



Evaluation of the Effect of Kinesio-Taping Banding Therapy on Upper Extremity Function, Quality of Life, and Emotional Status in Patients with Chronic Rotator Cuff Syndrome In Addition to Conventional Physiotherapy Methods

Kronik Rotator Manşet Sendromlu Hastalarda, Konvansiyonel Fizyoterapi Yöntemlerine Ek Olarak Yapılan Kinesio-Taping Bantlama Tedavisinin Üst Ekstremitte Fonksiyonu, Yaşam Kalitesi ve Emosyonel Duruma Etkisinin Değerlendirilmesi

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Abstract

Aim: Shoulder joint is important for the functional capacity of the upper extremity. A big part of the functionality in this joint is created by rotator cuff muscles. Rotator cuff injuries are the primary reason for shoulder induced pain and injuries. The purpose of this study is to assess the effects of kinesio-taping in addition to conventional physiotherapy methods on upper extremity function, quality of life and emotional state in patients with chronic rotator cuff syndrome.

Material and Method: Our study was performed on 92 patients (64 females-28 males) with rotator cuff syndrome. The patients were randomly divided into two groups. Conventional physiotherapy was applied to the first group and conventional physiotherapy techniques to the second group were applied kinesio taping twice a week. Each patient was evaluated with the disabilities of the arm, sholder and hand (DASH scale), short form-36 (SF-36 scale), visuel analog scale (VAS) score and BECK depression inventory before and after treatment. The evaluation was made within the group and between groups.

Results: It was determined that there was a statistically significant decrease in DASH and VAS evaluations in both groups before and after treatment. SF-36 scores were found to increase statistically significantly. When the post-treatment scores were compared, it was seen that there was a statistically significant difference between the two groups. In BECK depression inventory scores, there was no significant difference in both groups.

Conclusion: It was concluded that kinesio banding therapy is an effective treatment method when it is applied in addition to conventional physiotherapy techniques in the clinic, in terms of improving upper extremity function, increasing the quality of life and reducing pain in patients with RMS.

Keywords: Kinesio taping; rotator cuff syndrome; quality of life; pain; emotional status

Öz

Amaç: Omuz eklemi üst ekstremitenin fonksiyonel kapasitesi için önem arz etmektedir. Bu eklemdaki işlevselliğin büyük bir bölümü rotator manşet kasları tarafından oluşturulmaktadır. Rotator manşet yaralanmaları omuz kaynaklı ağrı ve sakatlıkların başlıca sebebidir. Bu çalışmada; kronik rotator manşet sendromlu hastalarda (RMS), konvansiyonel fizyoterapi yöntemlerine ek kinesio-taping bantlamanın üst ekstremitte fonksiyonu, yaşam kalitesi ve emosyonel duruma etkisinin değerlendirilmesi amaçlanmıştır.

Materyal ve Metod: Çalışma, rotator manşet sendromlu 92 hasta (64 bayan-28 erkek) üzerinde yapıldı. Hastalar randomize olarak iki gruba ayrıldı. İlk gruba konvansiyonel fizyoterapi, ikinci gruba konvansiyonel fizyoterapi tekniklerine ek haftada iki kez kinezyo bantlama uygulandı. Her bir hasta tedavi öncesi ve tedavi sonrası the disabilities of the arm, sholder and hand (DASH skalası), short form-36 (SF-36 skalası), visuel analog skala (VAS) skoru ve BECK depresyon envanteri ile değerlendirildi. Değerlendirme grup içi ve gruplararası karşılaştırma şeklinde yapıldı.

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Bulgular: Her iki grupta da tedavi öncesi ve tedavi sonrası DASH ve VAS değerlendirmelerinde istatistiksel olarak anlamlı şekilde azalma olduğu belirlendi. SF-36 skorları ise istatistiksel olarak anlamlı şekilde arttığı görüldü. Tedavi sonrası skorları karşılaştırıldığında iki grup arasında istatistiksel olarak anlamlı farklılık olduğu görüldü. BECK depresyon envanteri skorlarında ise her iki grupta anlamlı bir farklılık bulunmadığı belirlendi.

Sonuç: Kinezyo bantlama tedavisi RMS'li hastalarda üst ekstremitte fonksiyonunu geliştirmesi, hastaların yaşam kalitesini artırması ve ağrıyı azaltması gibi yönleriyle, klinikte konvansiyonel fizyoterapi tekniklerine ek olarak uygulandığında etkili bir tedavi yöntemi olduğu sonucuna varıldı.

Anahtar Kelimeler: Kinezyo bantlama; rotator manşet sendromu; yaşam kalitesi; ağrı; emosyonel durum

INTRODUCTION

Rotator cuff syndrome (RMS) is among the most common causes of shoulder pain. (1). In patients with this syndrome, limitation of movement ability is frequent in addition to shoulder ache (2). Among diseases which cause shoulder ache, rotator cuff injuries have a the incidence of 6-12% (1, 2). Rotator cuff ruptures can occur after the age of forty due to tendon degeneration and this situation has become an important reason for shoulder ache (2, 3). While the disease does not show any symptoms in 4% of the patients younger than 40, partial or full rupture is seen in 54% of the patients older than 60 years of age. As a result of these injuries, negative factors which influence the shoulder will occur such as pain in the affected shoulder, instability and decrease in functionality (3- 5). When the increasing average age of our country is taken into consideration, it can be thought that in the middle and long run, RCS will become a problem that needs to be solved, influencing business life and effectiveness.

