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AKCİĞER AMELİYATI OLAN HASTALARTDA EL MASAJININ AMELİYAT SONRASI AĞRIYA ETKİSİ: KONTROL GRUPLU YARI DENEYSEL BİR ÇALIŞMA

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Özet

Bu çalışma, akciğer ameliyatı olan hastalarda el masajının ameliyat ağrısına etkisini belirlemek amacıyla yapıldı. Araştırmaya alınma kriterlerine uyan ve gelişigüzel örnekleme yöntemi ile seçilen 34 hasta müdahale grubuna, 34 hasta kontrol grubuna dahil edildi. Hastaların tanıtıcı özellikleri ve ağrı şiddetleri ile ilgili bilgiler ilk aşamada toplandı. Müdahale grubundaki her hastaya birinci araştırmacı tarafından toplam 20 dakika el masajı uygulandı. Ağrı ve yaşam bulgularının izlemleri, müdahale grubundaki hastalarda, masajdan önce ve masajdan 5, 30, 60 ve 90 dakika sonra yapıldı. Kontrol grubundaki hastalar için müdahale grubuna uygulanan masaj süresi kadar beklendi. Bunun ardından 5., 30., 60., ve 90. dakikalarda tekrar değerlendirme yapıldı. Verilerin analizinde ki-kare, bağımsız gruplarda t testi, tekrarlı ölçümlerde ANOVA testleri kullanıldı. Müdahale grubundaki hastaların masajdan sonra yapılan ölçümlerinde masaj öncesine göre ağrı şiddetinde, kan basıncında ve solunum değerlerinde istatistiksel olarak önemli azalma olduğu görüldü. Ancak nabız değerlerinde önemli bir değişim olmadığı saptandı. Kontrol grubundaki hastaların ise kan basıncı değerlerinde önemli bir artış olduğu belirlendi.Rutin tedavi ve bakım ile birlikte uygulanan el masajının, akciğer ameliyatı olan hastalarda ağrı şiddetini, kan basıncı ve solunum değerlerini azaltmada etkili olduğu belirlendi.

Anahtar Kelimeler: Göğüs cerrahisi, ameliyat sonrası ağrı, el masajı, yaşam bulguları, hemşirelik.

THE EFFECT OF HAND MASSAGE ON POSTOPERATIVE PAIN IN PATIENTS WHO HAD LUNG SURGERY: A QUASI-EXPERIMENTAL STUDY WITH A CONTROL GROUP

Abstract

This study was conducted to determine the effect of hand massage on surgical pain in patients who had lung surgery. 34 patients who met the criteria for inclusion in the study and were selected by random sampling method were included in the intervention group and 34 patients were included in the control group. Information about the patients' descriptive characteristics and pain severity were collected at the first stage. A total of 20 minutes of hand massage was given to each patient in the intervention group by the first researcher. Monitoring of pain and vital signs was performed in patients in the intervention group before the massage and 5, 30, 60 and 90 minutes after the massage. For the patients in the control group, it was waited for the duration of the massage applied to the intervention group. Then, they were reassessed at minutes 5, 30, 60 and 90. Chi-square, t-test in independent groups, ANOVA tests were used in the analysis of the data. Measurements of patients in the intervention group after massage showed a statistically significant decrease in pain severity, blood pressure and respiratory values compared to before massage. However, no significant change in pulse values was detected. In patients in the control group, there was a significant increase in blood pressure values. Combined with routine treatment and care, hand massage was found to be effective in reducing the severity of pain, blood pressure and respiratory values in patients who had lung surgery.

Keywords: Thoracic surgery, postoperative pain, hand massage, vital signs, nurse.

