In clinical practice, burn lesions of various etiologies are quite common. In most cases burn injuries have a high social importance. The outcome of these injuries are often scars even in case of the small area of damage and average severity level of the process. Scars located on the exposed parts of the body or in the joints cause contractures, various cosmetic skin damages or even non-healing, resistant to standard therapy, trophic ulcers - in the case of radiation burns. All this leads to a prolonged rehabilitation process and significantly reduces quality of life for these patients. Every year in Russia recorded more than 60 thousand cases of burns, with an overall mortality rate reaches 3.6%. The true skin regeneration is impossible without additional intervention in case of loss of dermis (third-degree B and fourth-degree burns), and healing is accomplished by scar formation. Borderline third A-degree burns heal slowly, but then preserved epidermis is under threat of death. The most commonly reasons of skin lesions are - flame burns, contact burns and electric burns. The main reason for the development of local radiation injuries (LRI) are incidents with ionizing radiation and aftereffects of radiotherapy. Up to 30% of all complications of radiotherapy has on LRI. Our attention was attracted by mesenchymal stem cells (MSCs), which have a trophic effect and participate in the process of damaged tissues repair. The aim of this work was development of the complex treatment method for burns of different etiologies with using autologous MSCs, which allows to improve engraftment of autografts, nonhealing ulcers close and accelerate epithelization of burn surfaces. We have developed an experimental model of local radiation injury with β- radiation from the source 90Sr/90Y to explore the use of mesenchymal stem cells in the treatment of LRI. The experiments were performed on Wistar rats weigh- ing 170-180g. In the experiments we studied the effect of trans- plantation of mesenchymal stem cells on bone marrow for run the local radiation injuries in a local irradiation of the right tibia source with 90Sr/90Y 140 Gy radiation dose under different conditions and methods of cell transplantation. We have recorded a short latent period of 6.7 days after the local irradiation of rats at a dose of 140 Gy, and we did not observe any visible changes on the irradiated surface of the skin.

The phenomenon of dry or moist dermatitis begin to develop with a dose of 140 Gy, and we did not observe any visible changes on the irradiated surface of the skin. The results: The method of treatment of local radiation injuries with the use of autologous MSCs and standard surgical techniques made it possible to close the lesion on the 8th day after local irradiation of rats. The entire surface layer of the skin in the affected area turned out to be necrotic by the 12th to 14th days. Radiation ulcers were the basis for the transition to a phase of limited clinical trials. The phenomenon of hemosiderin, hemosiderin-iron lesions develops in all cases of burns, with an overall mortality rate reaches 3.6%. The true skin regeneration is impossible without additional intervention in case of loss of dermis (third-degree B and fourth-degree burns), and healing is accomplished by scar formation. Borderline third A-degree burns heal slowly, but then preserved epidermis is under threat of death. The most commonly reasons of skin lesions are - flame burns, contact burns and electric burns. The main reason for the development of local radiation injuries (LRI) are incidents with ionizing radiation and aftereffects of radiotherapy. Up to 30% of all complications of radiotherapy has on LRI. Our attention was attracted by mesenchymal stem cells (MSCs), which have a trophic effect and participate in the process of damaged tissues repair. The aim of this work was development of the complex treatment method for burns of different etiologies with using autologous MSCs, which allows to improve engraftment of autografts, nonhealing ulcers close and accelerate epithelization of burn surfaces. We have developed an experimental model of local radiation injury with β- radiation from the source 90Sr/90Y to explore the use of mesenchymal stem cells in the treatment of LRI. The experiments were performed on Wistar rats weighing 170-180g. In the experiments we studied the effect of transplantation of mesenchymal stem cells on bone marrow for run the local radiation injuries in a local irradiation of the right tibia source with 90Sr/90Y 140 Gy radiation dose under different conditions and methods of cell transplantation. We have recorded a short latent period of 6.7 days after the local irradiation of rats at a dose of 140 Gy, and we did not observe any visible changes on the irradiated surface of the skin.

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Clinical case number 1

61-year-old male patient. Diagnosis: acute local effects of back LRI of severe degree: radiation fibrosis, late radiation ulcers, due to aftereffects of coronary stenting procedure.

Clinical case number 2

74-years-old female patient. Diagnosis: acute effects of radiation damage to local tissue the lower third of the right leg, severe: radiation fibrosis, late radiation ulcers.

Clinical case number 3

64-year-old male patient. Diagnosis: keratinizing squamous skin cancer T1NOMO. Condition after excision and radiotherapy. Late radiation ulcer middle third of the outer surface of the right tibia.

Clinical case number 4

28-years-old female patient. Diagnosis: thermal burns II, IIIA, IIIB degree of upper and lower limbs the total area of 35%, 8% of them - deep burns.

Clinical case number 5

38-year-old male patient. Diagnosis: thermal burns II, IIIA, IIIB Art., Back, upper and lower extremities, head, a total area of 45%, 20% them deep burns.

Clinical case number 6

27-years-old female patient. Diagnosis: burn wounds of the right and left upper limb III A - B degrees of total area of 15% on the rear surface of the trunk in both areas of burn wounds of bladed III A - B degrees with a total area of 10-15%; burns on his face III A of degrees total area of up to 3%.