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Joint Event

2nd International Conference on

Tissue Science and Molecular Biology, Stem Cells & Separation Techniques

June 06-07, 2019 | London, UK

Biomed Res, Volume 30
ISSN: 0976-1683

Total tissue regeneration in necrosed diabetic foot with new biomedical strategy

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The present exposes a medic protocol to treat endothelial dysfunction and clinical and subclinical inflammation, whose therapeutic approach is based on the principle of extended mitochondrial hormesis, as previous physiological conditioning *ex vivo*/*in vivo*, to promote the angiogenic power of autologous stem cell transplantation mesenchymal (MSCs) from bone marrow and whithout culture. Mitohormesis behaves as a subtle extrinsic disturbance that triggers a series of nuclear signaling events with biochemical and metabolic changes that induce a cytoprotective state, which can be obtained with oxygen-Ozone (O^2/O^3) applications at low doses, through different routes of administration for 15 continuous days before and 15 continuous days after autologous transplant MSCs, producing a cytoprotective, anti-oxidant and anti-inflammatory microenvironment that synergizes the angiogenic power and immunoregulatory of MSCs. Diabetes Mellitus (DM) is an inflammatory pathology, where there is a chronic hyperglycemic state alters the molecular/cellular structures of vessels and nerves, generating hyperplasia, endothelial dysfunction and inflammation with cellular hypoxia. It has as a complication diabetic foot (DF) in 10-15% and that it occurs with ulceration, infection and destruction of deep tissues of the lower extremity. I present a clinical case of male of 47 years, with Dx of DM of 18 years and with DF of 3 years of evolution that degenerated in a state of necrosis, DF grade III/IV, indicating partial amputation that rejected to be submitted to combined protocol O^2/O^3-MSCs, giving results of total tissue regeneration, 30 days after the first autologous MSC with previous *ex vivo*/*in vivo* physiological conditioning, which was evidenced clinically by signs of trophism and functional recovery. After 12 months, the cycle was repeated and there was improvement in the protective sensibility of both lower limbs (Semmens-Weinstein monofilament) and improvement of erectile dysfunction (IIEF-5), as an expression of microvascular regeneration and systemic and autonomic nervous connections. Prospective studies are carried out evaluating clinical correlation of the angiogenic power with the use of the combined O^2/O^3-MSCs protocol and if the periods between cycles could be shortened.

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