

NEUROMOBILIZATION AND TAPING AS A NON-INTENSIVE METHOD OF TREATING CARPAL TUNNEL SYNDROME

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Abstrakt

Carpal tunnel syndrome occurs mostly in women over 40 years of age. This disease is caused by compression of the median nerve. Oppression can be caused by many factors. First of all, long-term physical labor, degenerative changes, hormonal disorders, inflammation, excessive overload of wrist movements or maintenance monotypic hand on computer keyboard. Pressure on the median nerve leads to impaired blood flow, causing pain and numbness in the 1st through 3rd finger of the hand and the so-called sensory disturbances. The purpose of this article is to provide non-invasive therapy carpal tunnel syndrome such as kinesioteaping and neuromobilization. Treatment of carpal tunnel syndrome Kinesio Taping method involves the appropriate application patches (tape) on the skin in the area of the forearm, including the wrist and palm portion of the hand. Patches do not contain any painkillers. The corresponding patch application allows you to make unlimited movement on the right wrist joint stabilization. Gradually reducing the pain and numbness. The second method presented in this article is - neuromobilization.

Neuromobilization is one of many methods of dealing with manual therapy, soft tissue - the tissue surrounding nerve tissue and nervous system [1]. It is classified in the International Classification of Medicinal Procedures ICD 9 (No. 93.17). Neuromobilization is a technique that restores the plasticity of the nervous system, or the ability to move relative to each other structures surrounding nerve tissue, and restoring the possibility of stretching and tensioning the nervous tissue itself and restore normal physiology of nerve cells [2]. Neuromobilization techniques are included in physiotherapy techniques, that is, movement therapies. The main idea of the method of treatment by neuromobilization a diagnosis of the nervous system, the autonomic, in terms of detection of pathological nervous tension structures and attempt to address them

Key words: zespół cieśni nadgarstka, KinesioTaping, neuromobilizacje, terapia, nieważyne metody terapii.

The aim: This article presents Medical Taping and neuromobilization as an effective way to activate the natural process of healing painful and treating carpal tunnel syndrome.

Introduction

Carpal tunnel - often referred to as carpal tunnel syndrome - is the most common compression neuropathy. It comes to mechanical compression of the median nerve in the



Photo 1. Carpal tunnel syndrome

Carpal tunnel is the space bounded on the palms of the transverse ligament of the wrist and the dorsal side by the bones of the wrist. Within this area there are 9 flexor tendon surrounded by synovial sheath the median nerve (photo 1). Increasing the volume of tissue within the carpal tunnel pressure increases and therefore the pressure on tendons and nerves. Because the nerve is very sensitive to pressure, there is a disturbance of its functions. These disorders are manifested by numbness of the fingers from the thumb to the ring finger. Characteristic is the appearance of numbness and pain at night and in the morning. Symptoms occur after working initially, later they still persist. In the final stage there are movement disorders manifested by falling objects from the hand, it is impossible to perform precise tasks. Therapy should be started quickly, because in the initial phase, impaired nerve function are reversible, but when it becomes neuropathy is a long-term permanent damage to the nerve [5].

What are the causes of median nerve compression neuropathy?

The causes can be divided into three groups: anatomical, physiological and acquired (habitual). The causes are anatomical anomalies, such as additional tend Physiological - it's inflammation, such as tenosynovitis, rheumatoid arthritis, gout, diabetic neuropathy and alcohol, fluid imbalance - pregnancy, oral contraceptives, obesity, chronic hemodialysis. Causes of acquired (habitual) or perform manual work and repetitive tasks bending the wrist and fingers, activities requiring a strong grip, and typing on a keyboard, playing some musical instruments, supporting himself on his hands at the wrist set in dorsiflexion (walking with crutches, long-term cycling, especially mountain sports and gymnastics). Carpal tunnel syndrome can occur after breaking the bone if it healed incorrectly in place of the typical radius [6].

How to recognize the median nerve neuropathy?

