**Morpho-functional features and role of adipocytes in wound granulation tissue after skin cryoablation**

Mykhailo Myroshnychenkoa\*, Gennadiy Kovalovb

Department of General and Clinical Pathological Physiology named after D.O. Alpern, Kharkiv National Medical University, Kharkiv, Ukraine

Institute for Problems of Cryobiology and Cryomedicine of the National Academy of Sciences of Ukraine, Kharkiv, Ukraine

The role of adipocytes in wound healing after skin cryoablation is a debatable issue. Morpho-functional features of adipocytes were studied on days 7, 14 and 21 after skin cryoablation in 30 hairless rats. Histological, immunohistochemical, morphometric and statistical methods were used. At all experimental periods, single adipocytes or their clusters were detected in the granulation tissue located in the wound cavity. In the microscope field of view ×100, the average value of the adipocytes number increased from days 7 to 21 (7th day – 29.1±2.3, 14th day – 53.9±2.4, 21st day – 74.4±3.9). Adipocytes were characterized on the 7th day by a round or oval shape, and on the 14th and especially 21st day – a round-oval, oblong or fibroblast-like shape. From days 7 to 21, it was detected an increase the relative number of adipocytes expressed alpha smooth muscle actin (7th day – (8.6±0.8)%, 14th day – (19.3±1.1)%, 21st day – (32.2±1.3)%). The qualitative and quantitative changes of adipocytes occurred against the background of the maturation of granulation tissue and its transformation into connective tissue. The study conducted by the authors indicates that adipocytes can stimulate the wound healing after skin cryoablation by transforming them into myofibroblasts, as evidenced by the change of adipocytes shape and expression of alpha smooth muscle actin. Myofibroblasts are known to produce connective tissue fibers and promote the wound contraction.

**Funding**: Not applicable

**Conflict of Interest:** None to disclose

**Corresponding Author\*:** msmyroshnychenko@ukr.net