1. INTRODUCTION

Despite the effective pain relief methods and nursing practices developed today, patients still continue to experience pain after surgery (1-3). Pain, which we face as an important problem in the postoperative period, causes complications such as anxiety, hemodynamic changes, changes in consciousness, and pain chronicity when not effectively managed (4-6). One of the most painful surgical procedures that is known is thoracotomy (7). Based on literature review, research shows that patients experience high levels of pain after thoracotomy (8,9). Pain results from damage to muscles, bones and joints, and soft and visceral tissues after thoracotomy (7,10). Complications such as chronic post-thoracotomy pain and delay in the healing process develop if the pain after thoracotomy is not eliminated (11).

One of the most important purposes of post-operative treatment and care is to reduce or eliminate the pain and its complications by providing effective analgesia, and thus to facilitate the healing of the patient. Moreover, it is to reduce morbidity and hospital stay, to improve quality of life and to provide opportunities for treatment under economical conditions (12). In order to reduce or eliminate pain, it is necessary to identify, implement and disseminate methods that are effective in pain treatment and care (12,13).

Today, pharmacological and non-pharmacological methods are used together to achieve aformantioned goals in pain management after surgery. Pharmacological and non-pharmacological methods are used together to achieve aforementioned goals in pain management after surgery.

Massage, which is one of the most commonly used non-pharmacological methods in recent years, is an ancient method dating back to the existence of humanity (14). How massage affects pain is explained by Melzack's gate control theory. Based on this theory, when massage is applied, A-alpha and A-beta thick tactile sense fibers that move faster than the A-delta and C thin fibers — which work in transmitting the sensation of pain — prevent the impulses in the fibers with small diameter, carrying the pain from reaching the upper levels (15). The mechanoreceptors in the center of tactile sensory fibers described in this theory are located mostly in the hands and feet and massage to these areas can be applied easily and in a short period of time. For this reason, it is reported in the literature that mostly these regions are preferred for massaging (16-19).

There are studies in the literature indicating that hand and foot massages reduce the pain of patients (18,19) and have positive effects on their vital signs (16,20). However, no studies could be found showing that hand massage is effective in reducing pain after lung surgery.

Surgical nurses are the team members who have the most active duty in the postoperative pain management. Thus, it is among nurses' roles and responsibilities to be knowledgeable about pain management through pharmacological and non-pharmacological methods and to reflect this knowledge in practice.

Therefore, this study was carried out to determine the effect of hand massage on postoperative pain and vital signs in patients who had undergone lung surgery through thoracotomy.

Research hypotheses:

H_0: There is no difference between the pain intensity of the patients who received hand massage after lung surgery and the pain intensity of the patients who were nor massaged.

H_1: The pain intensity of patients who received hand massage after lung surgery was lower than thar of patients who were not massaged.

2. MATERİAL and METHOD

2.1. Population and Sample

This study was designed as a quasi-experimental study with a control group.

The population consisted of all adult patients who had lung surgery at a university hospital's thoracic surgery clinic between March 2016 to December 2016 formed. The sample size was determined as a minimum of 68 patients who had lung surgery in the analysis (effect size 0.9, universe representation power 0.95 and confidence interval 0.95) performed using G-power 3.1.9.2. software.

Patients who met the criteria for inclusion in the study were assigned to sample groups with the random sampling method. 34 patients were included in the intervention group and 34 patients were included in the control group. Patients were first admitted to the control and then the intervention group on days when the researcher was randomly in the clinic.

2.2. Criteria for Inclusion

Patients aged 18 and over who volunteered to participate in the study, who do not have communication difficulties that prevent understanding and communication of the information provided, who feel "moderate" and more (4 and above) postoperative pain, who do not have a condition that prevents massage (zoster, fungus, local infection, etc.) for the intervention group, and who do not use Patient-Controlled Analgesia (PCA) and alternative methods (cold-hot applications, herbal methods) to relieve pain were included in the study.

2.3. Ethical Aspect of the Research

Before the study begun, approval was received from the Gaziantep Clinic Research's ethical committee (2016/15), and institutional permission was obtained from the hospital. The patients who met the inclusion criteria were informed about the study. They were informed about the aim of the study, the plan and the intentional use of the data that would be obtained. Their written informed consents were obtained.