Knesio taping therapy is a method which is used in many situations related with musculoskeletal system in physiotherapy and rehabilitation and which is frequently preferred due to its small number of side effects. Kinesio taping method was developed in 1973 by Dr. Kenzo Kase, it was applied in athletes first and recently it has begun to be used in physiotherapy and rehabilitation practices. Kinesio taping decreases inflammation and pain and helps in improving performance during movements by supporting the muscle (6).

The purpose of this study is to find out the efficiency of kinesio taping method used in the treatment of patients with RCS, which is frequent in clinic, and to analyze the effect of kinesio taping method which is applied in addition to conventional physiotherapy techniques given to chronic RCS patients on upper extremity function, quality of life and emotional states.

MATERIAL and METHOD

The study was conducted with 92 patients who referred to in a PMR clinic and who were examined by the physician and diagnosed with RCS. Randomly divided into two groups While the first group was given conventional therapy, kinesio taping was applied to the second group in addition to conventional therapy.

Patients between the ages of 18 and 65 who had a history of chronic rotator cuff injury and who had widespread shoulder pain were included in the study. Patients who had received shoulder joint surgery, those who had injection on

shoulder joint within the last 6 months and those who had a history of subluxation, those who had rheumatic disease, those with thoracic outlet syndrome and those who had surgical intervention previously were excluded from the study

Clinical Assessment

Demographic data about the patients were recorded by patient follow-up form and BECK depression inventory, DASH (the disabilities of the arm, shoulder and hand) scale, SF-36 (short form-36) scale and VAS (visual analogue scale) score were used in the assessment.

Conventional physiotherapy agents transcutaneous electric stimulation (TENS), ultrasound (US), hotpack (HP) were applied on the first group five days a week for three weeks. In addition to electrotherapy, kinesio taping technique for RCS was applied on the second group twice a week for three weeks (7). Taping which was performed on Monday to patients in the second group was renewed on Thursday. During the week, tapings of the patients whose tapes were deformed were renewed. The patient's level of disability from the upper extremity was assessed with DASH scale. The test which included 11 questions to assess upper extremity function was graded from good to worse as 1=no difficulty and 5=unable (8).

SF-36 scale, which included physical condition (PCS) and mental condition (MCS) sub-scales, was used to assess the quality of life. Scores differed between 0 and 100 and high scores showed good health condition (9).

BECK depression inventory was used to assess the patients' depression. Hisli found depression threshold score as 17 in his study of Turkish validity and reliability of Beck inventory. Total score one can get from the inventory differs between 0 and 63 (10).

VAS, which was used to assess pain, is an effective, simple, repeatable and minimal tool requiring method (11).

All of the scales were conducted as pre-treatment (PRT) and post-treatment (POT) and the results were recorded.

TENS was applied on all parts of m. deltoideus in all patients 20 minutes a day, five days a week for three weeks with Compex Theta MI Pro. In addition, 20 minutes of hotpack application was used as superficial heat agent (12).

US, which was used as deep heat agent in the patients was applied with a frequency of 1 mhz and 1.5 watt/cm2 intensity for 10 minutes (12).

Kinesio taping suitable for RCS was conducted as follows:

Y tape was used as the first taping and the start of tape was m. deltoideus's insertion. The tape was curved on both sides of the shoulder and was stuck on the superior and inferior part of m. deltoideus with 50% stress. The third tape was stuck on superior and inferior part of m. deltoideus for corrigation (7). Figure 1 and figure 2 shows that the kinesio taping application.



Figure 1. Kinesio taping application conducted on patient with RMC



Figure 2. At the end of the application conducted on patient with RMC

Statistical Analyses

Quantitative values are given as mean \pm standard deviation. Whether the data showed normal distribution was tested with the Shapiro-Wilk test. Comparison of DASH, BECK depression inventory for each group, TO and after treatment (TS) for SF-36 was done by t test in dependent groups. Significance level was accepted as $p < 0.05$. For statistical analysis, SPSS Statistics 22.0 (IBM Corp., Armonk, NY, USA) for Windows package program was used.

RESULTS

92 patients between the ages of 18 and 65 were included in our study. There were 25 female patients and 21 male patients in Group 1, while there were 39 female and 7 male patients in Group 2. Table 1 summarizes the demographic data of the patients.

Table 1. Demographic distribution of the patients

Parameter	Group 1	Group 2
Number of patients treated (n)	46	46
Gender (female)	25 (% 54.23)	39 (% 84.8)
Gender (male)	21 (45.77)	7 (15.2)
BMI (kg/m ²)	27.22 \pm 0.39	27.31 \pm 0.43
Dominant hand (right)	36 (% 78.3)	30 (% 65.2)
Patient shoulder (right)	34 (% 73.9)	46 (% 100)

Ages and body mass index (BMI)s of the female and male patients in Group 1 and Group 2 were compared and no statistically significant difference was found (Table 2).

