**REXON-AGE therapy in the treatment of arthrosis**

The arthrosis is a pathology characterized by a series of biochemical and molecular modifications of the extra-cellular matrix and of the cellular components.

The pathology leads to a modification of the cartilage and of the bone beneath, whose condition can be identify through a NMR; oedema is present, as also pain is perceived from the patient and the articular function is reduced. (1)

The hip and knee arthrosis are quite frequent, statistically present on 50 to 90 patients every 100,000 people. (2-3)

The main purpose of the therapy is usually focused on reducing the pain perceived from the patients.

The pharmaceutical treatment usually involves the use of analgesic drugs as FANS or COX-2 inhibitor. (7)

The use of these drugs could lead to serious problems of tolerability and could cause collateral effects as increase of gastrointestinal lesions, kidney and hepatic dysfunctions; could also affect the cardiovascular system causing for example hypertension or increase of platelet aggregation leading to risk of thrombosis. (4-6)

Alternatively, the treatment could involve injections in the joints of hyaluronic acid and/or of steroids following the guiding lines of the American College of Rheumatology; of these two, it is more frequently used the hyaluronic acid, because of its high viscosity properties. Steroids are used less frequently, although they are very effective in reducing the inflammation, since they could lead to lesion to the cartilage if used too often.

In particular, the injection of hyaluronic acid are easy to make in the knee (8), while in the hip the injections are more difficult to be performed, since it could be necessary the use of ultrasound scanning or TAC in order to verify the correct distribution of the injected liquid.
Recently have been published few clinical studies involving the use of non invasive methodologies based on the use of pulsating low frequency magnetic fields, which seem to stimulate the chondrocytes differentiation and the synthesis of proteins composing the extracellular cartilage matrix. (9)

Our clinical study has utilized a device based on a new technology, which by employing extremely high frequency current at low power, promotes the stimulation of cutaneous, muscular and articular tissues.

The heart of the systems resides in the peculiar spectrum of frequencies transmitted. This is based on the Quantum Molecular Resonance Theory, and the medical device which has been employed is name Rexon-age. This device does not pursue a mere heating up of the treated area, instead it acts in order to pursue a very peculiar cellular stimulation, while keeping at very mild temperature the treated region, and therefore avoiding possible unpleasant consequences that an excessive heating up could lead to.

Rexon-age has 5 different output channels. Each of them can be connected to an electrode, which it is then put in contact with the skin of the region which is intended to be treated.

Rexon-age produces a low intensity current but at a very high frequency.

The frequency spectrum used reaches up to 64 MHz. The energy is transmitted to the patient throughout the entire surface of the electrode in contact with the skin.

The employed current is monopolar and being at such an high frequency that it can close down to earth, without the necessity of a neutral plate in contact with the patient.

Each channel, and every transmission electrode connected, is activated one by one.

**Material and methods**

During the period from May to September 2006, I have treated 32 patients in the Department of Pain Therapy of the Hospital of Cittadella (PD).

20 patients were affected by gonarthrosis (knee arthrosis) and the other 12 were affected by coxarthrosis (hip arthrosis).

Each patient has been treated with 2 different therapy cycles, 15 days apart. During every session, 2 or more electrodes were applied on the affected articulation.

During every session, each connected electrode was activated for 4 minutes (4 cycles of 1 minute each). The electrode used was the number 3 (size: 50 x 90 mm).

All the patients treated had the following characteristics:

- More than 40 years
- Arthrosis of the hip or knee, as per the criteria defined by ARA (10)
Each patient had to fill up the questionnaire WOMAC (Western Ontario and McMaster Universities Osteoarthritis Index) (11) both before the beginning of the therapy and after 4 months the end of the therapy.

The WOMAC Index represents a valid evaluation instrument for patients affected by arthrosis.

A previous clinical study carried out in the year 2000, had proved that the WOMAC method can reveal even small changes of the patient’s evaluation, regarding the following:

1. Perception of pain  
2. How often the pain appears  
3. Restriction of the articular movement

The detection of these minimal differences allow a more detailed clinical evaluation and therefore a better therapeutic management of the patients.

The following categories of patients have been excluded from the clinical study:

- Patients with benign or malignant cellular proliferation  
- Pregnant patients  
- Patients with pace-maker  
- Infective articular pathologies  
- Patients with metallic prothesis

During the follow-up visits I have used a V.A.S. (Visual Analogical Scale) for evaluating the intensity of pain and the WOMAC index, for evaluating the movement limitation. (12)
Results
Here below are reported the results concerning the 20 patients treated for knee arthrosis. The evaluation concerns the movement limitation.