2.4. Place of the Study and Participants

The study was conducted at the thoracic surgery clinic of a university hospital in Southeastern Anatolia region of Turkey. Patients who underwent lobectomy, wedge resection and pneumonectomy were included in the study when they were brought to the clinic.

After they were included in the study, patients who received additional analgesia in addition to normal analgesia treatments, who left the clinic during reassessment, and who wanted to leave the study during the reassessment stage (14 patients) were excluded from the study.

2.5. Data Collection Tools and Methods

Patient Description Form

This form developed by the researcher in order to determine the and medical characteristics of patients consists of two parts. In the first part, there are 13 questions aimed at determining the descriptive characteristics of patients, and in the second part-their medical characteristics.

Numerical Rating Scale (NRS):

The numerical assessment scale (NRS) is commonly used to assess pain. The scale is used in a way that the patients over the age of 9 mark the best value indicating their pain that exists at that moment. The numerical value shown by the patient is a document of the level of pain. It also allows to assess the intensity of pain that changes over time and determine the treatments that will be used to relieve the pain. The patient is told what the values between 0 and 10 mean: 0 "no pain at all", 4-6 "moderate pain", 7-10 "severe, unbearable pain". The patients are asked to choose the value that best describes the pain (21,22).

2.6. Conduct of the Study

The study was conducted quasi-experimentally with a control group to determine the effect of hand massage applied to patients who had lung surgery on postoperative pain. Patients who had surgery were taken to a breast surgery clinic after spending the first night in intensive care. For this reason, the clinic was visited on Tuesday, Wednesday, Thursday, Friday and Saturday to reach the patients. During the days when the researcher was in the clinic, attention was paid to inform the patients who accepted the study in a way that they could understand, to ensure that the patients were alone during the massage application and assessment, and to ensure that the patients were comfortable during the massage application in the intervention group. However, since the majority of the patient rooms in the clinic where the study was conducted were for 2 people, it was not possible for the patients to be alone. Attention was also paid to ensure that the patient rooms were not noisy, and the room temperature was at a level that would not disturb the patient. Patients were asked to read and sign informed consent forms. Consent was obtained from relatives of patients who were elderly or

illiterate. 9 patients, 5 from the control group and 4 from the intervention group, were excluded from the study because they were asleep and tired during reassessments or wanted to quit without specifying any reason. In addition, 5 patients, 2 from the control group and 3 from the intervention group, who requested additional painkillers as their pain increased were removed. A total of 82 patients voluntarily agreed to participate in the study.

First, control group patients were admitted to the study. Patients continued to be admitted to the control group until the number of patients determined by the power analysis was reached. After a sufficient number of patients in the control group was admitted, patients were admitted to the intervention group, thus preventing transmission between the two groups.

The first researcher received massage training for classical hand massage application. Baby oil was used during the application. 20 minutes of classic hand massage were performed on patients in the intervention group by the researcher himself, 10 minutes on each hand. As an analgesic treatment, Tenoxicam, Tramadol HCl and Diclofenac sodium were administered alone or in combination. Patients were admitted to the study during the period when the effects of analgesics began to wear out (16:00-18:00). Patients in the control group received only analgesic therapy, while patients in the intervention group received hand massage in addition to analgesic therapy. Classical hand massage was performed using effleurage (stroking), petrissage (kneading), friction, tapotement (knocking) and vibration techniques, respectively, to the patients in the intervention group. Pain and vital signs of patients in the intervention group were assessed before starting the massage, and then the massage was applied. Measurements were repeated after 5, 30, 60 and 90 minutes after the completion of the massage. In patients in the control group, pain and vital signs were assessed when they were admitted to the study, and measurements were repeated at the same minutes, waiting as long as the massage time in the intervention group.

