

# **CONTROL TISSUE REGENERATION AND PELVIC PAIN AND NEUROINFLAMMATION WITH THE USE OF PEMF AND MODULATION OF NON-NEURONAL CELLS.**

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## **Abstract**

The AA in the title of this paper want to illustrate the plan of care and welfare that began a few months ago with a scientific collaboration between universities, research centers and CSRMR (Study Center for Research in Regenerative Medicine) of University G. Marconi Rome, created to coordinate the diagnosis and management of skin lesions, mucosal and cartilaginous.

The use of magnetic fields has roots in the scientific literature and at the level of basic research and clinically and there are many publications that underline a role on pain and the neuro inflammation that often supports it.

## **Objectives**

The CMR project was born from the regenerative boost that our group wants to give to a number of diseases characterized by neuroinflammation and nerve lesion, muscle and tissue that can transform the symptom (neuropathic pelvic pain) in disease.

It has been installed since 3 months in the HMD rTPM pelvis with which it has been studying the response of patients with incontinence problems of various types, the post-surgical problems, sexual dysfunction and treatment of pelvic pain.

## **Materials and method**

### ***Study on urinary incontinence in patients submitted to prostatectomy***

Observational Study performed in Humanitas Mater Domini Castellanza (Varese), accredited JC, with a selection of 20 patients subjected to therapy with rTPM Biophysics and 20 patients subjected to traditional care for the treatment of urinary incontinence after surgery.

### ***Use of PEMF for the regeneration of skin tissue***

50 patients enrolled with various types of Skin lesion (70% Vascular lesions low legs) in ambulatory treatment two times a week for the first 2 weeks and subsequently with treatment at home, cared for by ADI partners of the CMR, twice a day with the Home Care device.

## **Results**

### ***Study on urinary incontinence in patients submitted to prostatectomy***

Evaluation of the results within three months. In the first 10 patients (7 post prostatectomy, 3 cystourethrocele) enrolled with 18 sessions cycle twice a week has ended has been recorded the improvement of incontinence in 75% of cases with patient compliance and improving the quality of life equal to 100%.

### ***Use of PEMF for the regeneration of skin tissue***

Obtained results after 3 months with the AIMED method.

Reduction of 50 % lesion in 60% of cases.

Complete healing in 35% of cases.

## **Discussion**

The use of rTPM allows not only to train the muscles to adequate response to inflammatory stimulus that causes the muscle accommodation deficits with altered contractility or spastic contracture painful pelvic district but to stimulate a series of regenerative phenomena due to the action of magnetic waves at high intensity on the cell membrane and the cytoplasm and especially on the role of certain cell classes, including the mast cell, which seems to have a fundamental role

in the determination of the pelvic region pain.

The magnetic fields used at the CMR for the treatment of Cutaneous lesions, which are applied in circularity with the other operating methods of Aimered model (see diagram), confirmed the literature data, with a series of 50 patients treated.

### **Conclusion**

The use of magnetic fields opens new scenarios for Regenerative Medicine

Medicine quantum refers to the concept of electromagnetic fields with their energy change the very essence of nature. The concept that emerges and is that the cell may meet a process of self healing (self healing) if it receives and gets the right information and this is the new that goes on .....

Aragona S.E.

## INTRODUCTION

The Center for Regenerative Medicine of Humanitas Mater Domini (Castellanza Varese) was created to coordinate the diagnosis and management of skin lesions, mucosal and cartilaginous. The AA in the title of this paper want to illustrate the plan of care and welfare that began a few months ago with a scientific collaboration between universities, research centers and CSRMR (Study Center for Research in Regenerative Medicine) of University G . Marconi Rome.

Technological Innovation and Clinical experiences come together to deal The AA in the title of this paper want to illustrate the plan of care and welfare that began a few months ago with a scientific collaboration between universities, research centers and CSRMR (Study Center for Research in Regenerative Medicine) of University G . Marconi Rome.

The use of magnetic fields has roots in the scientific literature and at the level of basic research and clinically and there are many publications that underline a role on pain and the neuro inflammation that often supports it.

The Project of CRM "*rTPM and pain management in Regenerative Medicine*" aims painful diseases associated with chronic skin lesions and pelvic floor disorders and in particular the scope urogenital diseases that compromise the quality of life and health of many patients.

### *Physiological Requirements for use in chronic wounds*

"In molecular pond of biological events, in full operation, the Extracellular Matrix is agitated and turbulent with the running about of molecules, vibrate and collide many protagonists."

**J.Al-Khalili – J-McFadden**

Medicine quantum refers to the concept of electromagnetic fields with their energy change the very essence of nature. The concept that emerges and is that the cell may meet a process of self healing (self healing) if it receives and gets the right information and this is the new that goes on ..... " Aragona S.E.

"Cells communicate with each other using the information carried by molecules, which act in the short radius, or carried by electromagnetic waves and sounds that are transmitted at a distance in the long ray and that direct the molecules exactly on the target where they must go" Pier Maria Biava.

