CHANGE IN PAIN THRESHOLD IN FIBROMYALGIA

(Preliminary communication)

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Abstract

Fibromyalgia can be defined as a disease of the 21st century because it is largely determined by the lifestyle of the modern man, as well as high levels of stress. Fibromyalgia is a chronic disease of skeletal muscle manifested by characteristic thickening of individual muscle groups, spastic muscle fibers and painful symptoms manifested. Specifically for fibromyalgia is that the pain can be felt in all parts of the body. It is identified by the appearance of strong pressure sore on trigger points (TP), which are a source of stiffness and discomfort. According to Tarnev (Търнев), 2016) “The main group affected by the disease are men and women of working age - between 35 and 60 years, with the progress of the disease leads to work stoppage.” They are often combined with a soft tissue seal in the points of pain, identifiable by palpation called miogelosys or TP. Myofascial TP are frequent and distress factor in the life of every person and according to Sola and Kuitert (1955) were detected in 54% of healthy women and 45% of healthy men. The aim of this study is to track the changes in experimentally induced pain by palpation in patients with fibromyalgia undergoing physiotherapy and specialized hardware kinesitherapeutic program.

Keywords: pain threshold, fibromyalgia, physiotherapy, Terrier method, active gymnastics, hydrotherapy, body mass, Visual Analog Scale, (VAS), experimentally induced pain, anthropometric measurements, St. deviation

INTRODUCTION

In the past 20 years the interest in studying the clinical manifestations and treatment of fibromyalgia has increased. Fibromyalgia is characterized by generalized pain persisting for more than three months, which are spontaneous, diffuse, continuous and inexplicable; pain during mechanical pressure in 11 of 18 tender points. The pain threshold at these points should be less pressure of 4 kg / cm2 (Wolfe, et al., 1990). It is the second most common diagnosis after osteoarthritis placed in the office of rheumatologist (Wolfe, et al., 1997). According to some studies about 10-16% of rheumatic patients suffer from fibromyalgia (Masi, 1993).

Pain is the main symptom and it is based on criteria for diagnosis. At first it is located (in the cervical, thoracic or lumbar bilaterally at the level of the shoulders), and then is converted into diffuse and chronic. The pain is constant, stronger in physical activity, but also present in the rest. Describe the patients as burning, dangerous, irradiated, cutting, cramping. In dolorimetry pain is established in 11 of 18 tender points (Goldenberg, 1987). The patients are unable to localize the place of pain – in muscles, tendons, joints, or joint areas (Wolfe, 1989).

The presence of pain and its reproducibility TT is connected and is based on the theory of Myofascial TT, the presence of „miogelosys” and disappearance of symptoms in specific treatment. The therapeutic management of FM is connected with precise control the activity of pain points with granting miogelosys and prevent the possibility of chronic process (Mejjad, 2002). Fatigue or chronic fatigue syndrome is the morning upon awakening, accompanied by a feeling of morning stiffness. 80% of patients with fibromyalgia suffer from a sleep disorders. Sleep is unhealthy and unrefreshing, a large number of awakenings and decreased duration of slow deep sleep. Sometimes during the sleep phases of apnea appear (Dauvilliers, & Touchon, 2001).

Other symptoms developed in the course of fibromyalgia are „irritated colon” (more than 50% of cases), headache or real migraine (40% of cases), changes in the circulation (Raynaud’s syndrome), vascular game dermatographic urticaria, palpitations, accompanied anxiety to cardiac neurosis, „irritated bladder”, skin rashes, decreased ability to concentrate, reduced vision and 33 hearing, dizziness and fainting, profuse sweating, myalgia, arthralgia with a sense of swelling of the fingers, myoclonic tremor limb, etc. The complex of chronic pain, fatigue and changes in sleep gives reason to think about the larved (masked) depression. On average approximately 25% of patients with fibromyalgia develop a true depression, and 50% of them exhibit depressive symptoms (Lynn, & Rhene, 1994).
For people suffering from fibromyalgia, there is a premature aging of the brain, loss of gray brain matter, breaches of the working memory, decreased activity, depression: Tarnev (Търнев) (2016). In many patients with fibromyalgia are identified and changes in memory. Cognitive impairment shall be determined by tests and standard criteria for evaluation of memory (Hermann, 1982).

The purpose of this study is to follow the changes in experimentally induced pain by palpation in patients with fibromyalgia receiving apparatus physiotherapy and specialized kinesitherapeutic program by measuring the pain threshold before and after the therapy.

**METHODS**

This study involved 17 women with an average age of 40 ± 11 years. The survey was conducted between June and November 2015 in the Sports and Recreation Center „Bachinovo“ in Blagoevgrad, at SWU „Neophyte Rilski“.

After signing the declaration of informed consent and evaluation of anthropometric data, the pain threshold was examined after the experimentally induced palpable pain (at the same pressure, the same person) in TT and evaluation with the so called visual-analogue scale (Visual Analog Scale, VAS). The values of pain thresholds were measured before and after six months of instrumental physiotherapy and specialized kinesitherapeutic program, which included: manual therapy, hydrotherapy, hydro procedures and others.