Table 2. Comparison of age and BMI averages of female and male patients in Group 1 and Group 2

Parameter	Parameter	Group 1	Group 2	p
Male	Age	60 (39-65)	60 (52-65)	0.811
	BMI	28 (22.5-30.5)	25.5 (23.1-31)	0.575
Female	Age	52 (35-65)	55 (38-65)	0.293
	BMI	26.5 (21.8-34)	28.4 (19.3-35.4)	0.124

In DASH, VAS and BECK depression inventory scores, a statistically significant decrease was found in POT assessments when compared with PRT, while statistically significant increase was found in SF-36 scores ($p < 0.001$) (Table 3).

When the groups were compared, statistically significant difference was found between POT values of both groups in all parameters except for BECK depression inventory (Table 4).

Table 3. PRT and POT TS, DASH, VAS, SF-36 and BECK depression inventory assessment of Group 1 and Group 2

Parameter	Groups	PRT	POT	p
		Median (min-max)	Median (min-max)	
DASH	Group 1	79.78±1.74	63.28±2.36	<0.001
	Group 2	73.27±2.23	58.74±1.70	<0.001
VAS	Group 1	8 (5-10)	5 (3-8)	<0.001
	Group 2	8 (3-10)	3 (0-6)	<0.001
SF-36 PCS	Group 1	43 (11-55)	51 (17-62)	<0.001
	Group 2	39 (29-53)	55 (35-63)	<0.001
SF-36 MCS	Group 1	42 (25-58)	49.5 (40-67)	<0.001
	Group 2	36 (23-54)	50 (35-64)	<0.001
BECK	Group 1	10 (0-27)	5.5 (0-21)	<0.001
	Group 2	9.5 (3-20)	5 (0-15)	<0.001

DASH: The disabilities of the arm, shoulder and hand scale, SF-36 (short form-36) scale and VAS (visual analogue scale) score

Table 4. POT SF-36 (Difference SF-PCS) and SF-36 (Difference SF-MCS), Difference BECK, Difference DASH, Difference VAS assessments of the groups

Parameter	Parameter	Group 1	Group 2
Difference SFPCS	7 (13-4)	15 (23-2)	<0.001
Difference SFMCS	7 (13-3)	13 (24-5)	<0.001
Difference DASH	9 (6-16)	18 (7-52)	<0.001
Difference BECK	4 (0-7)	4 (1-9)	=0.122
Difference VAS	2 (1-4)	5 (3-7)	<0.001

DISCUSSION

Kinesio taping is intensively used in RCS and it is preferred due to its pain decreasing and muscle strength and body function developing effects in patients. Researches in literature also indicated that the application has a wide area of use (13).

The aim of our study is to research the influence of kinesio taping method in patients with RCS. It was concluded in our study that kinesio taping applied in addition to

conventional physiotherapy modalities will provide significant improvement in upper extremity functions, quality of life and pain of patients with RCS.

It can be seen that average age in studies conducted in literature about the treatment of patients diagnosed with RCS was similar to average age of patients who participated in our study (14, 15). This can be because individuals 40 years and older are more severely influenced by RCS symptoms.

Literature review conducted shows that in studies conducted on patients with impingement syndrome by using kinesio taping, a significant decrease has been reported in post-treatment VAS values when compared with pre-treatment (7, 16, 17). In our study, a statistically significant decrease was found in VAS scores of both groups, with higher decrease in kinesio taping group ($p<0.05$).

Kaya et al. reported that kinesio taping is an effective method in patients with impingement syndrome in their studies using DASH scale to evaluate upper limb function. (7). In our study, statistically significant decrease was found in DASH scores of the group which received kinesio taping ($p<0.05$). In the light of these findings, we believe that kinesio taping is effective in the improvement of upper extremity functions.

In Esenyel et al.'s study on the assessment of patients

with RCS, BECK depression inventory results showed that 41% of the patients had moderate level of depression and pain severity and depression showed a positive correlation (18). In our study, when PRT and POT results were compared in both groups, no statistically significant difference was found in depression status ($p>0.05$).

There are so many studies in the literature which reported that kinesio taping caused a significant improvement in quality of life in patients with RCS (19, 20). In our study, statistically significant increase was found in post-treatment scores of both groups, with statistically higher scores in kinesio taping group. Different studies have shown kinesio taping to have a positive effect on the improvement of various body functions and quality of life (21-23).

According to the results of our study, kinesio taping added to conventional treatment is a preferable method since it is an cost-effective, easily applicable and non-invasive method which significantly contributes to the improvement of upper extremity functions, decrease in pain and increase in quality of life.

CONCLUSION

According to the results of this study, we believe that kinesio taping method in addition to conventional treatment modalities is more effective than conventional treatment.

Our study researched the efficiency of 3-weeks lasting kinesio taping, but the long term efficiency of the treatment was not followed. Further studies with greater sample groups are needed in which long term effects of kinesio taping in RCS is researched.

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Conflict of Interest: *The authors declare that they have no competing interest.*

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