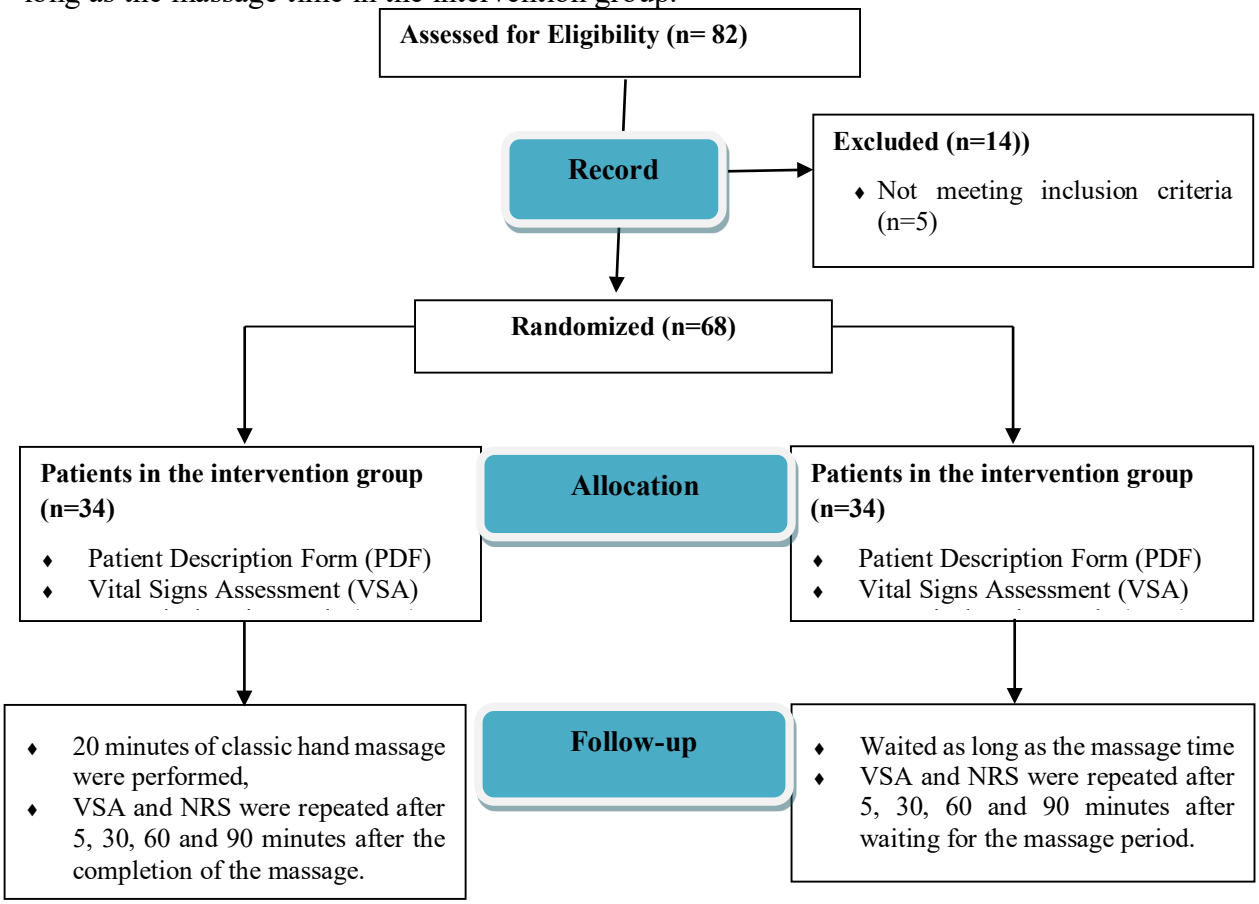

Figure 1: CONSORT

Data Analysis

The SPSS 21.0 (Statistical packet for Social Sciences for Windows) program was used for the analysis of findings obtained in the study. Statistical methods applied in the study are explained in Table 1.

