



THE APPLICATION OF KINESIOTAPE IN THROMBOLYZED PATIENTS WITH ISCHEMIC STROKE

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ABSTRACT:

The aim of the study was to investigate and compare different kinesitherapy techniques and their impact on the recovery of patients with ischemic stroke. Also, to investigate the effect of kinesiotaping on thrombolized patients.

Materials and Methods. The study was conducted in 2014-2015 at the General Hospital for Treatment in Blagoevgrad - Neurology Department. The study contingent consisted of 20 patients, 10 of whom had an ischemic stroke and underwent venous thrombolysis (experimental group). In the other ten patients, no innovation was applied (control group).

Results and analysis: In patients with a brain accident, the muscles in the affected limbs are hypotonic. From a kinesitherapeutic point of view, it is very important in the hospital setting not to allow a pathological increase in muscle tone without a precondition for spasticity in the muscles and subsequent contracture. In our study, we examined the change in muscle tone using the Ashworth test. All patients were tested on the day of hospitalization, on the 5th day and on the 7th day (the day of hospitalization), on the 30th day.

Discussion. Kinesio tape provides maintenance of the affected muscles and causes significant proprioceptive irritation, which helps to restore the existing motor deficit.

Conclusion. We believe that the choice of methodology is extremely difficult due to the colorful clinical picture and the general condition of the patient. The combination of different methods could help the patient recover faster.

Keywords: kinesiotape, ischemic stroke, thrombolysis,

INTRODUCTION.

The Ischemic brain is one of the most common cerebrovascular diseases. This paper examines the application in clinical practice of venous thrombolysis in patients with ischemic stroke, describes the method of application and the possibilities of recovery and kinesitherapy of patients (including various combinations of methods - kinesiotaping, mirror therapy, Kabat Methodology, Methodology of Perfetti, etc.) in hospitals and outpatient facilities and rehabilitation centers, as well as the results of the application of innovation in Bulgaria [1]. Applied venous thrombolysis reduces hospital stay and time to recover from motor deficits. Despite numerous studies looking for solutions to restore motor deficits after an acute cerebrovascular accident, there are still unresolved issues related to: establishing early criteria for starting a kinesitherapy procedure after venous thrombolysis. Control of acute manifestations and influence of complications. This requires an effective way to address motor deficits, the reduction of which leads to severe disability. Some of these issues are of scientific interest in social and theoretical aspects, and others are directly related to kinesitherapy practice [1]. Another group of authors suggests options for a kinesitherapeutic program with a large number of kinesitherapeutic agents included in the 12-24 hours after the acute cerebrovascular accident [2]. Huang YC et al. studied twenty-one stroke patients with hemiplegic upper extremity periarthopathy within 6 months of stroke onset in the rehabilitation department of a medical university hospital in Taiwan [3]. The authors concluded that social capital is related to the quality of life in elderly stroke patients, suggesting that social capital may be important in improving quality of life among this patient population [4]. Ji K, et al. (2022) did an interesting study conducted using a multistage method through a questionnaire of a stratified random sample determining the quality of life [5]. Tan B, et al. investigated the effects of kinesio taping in the treatment of shoulder pain and upper extremity function in stroke survivors. Nine randomized controlled trials with 253 participants were in-

