Application of the Low Frequency Magnetic Field in the Case of Degenerative Diseases

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1. INTRODUCTION

The low frequency magnetic field is one of the physiotherapeutic agent used influences presently in medicine with very good results. Usually, special apparatus for magneto therapy creates the low frequency magnetic signals in the patient's area. Several kind of equipment for magneto therapy are used.

Th present paper describes the system MAGNET-H80M, designed by Prof. Dr. Dimiter C. Dimitrov at the Department of Radiotechnics of Technical University of Sofia, Bulgaria. Depending on the cases suitable inductors are used. The apparatus works out an electrical signal having the following parameters:

-top value of the maximum magnetic induction 15μT

-frequency changing automatically within the following ranges: 1-25Hz

-Fixed frequency with a possibility for manual control within the interval:1-25Hz

The magnetic field generated by the apparatus MAGNET-H80M posses an expressive analgesic, anti-inflammatory and trophic effect and it is stimulating the development of the collateral net vessels and the permeability of the vessels and membranes. The apparatus for magneto therapy MAGNET-H80M is designed for low frequency magnetic field treatment of the following diseases:

Pulmonal diseases-bronchial asthma, bronchitis, pulmonal tuberculosis, etc.

Cardio-vasculad diseases-arterial hypertension, ischemic heart diseases, etc.

Diseases of the joints and their peripheral tissues;osteoarthritis, rheumatic arthritis etc.

Surgical, orthopedis and traumatological diseases-fracture, postoperative fistules,etc.

Dermatological diseases-skin allergy, dermatitis, psoriasis, sclerodermy etc.

Genealogical diseases-adnexitis, parapetritis, mastitis, etc.

ENT diseases- sinusitis, otitis, M. Meniere, etc.

2. MAGNETO THERAPY ON THE JOINTS AND THEIRS PERIPHERAL TISSUES.

There is a óéãíéöéøáíô experience in the treatment in the orthopedic practice, but we would like to stress to the very good results and the high therapeutic effect to the magnetic field generated by MAGNET-H80M.

a)We applied this apparatus for treatment to the cases with **frozen shoulder.** We put the shoulder between two inductors and we adapted the apparatus as follows: magnetic induction-6,5mT; frequency-1Hz; duration of the exposition-15min for 15-20 sesions. This method have been used for 120 patients(63 men and 57 women) with periarthritic changings at the shoulder joint. The patients were from

40 to 70 years old, mostly between 40-60 years old (66%).

80% of the patients with clinical manifestations(pain and limited movement) had been complaining for one year, 20%- for more than 1 year. 27 patients were in heavy condition clinically in the acute stage, all the others were in the chronic stage of the diseases with exacerbation from time to time.

The results from the treatment were evaluated by the improvement related to the:

-pain:

in the three degrees: strong, middle, weak. Before the treatment the pain was strong in the 98,4% of the patients(118 cases) and middle in the 1,6%(2 cases).

After the treatment 51% of the patients(62 cases) had weak pain and 22,5%(27 cases) had pain only when they were forcing the shoulder joint.

***-swelling*:**

evaluated in three degrees: strong, middle, weak. Before the treatment 4 patients had strong swelling and weak one had 22 patients. After the treatment only one patient had weak swelling.

-skin temperature: without changing before and after the treatment.

ESR: before the treatment ESR was higher in the 10 cases, after threatment became normal.

Radiography of the shoulder: In the acute stage with calcification with small sizes they were decreased or disappeared after the treatment. When the calcifications were big

ones the stage was acute, the result from the treatment was only reducing the sizes of the calcifications. In the chronic stage we did not receive therapeutica ro-entgenological result.

Measurement to the joint movements: flexion, extension, abduction, external and internal rotation. After the treatment they were favorably changed:

Indexes	X1(before treatment) X2(after treatment)	d	P	Patients with improvement (%)
Flexion	0-111,57 0-152,03	37	<0,001	85,83
Extension	0-28,15 0-48,21	11	<0,001	75,83
Abduction	0-106,25 0-146,49	41	<0,001	80,0
External Rotation	0-55,00 0-73,13	20	<0,001	73,33
Internal Rotation	0-55,38 0-74,42	22	<0,001	73,33

In the control examination after one year the result was kept. There were not besides effects during the treatment.

Example for the acute stage to the disease was our patient R>I>T> 38 years old, diagnosis acute humeroscapular periarthritis in the right shoulder with limited movements. From the examinations: Roentgen; calcification in the shoulder, ESR normal, all other examinations normal. The patient was treated by the method with low frequency magnetic field . After the treatment the pain disappeared, the movements in the shoulder joint was: flexion -from 0-50degr. to the 0-180degr., extension - from 0-30

degree. to o-55degr., abduction from 0-60 degree. to the 0-180degr., external rotation from 0-35 degree. to the 0-90degr.

There was not any change in Radiological images.

b) We treated with magnetic field 73 patients with **osteoarthrosis** to the lower limbs (56 women and 17 men) divided into groups, depending the age. The localization was: for 11 patients arthritis in the hip joint, for 20- joints to the foot, for 42- to the knee joints. We classified the patients according to NS Kosinskaja (1961) and they were distributed so: 1st grade - 5; 2nd grade - 51 and 3rd grade - 17 patients.

For the biggest part of the patients the disease developed gradually without reason. The patients were admitted with pain and limited movements in the joints in various degrees. All of them had swelling and deformation in the joints and limited movements. There were rentgenologically manifested osteoarthrosis with narrowing to the articulation to the joint for the biggest part of the patients. The blood checking, including ESR was not changed.

We treated the patients with MAGNET-H80M apparatus. A low frequency magnetic field have been applied to the every joint every day for 15-20 days using magnetic field with the following parameters: magnetic induction-8mT, frequency-1Hz. During the time of the treatment and after that there were no besides effects.

The results from the treatment were evaluated so:

a)clinically healthily patients- after the treatment the pain disappeared and the movements are normal;

b)patients with considerable improvement- big decreasing to the pain in quiet position and in movement and increasing in the amplitude to the movement in the joint not less than 20 degree, disappearing to the swelling (if the joint was existing) and good improved to the common condition(normalization to the sleeping and to the appetite);

c)patients with improvement- decreasing to the pain, increasing to the movement in the joint not more than 20 degree;

d)patients with insignificant improvement-insignificantly changed the mentioned indexes.

The obtained results are described in the following table:

Results of the treatment	Grade to the changing in the joint				
	I	II	III	all	%
Clinically healthily persons	5	26	2	33	42,7
Patients with considerable Improvement	-	20	3	23	33,4
Patients with improvement	-	5	12	17	23,9
Examinated persons	5	51	17	73	-

As the above table shows from 73 treated patients after the treatment the subjective complying disappeared in 42,7% and they are clinically healthy, 33,4% are improved and 23,9 % have a limited improvement. The objective improvement comes after 3 - 4th sitting with disappearing to the swelling and the pain.

3. CONCLUSION

The low frequency magnetic field , generated by apparatus MAGNIT-H80M have an application in the therapy of a number of diseases and do not have contra-indication. It is easy to use low-frequency magnetic field. The first therapeutically effect can be obtain after 3-4th sitting.

REFERENCES

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