Table 1: Statistical Methods Used in The Analysis of Study Data

Variables	Statistical method used
Comparison of control variables of experimental and control groups	➢ Chi-square t test in and independent groups
In assessing some descriptive and medical characteristics of the patients	➢ Number, percentage, mean and standard deviation
For the importance test of the difference between pain, blood pressure, pulse and respiratory values at measurement times of experimental and control groups	➢ T test in independent groups
For the importance test of the difference between pain, blood pressure, pulse and respiratory values at repetitive measurement times of experimental and control groups	➢ Analysis of variance in repetitive measurements

3. RESULTS

No difference was found between the groups in terms of descriptive characteristics of tha participants except for educational status (p=.001, x^2=11.103) (Table 2).

Table 2: Descriptive and medical characteristics of the patients in the intervetion and control groups

	Experimental group (n=34)		Control group (n=34)		Total		Test[a]	Value[b]
Age								
Younger than 55 years of age	12	35.3	14	41.2	26	38.2	X^2=.249	>.05
55 years and older	22	34.7	20	58.8	42	61.8		
Gender								
Female	7	20.6	8	23.3	5	2.1	X^2=.086	>.05
Male	27	79.4	26	76.3	53	77.9		
Education level								
Lower than High School	16	47.1	29	85.3	45	66.2	X^2=11.103	**=.001**
High School and Higher	18	52.9	5	14.7	23	33.8		
Marital Status								
Married	32	94.1	31	91.2	63	92.6	X^2=.217	>.05
Single	2	5.9	3	8.8		7.4		
Employment Status								
Employed	11	32.4	12	35.3	23	33.8	X^2=.066	>.05
Unemployed	23	67.6	22	64.7	45	66.2		
Status of Undergoing Any Previous Operation								
Had one	12	35.3	14	41.2	26	38.2	X^2=.249	>.05
None	22	64.7	20	58.8	42	61.8		
Current type of surgery								
Lobectomy	18	53.0	16	47.1	34	50.0		
Wedge resection	8	23.5	5	14.7	13	19.1	X^2=2.000	>.05
Pneumonectomy	8	23.5	13	38.2	21	30.9		
The number of intercostal drains								
No drains	3	14.7		20.5	12	17.6	X^2=1.082	>.05
Single drain	14	41.2	16	47.1	30	44.2		

Two drains	15	44.1	11	32.4	26	38.2		
Postoperative analgesic								
NAD[c]	20	58.8	23	67.6	43	63.2	X^2=.569	>.05
Opioid (Narcotic)	14	41.2	11	32.4	25	36.8		

a: Chi-Square test to determine the relationship between categorical variables.
b: P value for statistical significance of difference between the 2 settings
c: NAD; Nonsteroidal Anti-inflammatory Drugs

It was seen that there was no statistically significant difference between the two groups in terms of the pain severity levels at the 0th- and 5th-minute follow-ups, but the differences in the 30th, 60th and 90th minutes were statistically significant. It was found that there was a decrease in the pain severity of the patients in the experimental group, which began at the 5th minute after the massage and continued until the 90th minute. This decrease occurring within the experimental group was statistically significant, as well (F=81.829; p=.001) (Table 3) (Figure 2).

Table 3: Change of Pain Severity Within and Between Groups According to Time

Follow-up times	Experimental Group (n=34) Mean±SD	Control Group (n=34)Mean±SD	Test[a]	P Value[c]
Before massage	7.20±1.17	7.26±1.60	t=.173	>.05
5 minutes after massage	7.08±1.42	7.11±1.60	t=.080	>.05
30 minutes after massage	6.11±1.22	7.20±1.49	t=3.286	**=.001**
60 minutes after massage	5.61±1.39	6.88±1.68	t=3.375	**=.001**
90 minutes after massage	5.17±1.02	7.58±1.23	t=8.753	**=.001**
Test[b]	F=81.829	F=1.890		
P Value[c]	**=.001**	>.05		

a: Indepented sample test
b: Anova
c: P value for statistical significance of difference between the 2 settings