cluded. The databases - PubMed, EMBASE and Cochrane Central Register of Controlled Trials - were studied. A meta-analysis showed that kinesio taping significantly reduced shoulder pain after stroke [6]. Zlatkova K., (2020) makes a comprehensive review of kinesiotherapeutic methods for the recovery of patients who have experienced an ischemic stroke [7]. However, results such as Fugl-Meyer test data and Barthel index did not differ between the kinesio taping and control groups. The authors concluded that kinesio taping effectively alleviated shoulder pain, improved upper limb spasticity, and reduced subluxation of the shoulder in stroke survivors. However, the effects of kinesio taping on upper extremity function in terms of FMA-UE scores and independence in daily activities have not been verified [3, 4]. Huang YC, et al. investigated the effects of kinesio taping on upper limb spasticity impact and motor performance in subacute stroke patients. Methods: Thirty-one patients participated in the study, randomly assigned. In one group, kinesio tape (on the dorsal side of the affected upper limb) was applied as an additional treatment. Both groups received regular rehabilitation 5 days a week for 3 weeks. The primary outcome was muscle spasticity as measured by the modified Ashworth scale (MAS). Secondary outcomes were measured using the Fugl-Meyer Upper Extremity Assessment (FMA-UE), the Brunnstrom stage, and the Simple Test of Hand Function Evaluation (STEF). Measures were taken before the intervention, immediately after the intervention (week three) and two weeks later (week five [3]. Within-group comparisons yielded significant differences in FMA-UE and Brunnstrom stages at weeks three and five in the control group (($P=0.003-0.019$). Significant differences in FMA-UE, Brunnstrom score, and MAS at weeks three and five ($P=0.001-0.035$) and proximal FMA were noted in the kinesiotape group. -UE between weeks three and five ($P=0.005$). Intergroup comparisons showed a significant difference in distal FMA-UE at week five ($P=0.037$). The authors' conclusion is that kinesio taping may provide some benefits in reducing spasticity and improving the motor performance of the affected arm in patients with subacute stroke [4].

THE PURPOSE OF THE PUBLICATION

The aim of the study was to investigate and compare different kinesiotherapy techniques and their impact on the recovery of patients with ischemic stroke and also to investigate the application of kinesiotape on the affected muscles in thrombolized patients with stroke. The subject of our study is the process of recovery through the application of kinesiotape tape during the hospitalization of stroke patients with venous thrombolysis.

MATERIAL AND METHODS.

The study was conducted in the period from 2008-2014 in the Neurology Department at the Hospital in Blagoevgrad. Kinesiotherapy was performed on 25 patients with ischemic stroke. Divided into two groups - 15 patients (control group - KG) and 10 patients treated with the method of "venous thrombolysis" - experimental group (EG). The mean age of the subjects was 66.17 ± 4.18 . The following elements of different methods were applied in the experimental group: kinesiotape application of upper and lower limb, passive exercises, Kabat method, mirror therapy, exercises for fine movements, coordination exercises, applied locomotor movements [1]. The application of kinesiotape is performed on m.deltoideus, forearm muscles (m.extensor digitorum, m.extensor digiti minimi, m.extensor carpi ulnaris, m.extensor carpi radialis brevis, m.gluteus medius and kinesiotape to maintain dorsum flexion in the foot (m.tibialis anterior and m. extensor digitorum longus) and the muscles controlled by the n.facialis. It is applied 12 hours after the applied venous thrombolysis. The application is performed after a dermatographic test. Drug therapy and, in particular, the use of anticoagulants should be considered due to the likelihood of hematoma formation. For application on m. gluteus medius requires two C-shaped kinesiotape tapes, length 20 cm. and 15 cm. [1]. The first application is with 15% tension from the pelvis to the middle of the femur. The second application is from the pelvis and ends on the large trochanter. The direction is from proximal to distal, without tension at the ends. When applying kinesio tape in the area of the m.extensor digitorum, an "I" shaped kinesio tape with 4 tails is required. The anchor is on the lateral epicondyle. Tension 15%. Flexion position in the fingers. Direction from proximal to distal. The end of the kinesio tape is next to the distal phalanx. A high-tension patch is placed on the hands due to a large number of receptors. Kinesiotape on n.facialis is performed with an "I" shaped band and dimensions of the same - width 1.25 cm and length 5 cm. The application is performed on the muscles innervated by the lower branch of the nerve [1]. Another author proposes an interesting and combined methodology for determining motor deficits in stroke patients [4]. The same methods and specialized exercises were applied in the control group, except for kinesiotaping and mirror therapy. The application of kinesiotape is performed on m.deltoideus, forearm muscles (m.extensor digitorum, m.extensor digiti minimi, m.extensor carpi ulnaris, m.extensor carpi radialis brevis, m.gluteus medius and kinesiotape to maintain dorsum flexion in the foot (m.tibialis anterior and m. extensor digitorum longus) and the muscles controlled by the n.facialis. It is applied 12

