EXPRESSION OF EXTRACELLULAR MARKERS AS CRITERIA FOR TREATMENT OF PERIPHERAL ARTERIAL OCCLUSIVE DISEASE

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EXPRESSION OF EXTRACELLULAR MARKERS AS CRITERIA FOR TREATMENT OF PERIPHERAL ARTERIAL OCCLUSIVE DISEASE (Abstract): During the last decade, mesenchymal stromal cells (MSC) have been used in medical therapeutics, especially for reperfusion in peripheral arterial disease, ischemic cardiomiopathy and myocardial infarction. Studies demonstrated that membrane proteins are important in MSC endothelial differentiation. Aim: To determine the expression of extracellular markers of MSC, in order to ascertain if some expressed proteins (MSC specific cluster of differentiation proteins, essential for MSC characterization and proteins which have a role in adhesion and migration) have capability to induce angiogenesis

Material and methods: To detect the expression of these proteins and confirm the presence of MSC and other essential proteins with important role in adhesion and migration, cells from five donors were fully assessed by flow cytometry (surface expression), differentiation assays (MSC differentiation into osteocytes, adipocytes, and chondrocytes), and qRT-PCR (gene relative expression). Results: Our results were in agreement with other reports, with small exceptions, related especially to donor dependent conditions. The surface expression of beta 1 subunits correlated with a high gene expression on RNA level. Conclusions: MSC had all specific characteristics. Surface marker expression was in agreement with pervious findings. These cells can be used for endothelial progenitor cells further differentiation. Beta 1 expression suggests a high potential of the MSC to form capillary lumen, thus for further artery formation and efficient angiogenesis. Key words: PERIPHERAL ARTERIAL DISEASE, ADULT STEM CELL, MEMBRANE PROTEINS.

In the last decade mesenchymal stromal cells (MSC) were used as medical therapeutics. MSC can be isolated from bone marrow, peripheral blood, fat, skin, vasculature, and muscle, where they most likely are responsible for normal tissue regeneration, as well as for a response to injury (1). MSC are negative for primitive hematopoietic cell markers. Individual clones of cell lines derived from MSC have different potentials for differentiation, indicating different stages of determination and levels of plasticity. MSCs are a varied population of plastic-adherent cells that show a fibroblast-like morphology, they are forming colonies when grown at clonal densities (referred to as colony forming units fibroblast or CFU-F) (2), and can differentiate into bone, cartilage, and fat cells (3). Human MSCs have been defined by the positive expression of the cell surface antigens CD73, CD90, CD105 and a lack of expression of hemato-