THE CLINICAL APPLICATION OF AUTOLOGOUS BONE MARROW MONONUCLEAR CELL THERAPY FOR ISCHEMIC CARDIOVASCULAR DISEASE.

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Direct stem cells application has the potential to stimulate tissue regeneration in a paracrine and/or autocrine manner; thus, they have been extensively studied as candidate cell sources for cardiovascular regeneration. Several preclinical and clinical studies addressing the therapeutic potential of autologous bone marrow mononuclear cell in limb ischemia and myocardial infarction. However, clinical studies using stem cell therapy approaches have produced mixed results.

In our clinical trials, we are analyse of factors associated with the therapeutic benefit of cell therapy in “no-option“ patients with critical limb ischemia and validating intramyocardial bone marrow stem cell therapy in combination with coronary artery bypass grafting. We examined which properties of bone marrow mononuclear stromal cells are relevant for responding and non-responding patients. We suggest that the quality cells shown in the expression of cell surface markers and specific genes expression plays an important role in therapeutic outcome. We believe that paracrine mechanisms are main drivers in the induction of reparatory processes in ischaemic patients and differences in stem cells properties are relevant in relation to their involvement in the effectiveness of reparatory process.

In this way our trial, besides providing evidence regarding the impact of surgical stem cell therapy on patients’ functional and clinical outcome, helps to further standardize the GMP produced, autologous cell product and to answer questions raised by the basic research.