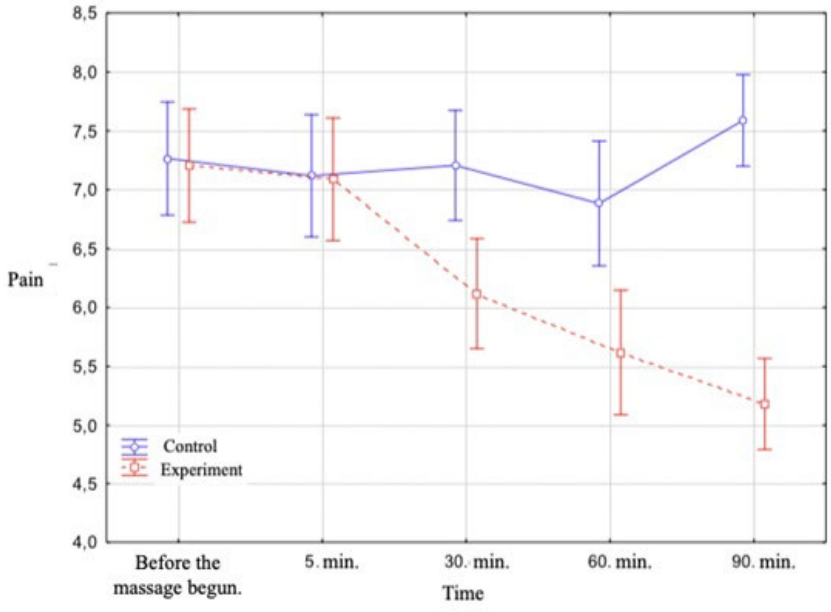

Figure 2 : The pain changes of the patients in the experimental and control groups during follow-up.

No decrease was observed in the systolic and diastolic blood pressure values of the patients in the experimental group at the 5th minute after the massage. However, it was found that after the

30th minute, the pressure values decreased and the decreases were statistically significant (p=.001). It was found that the systolic and diastolic blood pressure values of the patients in the control group showed fluctuations over time. It was found that the systolic and diastolic blood pressure values at the 90th minute were statistically higher than the initial measurements (p=.05) (Table 4).

When the pulse rates of the patients were examined, no significant changes were found among the times of the measurements in both groups (p>.05) (Table 4).

It was found that the respiratory values of the patients in the experimental group decreased at a regular pace in the repeated measures, and this decrease was statistically (p=.0001). In the control group, there were also changes among the times of measurements; however, it was found that these changes were not statistically significant (p>.05, Table 4).

Table 4: Change of Vital Signs Between-groups and Within-group

Follow-up times/ Test[b]	Systolic Blood Pressure				Diastolic Blood Pressure			
	Experimental Group (n=34) Mean±SD	Control Group (n=34) Mean±SD	Test[a]	P Value[c]	Experimental Group (n=34) Mean±SD	Control Group (n=34) Mean±SD	Test[a]	P Value[c]
0th minute	135.00±18.62	117.05±16.05	t= 4.254	**=.001**	76.47±10.93	72.35±11.02	t=-1.563	>.05
5 th minute	135.29±18.78	117.35±18.30	t= 3.988	**=.001**	77.35±9.31	69.41±10.99	t=-3.214	**<.05**
30 th minute	132.64±15.23	114.41±16.17	t= -4.784	**=.001**	74.41±8.23	71.47±8.92	t=-1.413	>.05
60 th minute	128.23±14.02	117.94±16.65	t= -2.756	**<.05**	72.05±7.29	67.02±14.79	t=-1.778	>.05
90 th minute	126.17±13.26	122.05±17.19	t= -1.106	>.05	68.23±7.16	73.82±9.53	t=2.731	**<.05**
Test[b]	F=7.058	F=3.818			F=12.037	F=3.276		
P Value	**=.001**	**<.05**			**=.001**	**<.05**		