VAS is a scale for assessing the pain perception with a length of 100 mm. The left end of the scale reflects the level of „no pain“ and the right - „very severe pain.“ After palpation in TT, the patient indicated on the scale this point, saying it reflects the strength of his pain perception at the time of measurement. The intensity of the pain is registered as the length in millimeters measured from the left edge of the scale to a point specified by the patient. The statistical treatments were carried out with the statistical package Prizm.

**Methods of the kinesitherapy**

The main objective of our methodology was to improve the condition of patients with fibromyalgia and was aimed at: - influence positively adaptation and quality of life; - appropriate treatment of chronic pain, changes in sleep, depression; - development of proper strategy and individual approach to each patient; - regular examinations at a general practitioner and specialist rheumatologist.

Main tasks of kinesitherapy - positive psychomotional impact to motivate active and willing participation in the activities; - Reduction of pain; - Improving the function of the respiratory system and training in proper breathing.

Means of kinesitherapy:

- Manual-soft tissue mobilization by the method of J.C.Terrier - The impact of manually-soft tissue mobilization is expressed in the reduction of pain; affects the muscle tone - trophic for reflex inhibited muscles and relaxing to tears hypertonic muscles.
- Proprioceptive training (elastic bands, Swiss ball multi active stone, balance board softer).
- Locomotor training on the treadmill.
- Manual therapy, electro and ultrasound treatment - Reduces the number of the pain points, the intensity of pain and insomnia.
- Active gymnastics and stretching - Aerobic exercise improves pain, fatigue, changes in sleep comfort of the patient's functional changes in fibromialfiya - respiratory and cardiac function dermografizma, manifestations of the digestive system, individual sense of pain. Stretching - Made individual treatment depending on the degree of the manifestations of fibromyalgia.
- Hydrotherapy, balneotherapy - water exercises and swimming - Lowers the threshold of pain and muscle spasms, relieves accompanying symptoms of depression.

Specialized kinesitherapeutic program began with soft tissue massage (relaxing and analgesic effect affects depressive symptoms), focusing on the treatment of trigger points. Breathing exercises from different starting points, combined with movements of the limbs. Symmetrical exercises in isometric mode from different starting points - occipital leg with the knees bent, leg, side leg, knee support, and isometric exercises with „Theraband“ - bands with resistance tailored to individual abilities - for dorsal, ventral gluteus muscles and muscles of the shoulder girdle. Also included exercises with a Swiss ball and balance board covered in the proposed methodology preclude long and static loads, jumps and sudden movements.

The average values of the body mass before and after applying the specialized kinesitherapeutic program were 65 ± 7, 0 kg and 61 ± 6, 5 kg, (Table 1.).

The values of the pain threshold measured before and six months after the specialized kinesitherapeutic program were 9,1 ± 0,83 mm and 2,4 ± 0,93 mm, respectively. At the end of the sixth month, the pain

<table>
<thead>
<tr>
<th>Group</th>
<th>X</th>
<th>St. Deviation</th>
<th>X max.</th>
<th>X min.</th>
<th>V%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before N = 17</td>
<td>65</td>
<td>7,0</td>
<td>78</td>
<td>54</td>
<td>10,72 %</td>
</tr>
<tr>
<td>After N = 17</td>
<td>61</td>
<td>6,5</td>
<td>72</td>
<td>50</td>
<td>10,67 %</td>
</tr>
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</table>
Table 2. The values of the pain threshold measured before and six months after the specialized kinesitherapeutic program

<table>
<thead>
<tr>
<th>Group</th>
<th>X</th>
<th>St. Deviation</th>
<th>X max.</th>
<th>X min.</th>
<th>V%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before N = 17</td>
<td>9,1</td>
<td>0,83</td>
<td>10</td>
<td>8</td>
<td>9,13 %</td>
</tr>
<tr>
<td>After N = 17</td>
<td>2,4</td>
<td>0,93</td>
<td>4</td>
<td>1</td>
<td>39,59 %</td>
</tr>
</tbody>
</table>

The pain threshold was reduced to 2.4 ± 0.93 mm (Table 2). The differences in the values of pain thresholds in the two periods of measurement were statistically significant (p <0.05).

The data presented demonstrate the effectiveness and positive impact of the enclosed specialized kinesitherapeutic program in patients with fibromyalgia. The strong reduction in symptoms of pain and muscle spasm during the six-month treatment improves the quality of life for patients with this disease and significantly reduces the accompanying manifestations of depression. For more complete evaluation of pain symptoms in experimentally induced pain is better to apply more diverse and less subjective indicators for assessing symptoms and kinesitherapeutic programs such as measuring pain rating algometry with analgesimeter, tourniquet algometry and others (Pentcheva, Grncharska, & Kossev (Пенчева, Грънчарска, & Косяв), 2007; Pentcheva, Grncharska, & Stoilov (Пенчева, Грънчарска, & Стоилов, 2010).

CONCLUSION

Presented data showing that the measurement of pain threshold before and during the treatment of patients with fibromyalgia is a rational approach to assess the effectiveness of the application of kinesitherapeutic program.

REFERENCES


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