hours after the applied venous thrombolysis cm., length 20 cm. and 15 cm.[1]. The application is performed after a dermographic test. Drug therapy and, in particular, the use of anticoagulants should be considered due to the likelihood of hematoma formation. For application on m. gluteus medius requires two C-shaped kinesiotape tapes. The first application is with 15% tension from the pelvis to the middle of the femur. The second application is from the pelvis and ends on the large trochanter. The direction is from proximal to distal, without tension at the ends. When applying kinesio tape in the area of the m. extensor digitorum, an "I" shaped kinesio tape with 4 tails is required. The anchor is on the lateral epicondyle. Tension 15%. Flexion position in the fingers. Direction from proximal to distal. The end of the kinesio tape is next to the distal phalanx. A high-tension patch is placed on the hands due to a large number of receptors. Kinesiotape on n. facialis is performed with an "I" shaped band and dimensions of the same - width 1.25 cm and length 5 cm. The application is performed on the muscles innervated by the lower branch of the nerve [1]. For statistical data processing, a nonparametric Chi-Square test was used, which helped to investigate the difference in change in tone data verified by the Ashworth test. Of the experimental group, only 9.67% of patients have a slight change (towards spasticity) in muscle tone, the rest have restored muscle tone without any pathological change. In EG on day 5, 21% of patients had a slight change (pathological) increase in muscle tone. There is a statistically significant difference Asymp. Sig. ≤ 0.001 , which proves that there is a change in the normalization of muscle tone and without it tending to spasticity.

For statistical data processing, a nonparametric Chi-Square test was used, which helped to investigate the difference in change in tone data verified by the Ashworth test.

RESULTS AND ANALYSIS:

In patients with a brain accident, the muscles in the affected limbs are hypotonic. From a kinesiotherapeutic point of view, it is very important in the hospital setting not to allow a pathological increase in muscle tone without a precondition for spasticity in the muscles and subsequent contracture. Of the studies performed, better results were recorded in the experimental group (ANOVA). We believe that this is due to the applied kinesiological tape and the additionally applied mirror therapy. In our

study, we examined the change in muscle tone using the Ashworth test. All patients were tested on the day of hospitalization, on the 5th day and on the 7th day (the day of hospitalization), on the 30th day. Of the experimental group, only 9.67% of patients have a slight change (towards spasticity) in muscle tone, the rest have restored muscle tone without any pathological change. In KG on day 5, 21% of patients had a slight change (pathological) increase in muscle tone. There is a statistically significant difference Asymp. Sig. ≤ 0.001 , which proves that there is a change in the normalization of muscle tone and without it tending to spasticity - (Table 1). We linked the improvement of the patient's motor abilities and the increase of the muscular strength in EG with the methodology applied by us, including the application of kinesiotape, which helped to normalize the muscle tone without allowing its pathological increase. Of the experimental group, only 9.67% of patients have a slight change (towards spasticity) in muscle tone, the rest have restored muscle tone without any pathological change. In KG on day 5, 21% of patients had a slight change (pathological) increase in muscle tone. There is a statistically significant difference Asymp. Sig. ≤ 0.001 , which proves that there is a change in the normalization of muscle tone and without it tending to spasticity.

Table 1. Chi-Square test for statistical reliability in the study of muscle strength in the acute period and discharge (EG)

N	10
Chi-Square	44,466
df	5
Asymp. Sig.	0,001

DISCUSSION:

Kinesio tape provides maintenance of the affected muscles and causes significant proprioceptive irritation, which helps to restore the existing motor deficit.

CONCLUSIONS:

Kinesio tape provides maintenance of the affected muscles and causes significant proprioceptive irritation, which helps to restore the existing motor deficit. We believe that the choice of methodology is extremely difficult due to the colorful clinical picture and the general condition of the patient. The combination of different methods could help the patient to recover faster.

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