ACTA SCIENTIFIC MEDICAL SCIENCES

Volume 3 Issue 2 February 2019

Perspective

# The Use of Bioquantine® and Allogeneic Mesenchymal Stem Cells Combined with a Spinal Cord Stimulation System in a No Option Patient with ASIA-A Scale

**Joel Isaias Osorio Garcia*, Sergei Paylian and Ale Ismael Gonzalez Cazares**

*RegenerAge SAPI de CV - Bioquark, Inc, Mexico*

***Corresponding Author:** Joel Isaias Osorio Garcia, CEO and Founder of Biotechnology and Regenerative Medicine at RegenerAge™, Mexico.

**Received:** December 17, 2018; **Published:** January 08, 2019

In 1973 the American Spinal Injury Association made the International Standards for Neurological Classification of Spinal Cord Injury (ISNCSCI). In this clinical review our patient was classified after the vertebral fixation surgery with a ASIA-A scale injury after suffering a fracture and luxation at T-12-L1, having total spinal cord section (Figure A). Based on the research made by Sergei Paylian PhD on animal models [1] and the safety use of allogeneic MSCs demonstrated on multiple animal models applications [2,3], we decided to apply an experimental translational medical protocol based the research and the previous outcomes obtained by Hamid and MacEwan [4,5] and decided to customize it exclusively to our patient based on the clinical evidence and personalizing the therapy on evidence. The medical team designed an ambulatory method utilizing a C-arm to apply the allogeneic MSCs in situ and using a intrathecal (subdural) catheter using a slow pump release system for the rest of the biological material with an optimum tolerance and minor side effects (mild fever, myalgias and headache) on the first 48 hrs hour after application. The experimental use of mRNA Bioquantine® was well tolerated with its purified form (intra and extra-oocyte liquid phases of electroporated oocytes [6]) showing to be well tolerated by the patient without any anaphylactic reaction. The current clinical report is meant to demonstrate the beneficial changes with the use of Bioquantine® and its administration in a patient with a severe SCI offering a possible optional therapy and potential neuroregeneration in this clinical condition. Mesenchymal stem cells (MSCs) are ideal for cell-based therapy in various inflammatory diseases because of their immunosuppressive and tissue repair properties. Moreover, their immunosuppressive properties and low immunogenicity contribute to a reduced or weakened immune response elicited by the implantation of allogeneic MSCs compared with other cell types, allogeneic MSCs are a promising option because of their low immunogenicity and immunosuppressive and tissue repair capabilities. The positive findings throughout the evolution of our protocol for spinal cord injury with the obtained results at this stage is a promising scientific based and evidence based medicine protocol that can be offered in the near future as an option for severe SCI patients. The functionality of the RestoreSensor® SureScan® by providing the electric stimulation fortifies the medical outcome and has given the patient the confidence to perform his physical rehabilitation with more energy for a longer time by the increase or decrease of the intensity of it according to the type of exercise regulated by the control-battery he handles. At this date, after 8 intrathecal applications of allogeneic MSCs and Bioquantine® in situ combined together we have got the following outcomes: an improvement in sensitivity, strength in striated muscle and smooth muscle connection by increased muscle mass (Figure B) and sphincter control, at 23 months after the first regenerative therapy and 12 months after the placement of RestoreSensor® the patient is showing an evident improvement on his therapy of physical rehabilitation (legs movement and control of them) having the following movements reported by the physical therapist: a) hip: adduction and external rotation, extension, abduction, internal rotation; b) knee: flexion; c) toe: MP and IP extension, also reporting an easier and functional crawling forward and backwards, and since 3 months ago the patient is capable to stand on his knees for 2 or more minutes without any support (Figure C) and taking small steps on his knees forward and backwards for the first time in his process, showing a progressively important functionality on both limbs, voluntary movement at both feet and an increase in sensory perception [7-12].


**Figure A**: Patient's initial MRI before the vertebral fixation procedure on Nov. 2nd 2016.

**Figure B**: Patient's muscle difference between limbs.

**Figure C**: Patient at physical rehabilitation workout.

## Bibliography

1. Sergei Paylian., *et al*. "Potential Therapeutic Applications of Extract Made from Electroporated Xenopus Laevis frog Oocytes in Murine Models of Melanoma, Traumatic Brain Injury and Experimental Skin Wrinkling". *BAOJ Pharmaceutical Sciences* 2.2 (2016): 24.

2. Vasileios Karantalis., *et al*. "Allogeneic Cell Therapy: A New Paradigm in Therapeutics". *Circulation Research* 116.1 (2015): 12-15.

3. Nanette Joyce., *et al*. "Mesenchymal stem cells for the treatment of neurodegenerative disease". *Regenerative Medicine* 5.6 (2010): 933-946.

4. Samar Hamid and Ray Hayek. "Role of electrical stimulation for rehabilitation and regeneration after spinal cord injury: an overview". *European Spine Journal* 17.9 (2008): 1256-1269.

5. Matthew R MacEwan., *et al*. "Regenerated Sciatic Nerve Axons Stimulated through a Chronically Implanted Macro-Sieve Electrode". *Frontiers in Neuroscience* 10 (2016): 557.

6. Paylian S. "Co-electroporation with Xenopus laevis oocytes reprograms normal and cancerous human cells to resemble induced human pluripotent stem cells". *BAOJ Cancer Research and Therapy* 1 (2015): 1-13.

7. Kim JS., *et al*. "Reprogrammed pluripotent stem cells from somatic cells". *International Journal of Stem Cells* 4.1 (2011): 1-8.

8. Kim WH., *et al*. "Some leopards can change their spots: potential repositioning of stem cell reprogramming compounds as anti-cancer agents". *Cell Biology and Toxicology* 32.3 (2016): 157-168.

9. Using neurostimulation for chronic pain © Medtronic, Inc (2016).

10. RestoreSensor SureScan MRI 97714 Rechargeable neurostimulator © Medtronic, Inc (2016).

11. Young W. "Spinal cord regeneration". *Cell Transplant* 23.4-5 (2014): 573-611.

12. Jun Zhang., *et al*. "The challenges and promises of allogeneic mesenchymal stem cells for use as a cell-based therapy". *Stem Cell Research and Therapy* 6 (2015): 234.

**Volume 3 Issue 2 February 2019**