	Pulse				Respiratuar			
	Experimental Group (n=34) Mean±SD	Control Group (n=34) Mean±SD	Test[a]	P Value[c]	Experimental Group (n=34) Mean±SD	Control Group (n=34) Mean±SD	Test[a]	P Value[c]
0 th minute	87.79±16.71	94.11±16.71	t=1.707	>.05	26.47±2.09	24.79±4.62	t=-1.926	>.05
5 th minute	90.17±11.64	95.02±16.48	t=1.402	>.05	26.32±2.61	25.85±2.35	t=-.781	>.05
30 th minute	88.47±11.94	97.00±15.68	t=2.522	**<.05**	25.14±2.53	25.85±2.97	t=1.053	>.05
60 th minute	87.05±9.48	93.82±21.87	t=1.654	>.05	23.64±2.38	25.76±2.94	t=3.258	**<.05**
90 th minute	87.29±10.36	99.38±16.14	t=3.674	**<.05**	22.73±2.42	26.02±2.06	t=6.023	**=.001**
Test[b]	F=1.714	F=2.749			F=46.574	F=1.726		
P Value[c]	>.05	>.05			**=.001**	>.05		

a: Indepented sample test
b: Anova
c: P value for statistical significance of difference between the 2 settings

4. DISCUSSION

It has been reported that uncured postoperative pain causes many complications in patients such as anxiety, hemodynamic changes (blood pressure, pulse rate, oxvgen level and respiratory rate), changes in consciousness and pain becoming chronic (5,6). The multifaceted and complex nature of pain and the fact that it is a completely individual experience makes it difficult to describe, explain, understand and control (25). Therefore, surgical nurses have important responsibilities in providing qualified postoperative pain control.

In line with this information, the study was conducted to determine the effect of hand massage o the severity of postoperative pain and vital signs in patients who had lung surgery.

The pain severity of patients in the intervention group began to drop after the application of hand massage. At all times when pain severity was monitored, it was determined that the pain continued to decrease. Changes in the severity of pain in patients in the control group over time were not statistically significant. Pain severity of patients in the intervention group was lower than pain severity of patients in the control group at all times monitored.

The mechanism of massage for relieving pain is based on Melzack's gate control theory and endorphin theory. According to these theories, mechanoreceptors and touch sense fibers, which are particularly present in the hands and feet and stimulated by massage, stimulate the substansia gelatinosa cells (the door closes), causing the stimulation transition to T cells to be inhibited and thus the sense of pain to be blocked (26). When substansia gelatinosa cells are stimulated, endorphin, an endogenous opioid, is released, preventing the secretion of substance P, which plays a role in pain transmission, thus preventing the transmission of pain impulses (27). The decrease in pain severity of patients with hand massage can be explained by Melzack's gate control theory and endorphin theory.

There are studies assessing the effect of hand massage on the pain of patients who were followed up in the intensive care unit after heart surgery and had liver transplantation. When the effect of hand massage was assessed qualitatively (27) and quantifiably (29) in patients who had heart surgery, it was observed that patients were significantly relieved. Hand massage applied in patients who had liver transplantation has also been shown to be effective in reducing pain (30).

There are studies in the literature showing that hand massage is effective not only in reducing postoperative pain, but also in reducing the chronic pain of elderly people living in nursing homes[(31) and patients receiving long-term care (32).

Hand massage is often performed together with foot massage (6,18,25). When hand and foot massages were applied together after thoracic surgery (6) and heart surgery (18,25) it was determined that there was a statistically significant decrease in pain severity of patients. These studies suggest that the pain experienced by patients is similar to the results of this study, since surgical interventions here are also applied to the thoracic region. It seems that the results of this study also support the literature.

