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Research Article

**MORPHOFUNCTIONAL MICROCIRCULATORY DISORDERS  
OF THE MEMBRANES OF CERTAIN ORGANS IN  
EXPERIMENTAL BURN SHOCK****Dydykin S.S.<sup>1</sup>, Meylanova R.D.<sup>2</sup>, Bogoyavlenskaya T.A.<sup>3</sup>, Shestakov A.M.<sup>4</sup>, Laptina V.I.<sup>5</sup>**

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**Abstract**

*Burn disease is the most severe type of thermal pathology, the occurrence of which tends to increase in recent decades. The development of microcirculatory disorders in burn disease plays a leading role. The pathological process always begins and ends at the micro level. In this regard, the study of the microcirculatory bed with burn shock continues to retain its relevance in the present.*

**Key words:** *Microcirculatory Bundle, Burn Shock, Burn Disease.*

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**INTRODUCTION:**

The problem of burn injury treatment continues to attract a lot of attention from specialists of various profiles and social protection bodies in connection with the increase in injuries in the modern world. [7, 6]. Despite significant advances in the treatment of burn injury, mortality among patients with extensive burns over 40% of the body surface reaches 80–90% [1, 4, 9, 3, 8, 2]. Disorders of microcirculation occupy a leading role in the pathogenesis of burn shock and the study of the mechanisms of their deployment is of great practical importance in the tactics of treatment of this pathology. Based on the foregoing, the purpose of this work was to study violations in the microvasculature that occur during the period of burn shock in the experiment. The study was conducted on 15 white outbred rats of both sexes, weighing 180–200 g. Under ether anesthesia, a third degree burn was applied to animals in an area of 25–30% of the previously depilated body surface according to the method proposed by E.V. Zinoviev in 2000. The object of the study was the fibrous capsule of the kidney (FCK), the dura mater of the brain (DMB) and the mesentery of the small intestine (MSI). To study the microvasculature of these organs, film preparations impregnated with silver nitrate according to the method of V.V. were prepared. Kupriyanov (1965). The study of impregnated drugs showed that extensive thermal injury causes certain changes in all levels of microcirculation. Changes in the course of the vessels, which in normal in all the objects studied had a straight or smooth wave.

During burn shock, zigzag type vascular tortuosity appears (arterioles and venules form up to 4–5 waves in the field of view). The contours of the vessels - deformed and had a "corroded appearance." Throughout the vessels, there are spasm areas alternating with areas of a bulbous expansion. Such changes were more often observed in arterioles, which gave them a "distinct" appearance. Precapillary arterioles and postcapillary venules also acquire increased tortuosity (up to 7–8 waves in the field of view). There is uneven diameter, deformation of the contours, in some places the walls of the precapillaries are blurred.

The exchange department of the hemomicrocirculatory channel undergoes similar changes: the capillaries are deformed, thinned. The network hemocapillaries are reduced, the main ones are preserved. As a result, avascular zones are formed, and in some areas the circulatory capillary network takes the form of "glomeruli" or "loops". In places, the capillaries have a discontinuous course or

blindly run out. Pronounced intravascular changes. In all parts of the microcirculation are determined signs of stasis. In large vessels, intermittent, granular blood flow is clearly visible, due to the presence of large aggregates separated by bright gaps of plasma (plasma skimming). In vessels of smaller diameter, dense aggregates of blood cells are seen of various shapes and sizes. In paravascular connective tissue moderate diffuse infiltration, paravascular hemorrhage is detected. An analysis of our own data allows us to conclude that the severity of these microcirculatory disorders is decreasingly observed first in DMB, then in FCK and last in MSI.

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