BIOMAGNETIC MICRO MASSAGE THERAPY BASIC RESEARCH

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ABSTRACT:
It has been shown by a number of authors that pulsing electromagnetic field creates beneficial effects on fractures, pseudoarthrosis, etc.
This research represents an introduction of a new method in the low frequency electromagnetic field therapy, called the Biomagnetic Micro Massage Therapy (BMMT).

Experiments were performed on rats under anaesthesia. The right lower limb each rat was traumatized using a standard technique. It has been observed that a significantly lower degree of swelling in animals exposed to BMMT, compared to the control group and others.

INTRODUCTION:
Scientific interest in the effects of ElectroMagnetic Fields (EMF), on living tissues has increased over the last two decades. One of the most important things in understanding the action and effects of EMF is a clear knowledge of the EMF spectrum. In basic; Biological response is determined by frequency and intensity of the field. These are also main parameters in the classification of therapeutical equipment on the market. Third kind of classification could be in a two groups; the EMF equipment with thermal and non-thermal effects.

Apparatus with thermal effects, heating the tissues, may cause more damage than good in therapy.

BMMT is a non-invasive, non-thermal therapy, with combined effects of permanent Magnetic Blanket (MB) fields and Pulsed Low Frequency Electro Magnetic Fields (PLFEMF).

Natural and artificial magnetic field plays an important rule in every living being, on our planet. Many processes in the organisms is determined by natural EMFs. For example: cyclical exchange in the blood elements is accordance with Sun rotation of 27 days, or Alpha Rhythm of the brain electromagnetic activity is in coloration with magnetic field oscillations of the Earth (1).The purpose of this study is to compare the effects of:
* Low Frequency EMF
* High frequency EMF, with low enemy emission
* BMMT
on development of post-traumatic oedema.

METHOD:
The experiments were performed on Wistar albino rats under Pentothal anaesthesia. Right lower limb of each animal was traumatized. Using the identical technique for all rats, each group was traumatized in the same manner, to cause leg contusion without the bone fracture .The rats were divided into four groups.
* The first group encompassed the rats which were immediately after lesion exposed to Pulsed Low Frequency EMFs or in the further text PLFEMF.. Frequency f=50Hz, Magnetic Induction B=8mT, PulsingFreq. fp=0.4Hz
* The second group of rats were exposed to Pulsed High Frequency EMFs (PHFEMF), f=27,125 MHZ , high energy level, THELFSISTEM
* Third group were exposed to a combination of Static (solid magnets) and Pulsed Low Frequency EMFs .f=50 Hz , B=8mT, fp=0.4Hz, Mag. density of Magnetic Blankets Bmb=180 mT
* Lastly , the fourth group served as a control.
The degree of swelling was evaluated by measuring the thickness of limbs before and after lesion (after 1,2,3 and 24 hours).

RESULTS:
The results obtained are presented in Fig 1 and Fig2. The exposure of rats to PLFEMF and combined with magnetic blanket (PLEFEMF +MB) showed a very high efficacy of these two methods in preventing the post traumatic oedema, where combined techniques(PLFEMF+MB) were significantly more effective .At the same time, it is obvious that PHFEMF was ineffective to prevent the development of oedema. (No statistically significant in comparison to control group.(Fig 1) The time course of swelling development is presented on Fig 2 Notes the very slow course of oedema development in PLFEMF +MB group.

DISCUSSION:
This experiment was done in 1987 (2) , after much success in the initial treatment of the patients. Undoubtedly, significant results were achieved. In particular, the new (PLFMF +MB) was significantly more effective in preventing oedema development, indicating the strong efficacy of this apparatus. This effect might be explained by influencing on blood coagulation , the permeability of small blood vessels and oxygen consumption in the tissue (see Pressman ,1977).

This method is called Biomagnetic Micro Massage Therapy BMMT. The step further in this research project was to improve the equipment for human application, and discovery of peristaltic wave in the BMM Therapy.

The majority of researchers looking to discover triggering frequency, or resonant frequency of some molecular system. This is very important future research.

In the application of EMF specially in the range of low frequency we have one very important effect, which is not present in the medical literature.

This demagnetizing effect is very well known in the area of electrical engineering. Low frequency EMF is used to demagnetized material, for example: in the measurement of Hysteris cycle.