Neuropathy of the median nerve has been recognized by a distinctive history and clinical study and additional research. We examine feeling soft and vegetative activities. We make muscle tests and provocation tests. Sometimes it is advisable to perform radiographs or electrophysiological studies. In exceptional cases a CT is performed or magnetic resonance. . Provocative tests are Tinel sign and Phalen sign. Symptom Tinel is a delicate area hitting the flexor retinaculum. The test is positive if the patient feels paresthesia in the median nerve. Symptom Phalen measures the maximum bending of the palms of the hands at the wrists. If less than 1 minute, there are paresthesias in the median nerve - the test is positive. The study focuses on the study electrophysiological conduction velocity. Well done indicates the degree of compression of the median nerve [6].

Treatment Options:

Operational transverse carpal ligament intersection - this treatment brings lasting improvement, but the patient often has a limited ability to lift heavy objects. The operation is performed under regional anesthesia, which means that there is only anesthetized limb surgery. The operation can also be performed endoscopically. – the scar is smaller, however, it does not provide such precision as an open technique. Another way is the local injection of hydrocortisone or steroid use iontophoresis. This brings a slight improvement in the use of ultrasound therapy, laser or cryotherapy. The use of diuretics reduces swelling in the carpal tunnel. However; the above mentioned methods are invasive methods to a certain degree. That is why we have tried to present non-invasive therapy carpal tunnel syndrome, are:

Kinesio Taping and neuromobilization.

Kinesio Taping Method has four basic physiological functions:

- reduces pain or sensory hypersensitivity in the skin and muscles
- corrects muscles
reduces excess lymphatic fluid causing swelling
- corrects the position of the joint.

Additional Features

- maintains the optimum position for the rehabilitation of muscles and joints,
- supports weakened muscles,
- corrects posture and symmetry of the body by improving the position of the kinetic feel of the body.

Features patch (tape)

- extends in only one direction to 40% of its initial length,
- the weight and thickness of the tape is similar to the thickness of the skin, the patient does not feel the presence of the patch on the skin, tape the surface we apply a slight stretching of the skin (10% - "paper off"),
- patch can be worn for several days - up to several days, depending on the application site, (to prevent an allergic reaction, it is advisable to wash the application sites daily because the patch often accumulates salt formed from sweat and dead skin cells) [7].

Action on the lymphatic system:

- create space under the skin to create a lymphatic drainage
accelerates blood circulation,
facilitates lymphatic drainage site edema,
- reduces the pressure on the mechanical receptors, reduces pain sensation,
- reduces swelling,
- accelerates the absorption of hematoma after tissue injury,
- lymphatic drainage can be carried out in two directions.

Muscular action:

- increases the intensity of contraction in the muscles weakened,
- reduces the effect of muscle fatigue,
- reduces painful muscle tension,
- increases range of motion,
- improves proprioception.

Effects on joints:

- reduces muscle contractures,
- normalizes muscle tone,
- improves range of motion,
- reduces pain caused by inflammation in the joints [8].

Impact taping on the skin:

For a better understanding of the concept of Kinesiology Taping this is a brief characterization of the skin. The skin is the largest organ of the body. It contains about five million touch receptors. It has about one million nerve fibers, found mainly on the face, legs and back. It also includes mechanical receptors (eg Ruffini end), thermoreceptors, pain receptors (polymodalne) and sensory receptors deep (Golgi). Ruffini Endings are responsible for the degree of tension and stretch the skin. They are located in the deep layers of the skin and adapt to slow neurons are associated with alpha mobility and thus are associated sarcomers, shrinking muscle elements that affect the sensitivity of motoneurons Ralph [8].

Application patch (tape):

- skin at the application site should be clean, dry and free of grease, shaved,
- after application of the patch, repeatedly rub the dorsal part of the hand to activate the adhesive.

According to the philosophy of "Kinesiology Taping" application patch / tape / allows the place of pain or injury to remain a full-motion, allowing the body itself to make "biomechanical repair". Kinesiology Taping is used in a variety of symptoms of pain (eg, back pain, limb, muscle, nerve palsy, for lymphatic drainage and treatment of many other ailments). Taping is an effective yet safe and gentle form of therapy that allows you to

achieve excellent results physiotherapy. The action of sensory patch re-trains, obtaining motor function, improving blood and lymph flow, removing pathological muscle tension, improving proprioception. The corresponding patch application indefinitely and appropriate patient movement stabilizes the wrist joint. Slices operate twenty four hours a day and can be worn from a few to several days [9].

