The Potential Value of Adipose Tissue-Derived((rAT)) Mesenchymal Stem Cells (MSCs)

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MSCs were verified after MSC transplantation (2,3,4); on the other hand, MSCs secrete a variety of cytokines and growth factors through paracrine or autocrine mechanisms, including vascular endothelial growth factor (VEGF), basic fibroblast growth factor (BFGF), hepatocyte growth factor (HGF), hypoxia-inducible factor-1α (HIF-1α) etc., that induce microvascular generation, stimulate peripheral mature endothelial cells proliferation and migration, and improve the micro-environment of ischemic tissue to participate in angiogenesis (5), all of which provide benefits to the injured tissue. The third issue is the safety of rAT-MSCs. The safety issue would be questioned by both doctors and patients in the future when clinical trials are conducted. If the rAT-MSCs for SCI therapy are used unsafely or improperly, they might result in some side effects. Irregular MSC therapy is associated with potential danger, including tumor growth or cancer. Therefore, it is necessary to evaluate the systematic safety of rAT-MSCs before treatment, for example: how many rAT-MSCs, which is the optimal path, and the specific mechanism of rAT-MSCs as cell replacement or “by-stander effect”. rAT-MSCs would be potential “golden seed cells” for many diseases if the questions above can be solved, and would benefit the patients who need treatment with rAT-MSCs in the future.

ACKNOWLEDGEMENTS

This work was supported by the National Natural Science Foundation of China (81401295), the Tianjin Research Program of Application Foundation and Advanced Technology...
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(15JCQNJC45200 and 16JCYBJC27600), the PUMC Youth Fund and the Fundamental Research Funds for the Central Universities (3332015126).

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