from 0.9x1.16 to 0.95x1.32 on average $1.02 \pm 0.04 \times 1.24 \pm 0.04$. The distance between the follicles ranged from 0.7 to 1.2 mm, on average 0.99 ± 0.15 mm. The inter-nodular zone varied from 0.2 to 0.55, on average 0.37 ± 0.09 mm. The colonic GLN had mainly oval [67.4%], rounded [24.3%] and [8.3%] atypical forms.

In the rectum, GLN is not detected.

The total area formed by grouped lymphoid nodules varied from 114 mm² to 148 mm², on average 131.6 mm². This is 4.82% of the total area of the colon.

In 6-month-old rats of the intact group, the length of the mesenteric part of the colon ranges from 251 to 293 mm, on average 272.5 ± 6.6 mm. The absolute increase in the length of the large intestine of baby rats is - +252.2 mm, the growth rate is - 15.2%.

The study showed that the diameter of the large intestine decreases from the proximal to the distal. The diameter of the cecum ranges from 14.2 to 22.8 mm, on average 18.0 ± 0.13 mm, the diameter of the colon - from 8.9 to 16.3 mm, on average 12.6 ± 0.1 mm, the diameter of the rectum ranges from 8.1 mm to 11.7 mm, on average 10.9 ± 0.13 mm. The growth rate of the diameter of the colon in the blind is 5.3%, in the colon - 13.4%, and in the rectum - 11.7%. The growth rate of the diameter of the mesenteric part of the colon is on average - 8.8%, which is 1.09 times more than in 3-month-old baby rats.

The total area of the colon ranged from 1223.1 mm² to 4400.4 mm², on average - 3427.2 ±4896.2 mm², the growth rate was - 26.0%

In 6-month-old rats of the control group, the wall thickness of the middle part of the blind varies from 568.4 to 960.7 microns, on average -685.8±8.30 microns, in the middle part of the colon -527.1 - 870.4 microns, on average -671.2±5.50 microns, in the middle part of the rectum is within 519.1-821.2 microns, on average - 638.2 ±6.02 microns [fig.3.1.3].The growth rate of the wall thickness of 6-month-old rats of the control group in the cecum is 3.74%, in the middle part – 3.06% and in the final part - 23.85%.

The number of single lymphoid nodules [SLN] of the cecum of 6-month-old rats ranges from 4 to 8 per 1 mm² of the intestinal area, on average 6 ± 1.0, their sizes range from 0.1x0.1 mm to 0.17x0.17 mm. In the colon, the amount of SLN per 1 mm² area ranges from 14 to 22, on average - 18.0 ± 0.6, with dimensions from 0.1x0.1 mm to 0.22x0.22 mm. In the rectum, the number of SLN is from 1 to 3, on average - 2.0 ± 1.0. The dimensions of the SLN in this department range from 0.1x0.1 mm to 0.25x0.25 mm. SLN are located along the entire wall of the colon and are mostly rounded and oval in shape.

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