Application patch is placed on the volar forearm, wrapping around the palm and part of his hand. There are several ways of application. Below are two ways to apply the patch (Photo: 2, 3)



Photo 2.

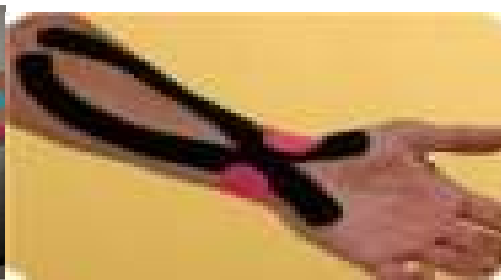


Photo 3.

Photo: 2, 3 Application Kinesio Taping - carpal tunnel syndrome

The easiest way to remove the patch is after showering. Removing the patch - slowly suck the skin, remove the patch in the direction of hair growth.

Neuromobilization - a method of physiotherapy and targeted the soft tissues: the nervous tissue of the central and peripheral nervous system and the "effector organs" - the muscles and internal organs.

The nervous system is the tissue, transmitting nerve stimulation in the form of electrical impulses to all the cells of our bodies, to ensure their functioning. It is one organ that maintains both structural and functional continuity at all levels - peripheral and central. Each step motor, to change the length, volume, and the voltage of the nervous tissue and blood vessels (veins running time of the vascular bundles - nerve) on account of their position and course in relation to the axis of the movements in the joint. When performing motion the nerve tissue is in each case subjected to a greater or lesser extent, the action of a mechanical force, which causes the deformation [10]. Tissue elasticity, their ability to adapt to a constantly changing and the current position of the body and physiological condition of the body, are a prerequisite for their proper functioning. Just as muscles, ligaments or tendons, nerve tissue also has some adaptive mechanisms that allow it to adapt to its operating mechanical load [11].

Neuromechanika is the correct mechanics of neural tissue conditioning the proper function of the innervated tissues such as muscle fibers, internal organs, structures forming the immune system and hormonal system. It is responsible for the maintenance of the so-called homeostatic balance of the body, which ensures the correct repair processes [11].

Neuromobilization causes inflammation optimization course by toning tensions CNS and ANS structures directly responsible and determining the course of inflammation, helping to

Treatment of carpal tunnel syndrome is performed by using the median nerve neuromobilization: We put the patient on his back. Therapist jet set to face the patient standing or sitting. Starting position: lower shoulder, visiting the arm by 90 degrees, shoulder external rotation, elbow extension in degrees, dorsiflexion of the wrist, snap your fingers (Photo. 4).

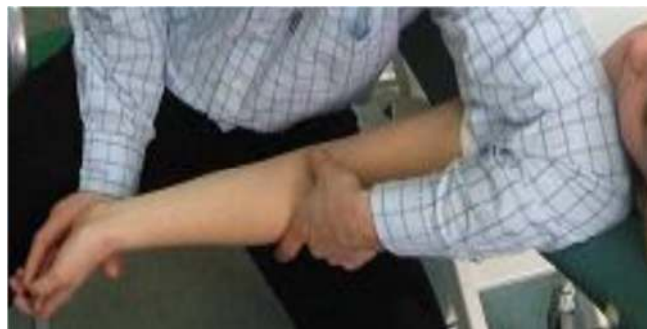


Photo 4. Neuromobilization median nerve by Butler

Making neuromobilization techniques should be individualized for each patient. Treatment should not be bad in the mind of the patient. In the course of treatment we observe his reactions. Adjust the amount, duration and frequency of the pulses to the state. Number of repetitions of 10 - 60 times. The time it takes a stroke of one - a couple of seconds. When properly done neuromobilization postoperative reactions may occur (slight discomfort), later followed by deep relaxation. Often after the first treatment the pain go away[10].

Summary

The presented technique of carpal tunnel syndrome treatments such as Kinesio Taping and neuromobilization are performed by certified therapists. They are safe and extremely effective. It should be noted that treatments include therapy neuromobilization all tissues innervated, so neuromobilization method is applicable for all types of ailments. The effectiveness of surgical techniques depends on the correct diagnosis of the pathogenesis and

adaptation techniques neuromobilization to the current clinical status. Neuromobilization use of locomotor diseases may be one way to conservative treatment.

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