<table>
<thead>
<tr>
<th>MOVEMENT LIMITATION</th>
<th>BEFORE</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absent</td>
<td>9,6%</td>
<td>25%</td>
</tr>
<tr>
<td>Rarely</td>
<td>5,7%</td>
<td>36,5%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>19,2%</td>
<td>26,3%</td>
</tr>
<tr>
<td>Often</td>
<td>38,5%</td>
<td>9,6%</td>
</tr>
<tr>
<td>Always</td>
<td>26,35%</td>
<td>1,9%</td>
</tr>
</tbody>
</table>

The results point out a general consistent improvement.

Absent: increase of the 160,45%, going from 9,6% to 25% of the total of patients. Rarely: increase of 5,4 times going from 5,7% to 36,5% of total.
Sometimes: increase of 37, from 19,2% to 26,3%.
Often: decrease of 70%, going from 38,5% to 9,6%.
Always: decrease of 93%, going from 26,355 to 1,9%.

Here below is reported the evaluation of the pain perceived, made with the V.A.S. scale

<table>
<thead>
<tr>
<th>VAS</th>
<th>BEFORE</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>3,8%</td>
<td>57,7%</td>
</tr>
<tr>
<td>3-4</td>
<td>13,5%</td>
<td>25%</td>
</tr>
<tr>
<td>5-6</td>
<td>36,5%</td>
<td>15,4%</td>
</tr>
<tr>
<td>7-8</td>
<td>42,3%</td>
<td>1,9%</td>
</tr>
<tr>
<td>9-10</td>
<td>3,8%</td>
<td>0</td>
</tr>
</tbody>
</table>

There has been a increase of 15 times of the population within the value from 0 to 2. Increase of the 92,6% in the population from 3 to 4. Decrease of 57,8% in the patients with pain value from 5 to 6. Decrease of 98% in the patient with pain from 7 to 8. No patient at the end had the maximum value for pain.
Here below are reported the results concerning the 12 patients treated for hip arthrosis. The evaluation concerns the movement limitation.

<table>
<thead>
<tr>
<th>MOVEMENT LIMITATION</th>
<th>BEFORE</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absent</td>
<td>7%</td>
<td>17,9%</td>
</tr>
<tr>
<td>Rarely</td>
<td>0</td>
<td>35,7%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>35,7%</td>
<td>28,5%</td>
</tr>
<tr>
<td>Often</td>
<td>35,7%</td>
<td>10,7%</td>
</tr>
<tr>
<td>Always</td>
<td>21,5%</td>
<td>7%</td>
</tr>
</tbody>
</table>

After 4 months from the end of the 2 therapeutic cycles of Rexon-age, it is shown a considerable improvement of the articular motion. In particular:

Absent: increase of 155,7% of patients in this category.
Rarely: from no patient in this category at the beginning of the therapy, it has passed to 35,7% of the patient at the end.
Sometimes: decreases of 20,1%, going from the 35,7% of the total to 28,5%.
Often: decreases of 70%; from 35,7% to 10,7% of the total.
Always: decreases of 67,5%, from 21,5% to 7%.

Here below is reported the evaluation of the pain perceived, made with the scale V.A.S.

<table>
<thead>
<tr>
<th>VAS</th>
<th>BEFORE</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>14,3%</td>
<td>53,6%</td>
</tr>
<tr>
<td>3-4</td>
<td>14,3%</td>
<td>28,6%</td>
</tr>
<tr>
<td>5-6</td>
<td>53,6%</td>
<td>17,9%</td>
</tr>
<tr>
<td>7-8</td>
<td>17,9%</td>
<td>0</td>
</tr>
<tr>
<td>9-10</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

From the analysis of the results after 4 months it shows that:
Increase of 2,74 times the number of patients reporting a pain value among 0 to 2.
The number of patient with pain among 3 to 4 has doubled.
Decrease of 66,65% of patients with pain value among 5 to6.
After 4 months from the end of the therapy, no patient presented a pain value above 6.
DISCUSSION

The reduction of the cartilage in the joints, connected to the ageing of the chondrocytes cells, plays an important role in determining the pathology of arthrosis.

Many studies point out that the cellular ageing fosters the arthrosis degenerative process, decreasing therefore the capacity of the chondrocytes to support and repair the articular cartilage tissue.

The activation of stem cells through the application of Rexon-age electrical fields seems to stimulate the capability to regenerate cartilaginous tissue, so important in maintaining the articular function.

CONCLUSION

The therapy by using low intensity but very high frequency currents, based on the Molecular Quantum Resonance Theory, represents a non invasive methodology which seems to stimulate the stem cells within the tissue.

This methodology can be applied to the connective tissue without collateral effects.

In my brief experience, the therapy with Rexon-age has been extremely effective in pain relief and improvement of articular motion.
Evaluation of motion limitation on patients with knee arthrosis

Pain evaluation on patients with knee arthrosis
Evaluation of motion limitation on patients with hip arthrosis

Pain evaluation on patients with hip arthrosis


