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Combination of Intrathecal Autologous Bone Marrow Concentrate, Robotic Movement Therapy, Neuromodulation and Electric Muscle Stimulations Causes Partial Motor Recovery and Complete Sensible Recovery in Patient with Chronic Spinal Cord Injury

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Patient's injury happened Dec. 2013, in a wrestler tournament, an awkward landing while grappling with an opponent and a dislocation of the C-6 vertebra at the base of the neck. Paralysis from the neck down.

He received one-year intensive rehabilitation therapy in the best US-Centres, without leg function improvement. It was no brain-controlled leg muscle activity and it was no sensitivity below C-6.

After one year he received in our Neuro Rehab Clinic 3 times combination of intrathecal autologous BMC (bone marrow concentrates) + robotic movement therapy + neuromodulation + electric muscle stimulation (EMS), first 14 months after injury, second 19 months and third 30 months after injury. It was evaluated before and after therapy through our Neuro Rehab and Shepherd Center in Atlanta which provides the largest and most comprehensive rehabilitation program in the United States for people with spinal cord injury.

Results show complete recovery of sensibility. The blood pressure was 80 /60 before therapy and 120 /80 after therapy. Before therapy his hand scale grip was not hard enough to register 1 lb. After therapy his hand scale grip registered at 14 lbs. for the left hand and 8 lbs. for the right. Lower extremity specific manual muscle testing (MMT) show before therapy only 1 for three muscles right (adductor hip, internal hamstring and quadriceps) and 6 muscles left (gluteus maximus, quadriceps, adductor hip, gastrocnemius, soleus and posterior tibialis). The rest was 0 (zero). After therapy he has most major muscle groups in his legs and core registering some kind of signal from the brain. He still has a couple at zero but not many. 10 of his zeros before are now replaced by 1, 2 or 3 (on a scale of 1-5 with 5 being full function). The patient is strong enough to walk with leg braces and movable walker.

Results and Conclusions:

1. El-Kheir W., Gabr H., Awad M., Ghannam O., Barakat Y., Farghali H., Maadawi Z., Ewes I., Sabaawy, H. (2014) Autologous Bone Marrow-Derived Cell Therapy Combined With Physical Therapy Induces Functional Improvement in Chronic Spinal Cord Injury Patients, *Cell Transplantation* 23: 729–745
2. Han N., Yabroudi M., Stearns-Reider K., Helkowski W., Sicari B., Rubin P., Badylak S., Boninger M., Ambrosio, F. (2016) Electrodiagnostic Evaluation of Individuals Implanted With Extracellular Matrix for the Treatment of Volumetric Muscle Injury. Case Series, *Physical Therapy* 96: 540–549.
3. Nas, K. (2015) Rehabilitation of spinal cord injuries. *World J Orthop* 6(1): 8-16
4. Ross H., Ambrosio F., Trumbower R., Reier P., Behrman A., Wolf S. (2016) Neural Stem Cell Therapy and Rehabilitation in the Central Nervous System: Emerging Partnerships. *Physical Therapy* 96: 734–742.
5. Ruff, C., Wilcox, J., and Fehlings, M. (2012) Cell-based transplantation strategies to promote plasticity following spinal cord injury. *Exp Neurol* 235: 78–90

Biography

Dr. Jakob Bodziony has many years of expertise in traumatological surgery, neurorehabilitation and cell therapies. He started his works in field of cell therapies with pancreatic islets cells for diabetes therapy. Some years ago, after SCI case in the family, he successfully used bone marrow cells for therapy of SCI.