The PLFEMF mechanism of action at the cellular level is not well understood. Stabilization of extra cellular membrane potential, and improving of oxygen transport (3) is possible to describe by demagnetizing effect.

REFERENCES:

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(3) Dr. Urlich Warnke, Saarbrucken University, Germany "The Application of Pulsating Magnetic Fields in Medicine" Biophysics and Medicine Report, Canada, 1983

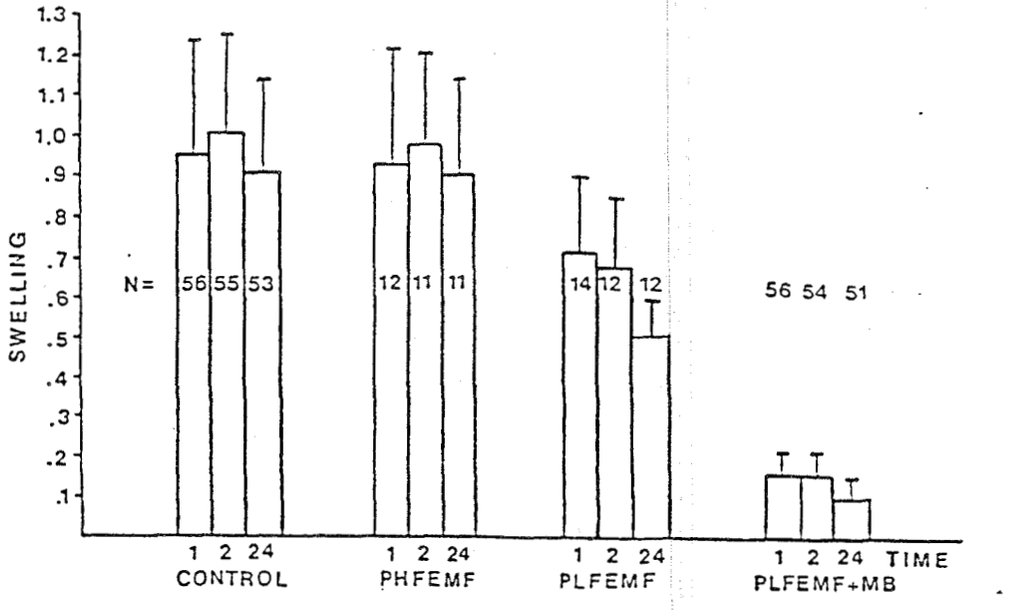

Fig. 1.

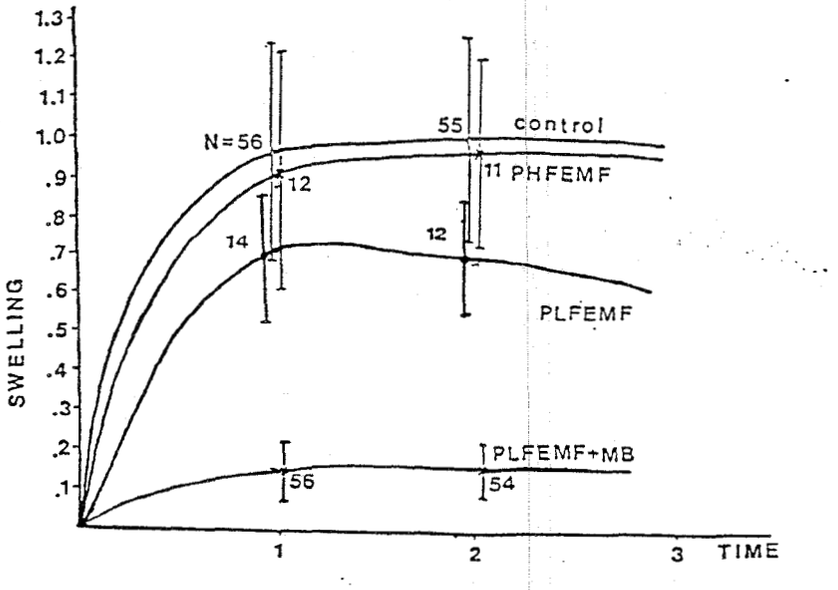

Fig. 2.