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Stem cell therapy of osteoarthritis using adipose tissue-derived stromal vascular fraction cells

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Therapy of osteoarthritis relies on non-steroid analgetics, chondroprotectives and in late stages total joint replacement is considered a standard of care. We performed a pilot study using novel stem cell therapy approach that was performed during one surgical procedure. It relies on abdominal lipoaspiration and processing of adipose tissue to stromal vascular fraction (SVF) cells that typically contain relatively large amounts of mesenchymal stromal and stem cells. SVF cells are injected immediately to the target joint. Since 2011, total of 136 patients have been recruited and followed for up to 12 months to demonstrate the therapeutical potential of freshly isolated SVF cells. At the same time, one to three joints (knees and hips) were injected with SVF cells per patient. A total number of 193 joints were treated. Semiquantitative clinical scale evaluation and non-steroid analgetics dependence was used as measurement of the clinical effect, all patients were diagnosed with stage II-IV osteoarthritis using X-ray and ultrasound, in some cases MRI was also performed to monitor the changes before and after stem cell therapy. After 3 months from SVF therapy, at least 50% clinical improvement was recognized in 94%, at least 75% clinical improvement in 85%, and complete remission in 72% of patients, respectively. Within 1-2 weeks from SVF therapy 87% of patients were off the non-steroid analgetics and remain such for at least 6 months. No serious side effects, infection or cancer was associated with SVF cell therapy. In conclusion, here we report a novel and promising therapeutical approach that is safe, cost effective, and relying only on patient´s own cells.

Biography

Jaroslav Michalek has completed his PhD in Pediatric Oncology at the age of 28 years at the Masaryk University in Brno, Czech Republic. Then he spend 3 years of postdoctoral studies at the University of Texas Southwestern Medical Center at Dallas, TX, U.S.A. Recently he is a President of the International Consortium for Cell Therapy and Immunotherapy (www.iccti.eu) at the Masaryk University in Brno, Czech Republic. He is also the author of more than 130 scientific papers in reputed journals.

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