



**Title:** Long term evolution after Cellular therapy in Spinal Cord Injury patients

**Author:** Teresita Moviglia Brandolino  
CIITT, Universidad Maimonides, Buenos Aires, Argentina

**Abstract:**  
Background

Restoring the connection between the proximal and caudal ends of a spinal cord injury has been one of the main goals of cell therapy since the late twentieth century. In 2002 we started working in this area and over the years we develop a therapeutic strategy that combines cell therapy in the nervous system and skeletal muscle with an intensive and multidisciplinary rehabilitation plan. We present long term follow up of 12 patients that received at least 2 years of complete treatment.

Material and Methods

**Patients:** 7 paraplegic, 5 quadriplegics with chronic (more than 18 months since the injury) and complete (ASIA A) spinal cord injury.

**Cell therapy:** autologous mesenchymal stem cells obtained from fat tissue and effector T lymphocytes previously activated with peptides derived from neural tissue (CEREBROLISIN) and skeletal muscle.

The cells were delivered by selective arteriography in the spinal cord and by intramuscular puncture. Patients received 4 spinal cord implants and 8 muscular implants over 2 years.

**Rehabilitation program:** all patients received an intensive (25 hours per week) multidisciplinary and dynamic program which aims to train and recover functions lost due to the spinal cord injury.

Results:

Both the cell treatment and the rehabilitation program were very well tolerated by all patients. No major side effects were observed.

Electrical activity associated to voluntary movement was observed in muscles that were silent pretreatment. Signs of muscular trophism recovery were observed in muscles that showed severe atrophy before treatment.

Patients showed significant functional improvements such as recover of isolated muscular movement, independent standing and sitting and independent gate.

Physiological and clinical changes appeared, consolidated, and increased after the first six months of treatment.

The patients were evaluated periodically the following two years after having finished the treatment and during this period they maintained what they had achieved and, in some cases, the continued to improve.

Conclusion:

Combined treatment is well tolerated. To achieve significant improvement requires time, several cell implants in both the spinal cord and skeletal muscles and intensive physical stimulation. Once the patient restores an independent function it will stay permanent.