RECONSTRUCTION OF THE VENOUS BED OF THE RABBIT'S PELVIC LIMBS WHEN CREATING REDUCED CIRCULATION

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Abstract: The article studies the reorganization of the venous bed of the rabbit's pelvic limbs when creating reduced circulation. When creating reduced circulation, there is a significant reorganization of the venous bed of the operated limb, expressed in the formation of both bypass muscle pathways and the development of direct anastomoses.

Key words: rabbit, venous vessel, arterial bed, venous bed, thigh, venography, anatomical preparation.

ПЕРЕСТРОЙКА ВЕНОЗНОГО РУСЛА ТАЗОВЫХ КОНЕЧНОСТЕЙ КРОЛИКА ПРИ СОЗДАНИИ РЕДУЦИРОВАННОГО КРОВООБРАЩЕНИЯ

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Резюме: В статье изучены перестройка венозного русла тазовых конечностей кролика при создании редуцированного кровообращения. При создании редуцированного кровообращения происходит значительная перестройка венозного русла оперированной конечности, выражающаяся в формировании как окольных мышечных путей, так и в развитии прямых анастомозов.

Ключевые слова: кролик, венозный сосуд, артериальное русло, венозное русло, бедро, венаграфия, анатомического препарирования.

Introduction. While numerous domestic and international researchers have studied the dynamics of arterial remodeling during this surgical procedure, little attention has been paid to the study of venous remodeling [1.2]. The literature contains a number of indications of significant differences in the physiological responses of blood vessels in the pulmonary and systemic circulations [5.6]. The strength of the saphenous vein ensures the resistance of the venous wall to increasing intraluminal pressure and its resistance to intramural injury [3,4]. The elastic properties of the venous wall characterize the ability of the saphenous vein to recover from deformation, namely, to maintain its structure even under new hemodynamic conditions [7,8,9]. Therefore, we studied the state of the venous bed during the creation of reduced blood flow.

Purpose of the study. To experimentally study the remodeling of the venous bed of the rabbit pelvic limbs during the creation of reduced blood flow.

Materials and methods. The experiment was conducted on 32 rabbits of both sexes weighing 2–2.5 kg. Fragments of the femoral, sciatic, and deep femoral veins, as well as the femoral artery above the origin of the deep femoral artery, were resected on the right limb. Observation periods ranged from 1 to 90 days. The venous system was examined using intracalcaneal venography and anatomical dissection.

Results of the study. Analysis of the obtained data showed that during the first week, a dense network of small venous vessels is detected in all organs of the operated limb. The anterior femoral vein dilates and the number of its tributaries increases. Small venous vessels connect the distal ends of the resected veins with the external vein surrounding the thigh, the caudal vein and the distal section of the deep femoral vein. The number of small vessels of the skin and fascia increases and their main vessels dilate. After 15-30 days, the number of small veins

decreases slightly, individual veins dilate, connecting the distal sections of the femoral and sciatic veins with the distal section of the deep femoral vein, the sciatic vein with the caudal vein; the femoral vein with the internal iliac; The distal segment of the deep vein connects with the external circumflex femoral vein, the proximal segment of the sciatic vein, and the internal iliac vein. The veins of the skin and fascia remain dilated.

Subsequently (45-60 days), against a background of decreasing number of small veins, individual dilated venous vessels are visible, the direction and topography of which corresponds to those described in the previous period. Anastomoses are revealed between the resected segments of the sciatic and deep femoral veins. Concurrently, dilated cutaneous veins are observed.

After 75-90 days, we observed the development of collaterals and anastomoses, the topography of which can be represented as follows: bypass routes connecting the distal segment of the femoral vein with the deep femoral vein and the internal iliac vein pass through the anterior and adductor muscle groups. Thus, when creating reduced blood flow, significant restructuring of the venous bed of the operated limb occurs, manifested by the formation of both bypass muscular pathways and the development of direct anastomoses. The distal segment of the sciatic vein is connected by collaterals running in the posterior and medial muscle groups with the deep femoral vein, the caudal vein, and the internal iliac vein. Outflow from the distal segment of the deep femoral vein occurs through vessels running in the anterior and posterior muscle groups. The former connects it with the external vein surrounding the thigh, while the latter connects it with the proximal segment of the sciatic vein and the internal iliac vein. Furthermore, an anastomosis is identified connecting the distal and proximal segments of the sciatic vein.

Conclusion: Development of these vessels occurs within 2-3 months after surgery. Compensatory restructuring of the vascular bed with reduced blood circulation apparently ensures normal blood circulation, since we did not observe any pathological phenomena in the operated limb.

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