The Tissue Repair in this context and in the therapeutic model developed and adopted by the AA, called Aimered, ( Tab 1) uses pulsed magnetic fields for the ambulatory and home treatment of Chronic Wound Care and for the treatment of pelvic floor disorders.

The ultralow Magnetic Fields (cPEMF) represent a form of non ionizing electromagnetic radiation at low energy capable of inducing biological effects, if kept within certain parameters. Among these effects are underlined:

Anti-inflammatory effect , through the modulation of the profile of cytokine induction to the transition of the repair process by a chronic phase pro-inflammatory to anti-inflammatory state (IL1, NGF, ROS, IL8).

Angiogenic effect, in order to increase the proliferation of endothelial cells, the formation of intracellular microtubules that improve the activity of cell membrane and the production of fibroblast growth factor (FGF) -2, with improvement of microcirculation. Epithelialization stimulating effect, with increased collagen synthesis.

Low frequency of Magnetic fields have shown that a better expression and regulation of NOS (Nitric Oxide Synthase) and COX -2 that improve the WH process with an increase of NO and a reduction of ROS and PGE-2 (study conducted on cultured cells HaCatT. human keratinocytes),

mediated by the reduction of IL1, demonstrated in the exudate of chronic wounds.  
**Effects of Pulsed Electromagnetic Fields on Interleukin-1 and Postoperative Pain: A Double-Blind, Placebo-Controlled, Pilot Study in Breast Reduction Patients –**  
Plast. Reconstr. Surg. 125: 1620, 2010.

**The Effect of mMagnetic Fields on Healing Wounds: Experimental Study and Review of the literature - S.L. Henry and AA- Eplasty, 2008 8 e40.**

The magnetic fields used at the CMR for the treatment of Cutaneous lesions, which are applied in circularity with the other operating methods of Aimed model (see diagram), confirmed the literature data, with a series of 50 patients treated. Low dose of Magnetic Fields (with the methodology Home Care) applied as follow:

- Increase patient comfort and reduce pain
- Promote the repair of lesions
- Reduce the dosage and use of painkillers
- Reduce morbidity
- Facilitate post-surgical healing
- Reduce the hospital stay and ambulatory entrances, facilitating the patient management at home with a reduction in health care costs, significant effect for patients suffering from LCC.

### **Physiological Requirements for use in pelvic pain and involving diseases**

The CMR has a section dedicated to pelvic pain, pelvic pain modulation and the management of urinary incontinence of many etiologies. The biophysical treatments are made with a DM magnetic pulses that generates high intensity level perineal (rTPM Pelvis).

The magnetic pulses of Cellvital Magnetic Therapy cause rhythmic contraction of the pelvic muscles and the surrounding areas and reactivate the muscles with great effect. The obtained benefits with this methodology are difficult to achieve with physical exercises. In addition to the pelvic floor, magnetic waves, can also stimulate the muscles of the hips, buttocks and thighs.

The physical effect is not the only effect of the stimulation that also affects the cellular respiration activity and start the inflammatory response and antidegenerative.

This solution is indicated for the treatment of:

Pain in the pelvic area nonspecific and specific

Osteoarthritis pain of thigh

Backache

Prevention of pelvic floor disorders

- Before pregnancy
- After childbirth
- First of sixty age

Training and post-natal rehabilitation

Preparation for interventions on the bladder, uterus and prostate

Incontinence After Prostatectomy

Urinary and fecal incontinence

Erectile Dysfunction

Disorders of potency and libido

Circulatory disorders lower limbs and skin lesions

Hypotonia muscular legs

Cellulitis and water retention

A particular indication of rTPM Pelvis concerns pelvic pain and especially of chronic inflammatory diseases of urological and genitals type in both men and women.

Pelvic pain can be caused :

Urinary tract disorders (interstitial cystitis, s. of ureteral pain, chronic nonbacterial prostatitis)

Gynecological disorders (adnexitis or vaginitis resistant to usual therapies, s. Associated with endometriosis, s. to vaginal pain associated with vulvodynia by excessive stimulation of mm of the region in unmanaged physical activities, vulvar vestibulitis)

Intestinal system disorders (irritable bowel s. of anorectal pain, fissures and hemorrhoids)

Peripheral nervous disorders (s. pudendal nerve)

Muscle disorders (s. of perineal pain, s of the pav muscle pain. Pelvic, bladder).

The use of rTPM allows not only to train the muscles to adequate response to inflammatory stimulus that causes the muscle accommodation deficits with altered contractility or spastic contracture painful pelvic district but to stimulate a series of regenerative phenomena due to the action of magnetic waves at high intensity on the cell membrane and the cytoplasm and especially on the role of certain cell classes, including the mast cell, which seems to have a fundamental role in the determination of the pelvic region pain. This cell assumes a prominent role in the inflammatory and pain response in various diseases in the pelvic area above all in the mucosal areas. Interesting is the role of the mast cell in its location between nerve fibers and perivascular (microglia). A spinal level microglia acts as an amplifier of algogeno message and with a progressive characterization of pelvic pain in chronic neuropathic pain. For the purposes of Regenerative degranulation of Mast Cell is the phenomenon that affects AA. In fact with this phenomenon the released substances (mediators) activate the inflammatory and pain response (see the main role of NGF in the phenomena neuroimmunitari tissue).