It has also been found that hand massage is used in combination with foot massage in surgeries on different parts. Significant reductions in pain were observed after cesarean section (17,19) abdominal surgery (33) and laparoscopic cholecystectomy surgery (34).

In addition to being an uncomfortable feeling for people, pain also causes changes in blood pressure, pulse and respiratory values in response to vegetative and autonomic reflexes (3,27). There are studies that show that hand massage and different types of massage make changes in the severity of pain, as well as in the vital signs (6,31).

Table 4 shows that the systolic and diastolic blood pressure of the patients in the intervention group after massage generally decreases, while the systolic and diastolic blood pressure of the patients in the control group increases. However, there is also a study showing that hand massage does not affect postoperative blood pressure (29).

In addition, there are studies showing that hand massage is effective in blood pressure values of chronic pain patients (31) and hand-foot massage (7) and only foot massage is effective in postoperative blood pressure values (35). Additionally, there are studies showing that massage applied to different areas after heart surgery (36) and foot massage applied to patients undergoing surgery for breast cancer (37) provide a significant decrease in average systolic-diastolic blood pressure. In this context, it can be said that the study results are parallel to the literature. However, the fact that patient groups and massage areas are different leads to limitations in terms of comparison. In addition, it is thought that the reason why the massages applied to different regions and the hand massage applied in this study have different effects on blood pressure may be due to the fact that

diseases, patients and medication treatments applied are different. In this case, along with massage methods, it is necessary to assess the state of use of medications that affect blood pressure.

In this study, pulse values, another parameter affected by pain, were also studied. It was found that patients in the intervention and control group did not have a significant change in pulse values at all measurement times. There are studies showing that hand massage applied in nursing home patients causes a significant decrease in pulse (31), and different types of massage also reduce pulse values in different patient groups (5,20,38,39). In accordance with this information, the results of the study were not similar to the literature in terms of pulse values. Again, it is believed that this condition can also be caused by the difference in the patient and the differences in the medications.

One of the increased complications due to pain that cannot be cured after surgery, respiratory distress is one of the most common problems (5). Considering that respiratory values can be kept at normal values as a result of reducing pain with massage, the respiratory values of patients were also examined as the last parameter in this study.

The average respiratory values of patients in both groups were above the normal limits at the beginning of the study. There was a significant decrease in respiratory numbers in the patients in the intervention group. In the control group, the number of breaths showed increases and decreases during monitoring times and was above normal values at all times. However these changes were not significant. In the different group of patients where hand massage was applied, there was a significant decrease in the average respiratory values of the patients (31). The results of this study are similar to the literature. Although there are different groups of patients, it can be said that hand massage has an effect on respiratory values.

Limitations of the Study

The study has soma limitations. The effects od hand massageof on postoperative pain and vital signs were determined only by examining the patient's pain reports and vital signs. However the level of endorphin, which causes pain to decrease and is thought to be secreted with massage, in the blood could not be assessed. Whether the effects on vital signs were caused by medication used to control blood pressure and heart rhythm were not assessed. The study was designed only with the experimental and control group, and no placebo group group was used. Therefore, the placebo effect could not be assessed. As some patients were not allowed to be alone during applications, the environment could not be made completely suitable for the study. In addition, as the study was conducted in a single center, it could not be compared with different hospital environments.

Conclusion

Hand massage can be used in combination with pharmacological treatment to reduce postoperative pain. Therefore, it can help patients reduce their pain earlier, control blood pressure and respiratory values.

- Hand massage is a method that can be applied in a short time and easily. For this reason, hand massage can be used together with drug therapy for pain control in surgical clinics.
- Hand massage can also be used for pain control after different surgical procedures.
- Since it has no side effects, it can be applied to special patient groups such as the elderly, children and pregnant patients.
- It can be integrated into undergraduate and postgraduate nursing education.

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