### **Project CMR "RTMP and pain management in Regenerative Medicine"**

The CMR project was born from the regenerative boost that our group wants to give to a number of diseases characterized by neuroinflammation and nerve lesion, muscle and tissue that can transform the symptom (neuropathic pelvic pain) in disease. In a work in 2016 entitled "**Pulsed Electro Magnetic Fields for post-surgical pain management in women undergoing caesarian section, a double-blind randomized placebo-controlled trial**" (Clin J Pain, March 2016) AA: Koodishideh M. and co conclude that patients treated with PEMF in the seven days after cesarean had a significant decrease in post surgical pain, reduce the use of analgesics and better healing of the surgical wound, with patient satisfaction.

The biophysical therapies help the doctor to manage the localized or chronic pain of the patient and the use of magnetic fields open a great field of interest on the treatment of diseases characterized by pain, but also on the care of well-defined diseases, difficult to solve. We started using PEMF on chronic lesions of various origins skin with an integrated use of 50 patients, with innovative results of healing time and type of healing, using the device Cellvital Homecare.

It has been installed since 3 months in the HMD rTPM pelvis with which it has been studying the response of patients with incontinence problems of various types, the post-surgical problems, sexual dysfunction and treatment of pelvic pain.

This effect tends to control the neuroinflammatory chronic and neuropathic pain. With the adoption of the Biophysical therapies in the operating model AIMED the attention is moved from the neuron (pharmacological approach target for pain control) to the cell membrane of cells protagonists of the modulation of the inflammation and activated the expression of the specific receptor complexes and respective ligands.

In the context of APMNA (Association for Psychoneuroimmunology Medicine of North America) in the occasion of the 27th International Meeting, the activities of the CRM, in regenerative key use

of ultra-low magnetic fields (PEMF) and high intensity (rTPM) was presented at the international level and scientific message is that the biophysical therapy sends to the patient a series of information addressed to the SNC with an adaptive response that achieves and on the physical component (muscle reactivity) and on ultrastructural ultramolecular level.

Several months studies begun starting from the review of the scientific literature:

***Study on urinary incontinence in patients submitted to prostatectomy***

Observational Study performed in Humanitas Mater Domini Castellanza (Varese), accredited JC, with a selection of 20 patients subjected to therapy with rTPM Biophysics and 20 patients subjected to traditional care for the treatment of urinary incontinence after surgery - Period of development three months . Evaluation of the results within three months. In the first 10 patients (7 post prostatectomy, 3 cystourethrocele) enrolled with 18 sessions cycle twice a week has ended has been recorded the improvement of incontinence in 75% of cases with patient compliance and improving the quality of life equal to 100%.

***Use of PEMF for the regeneration of skin tissue***

Observational study on the rapid healing of chronic skin lesions observed at the Center for Regenerative Medicine of Humanitas Mater Domini Castellanza (Varese), with the help of PEMF in Homecare, in combination with low dose therapy for the control of chronic inflammation.

**Results:** 50 patients enrolled with various types of Skin lesion (70% Vascular lesions low legs) in ambulatory treatment two times a week for the first 2 weeks and subsequently with treatment at home, cared for by ADI partners of the CMR, twice a day with the Home Care device.

Obtained results after 3 months with the AIMED method.

Reduction of 50 % lesion in 60% of cases.

Complete healing in 35% of cases.

***Use of rTPM and PEMF in pelvic pain from inflammatory diseases of the pelvic area ( gynecological dermatology).***

Recruitment polycentric study of patients with painful conditions of the pelvic region after uro genital inflammatory diseases, especially in patients with prostatitis (post infectioust), vaginitis, metritis and parametritis, dyspareunia and pelvic pain in young patients.

***Use of rTPM urinary incontinence in women.***

Recruitment polycentric study of patients with urinary incontinence with grade classification, and age-related diseases. Evaluation of current and innovative treatment therapies according to the healing and parameters of quality of life.

**Conclusions:**

"We could interpret the illness as a loss of the biological water of some coherent hierarchy levels between domains with the consequent loss of the electromagnetic control on biomolecules" Emilio Del Giudice

The use of magnetic fields opens new scenarios for Regenerative Medicine

Their use allow to observe the process of molecular view "in the magma of pro and anti-inflammatory cytokines focusing on what it must be done to reduce the inflammatory process (TNF

alpha and IL1), not losing sight of the structure of the matrix which remains the main scenario and place of the neo-tissue remodeling, emphasizing the biological role of water as a molecular transducer and energy information which, first of all, the stem cell receive and the role of the cell membrane that, in the presence of water and in agreement with the cable assembly of molecular (cytoskeleton) is a center of signals and information that involve, receptors, adhesion molecules, structure emc and cell populations with a "chimera" effect that is subject to known physical and chemical laws and to be known. "(Aragona S.E.)

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