KLİNİK ÇALIŞMA / CLINICAL RESEARCH

CAN PREOPERATIVE MULTIMEDIA INFORMATION PROVISION DECREASE PERIOPERATIVE PATIENT ANXIETY DURING REGIONAL ANESTHESIA? A RONDOMIZED CONTROLLED TRIAL

PREOPERATİF MULTİMEDYA BİLGİLENDİRMESİ REJYONEL ANESTEZİ SIRASINDA PERİOPERATİF HASTA ANKSİYETESİNİ AZALTIR MI? RANDOMİZE KONTROLLÜ ÇALIŞMA

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SUMMARY

Objective: *Preoperative information provision is the most effective approach for alleviating the patient's anxiety during the operation. In this study, we aimed to investigate the effect of showing pre-recorded spinal anesthesia procedure video on perioperative anxiety of the patients undergoing surgery under spinal anesthesia.*

Method: *A total of 100 patients undergoing inguinal hernia operation under spinal anesthesia were allocated into study (Group I, n=50) and control (Group II, n=50) groups. The study group watched an informative pre-recorded short film depicting the (HAD) anesthesia procedure. Patient anxiety levels were assessed via Visual Analogue Scale (VAS), Hospital Anxiety Depression Scale (HADS) and State Trait Anxiety Inventory (STAI).*

Results: *In the morning of the operation STAI Anxiety score was lower in the Group I, (p=0.007). There was positive correlation between the education level and the preoperative HAD Anxiety scores of the patients (r=0.256, p=0.010), whereas the education levels and the postoperative STAI Anxiety scores were negatively correlated (r=0.256, p=0.008). Significantly positive correlation was determined between preoperative VAS scores and HAD Anxiety (r=0.386, p=0.001), as well as STAI Anxiety scores (r=0.300, p=0.002).*

Conclusion: *Preoperative multimedia information of the patients scheduled for the operation under spinal anesthesia had favorable effects on perioperative anxiety levels.*

KEY WORDS: *Regional anesthesia, Spinal anesthesia, Anxiety, Multimedia, Video.*

ÖZET

Amaç: *Preoperatif bilgilendirme sağlanması hastanın ameliyat sırasındaki anksiyetesini azaltmak için en uygun yöntemdir. Bu çalışmada, spinal anestezi altında opere edilecek olan hastalara, önceden kaydedilmiş spinal anestezi videosu izletmenin perioperatif anksiyete üzerine etkisi araştırıldı.*

Yöntem: *Spinal anestezi altında inguinal herni operasyonu geçirecek olan 100 hasta çalışma (Grup I, n=50) ve kontrol (Grup II, n=50) gruplarına ayrıldı. Çalışma grubuna önceden kaydedilmiş spinal anestezi işlemini gösteren video izletildi. Hastaların anksiyete düzeyleri Vizüel Analog Skala (VAS), Hastane Anksiyete Depresyon Skalası (HAD) ve Durum Kaygı Anksiyete Envanteri (DKAE) ile incelendi.*

Bulgular: *Ameliyat sabahı DKAE Anksiyete skoru Grup I' de daha düşüktü, (p=0.007). Eğitim seviyesi ile preoperatif HAD Anksiyete skorları arasında pozitif (r=0.256, p=0.010), yine eğitim seviyesi ile postoperatif DKAE Anksiyete skorları arasında ise negatif (r=0.256, p=0.008) korelasyon vardı. Preoperatif VAS skorları ile HAD Anksiyete (r=0.386, p=0.001) ve DKAE Anksiyete (r=0.300, p=0.002) skorları arasında anlamlı pozitif korelasyon saptandı.*

Sonuç: *Spinal anestezi altında opere edilecek hastaların preoperatif multimedya bilgilendirmesinin perioperatif anksiyete seviyelerine olumlu etkileri mevcuttur*

ANAHTAR KELİMELER: *Rejyonel anestezi, Spinal anestezi, Anksiyete, Multimedya, Video*

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INTRODUCTION

Anxiety is one of the results of the mankind's adaptation and evolutional survival intuition to hazards against itself. Anxiety can affect the patient's pain perception negatively, so, increased anxiety can worsen the patient's overall satisfaction in perioperative care. Therefore, the patient satisfaction can be enhanced by reducing the preoperative anxiety leading to reduced postoperative analgesic requirement and hospital stay (1).

One of the most important reasons of anxiety symptoms in the medical patients is uncertainty in medical diagnosis and treatment (2,3). Therefore, the most effective approach to an anxious patient is meeting with him/her preoperatively to provide adequate information, psychological support and assurance by the anesthesiologist and the surgeon.

Preoperative information provision is regularly carried out due to both legal and ethical issues. The written information also consists of taking written consents and signatures of the patients. Patients can be informed by many media communication tools. The ideal informative method to alleviate patient's preoperative anxiety is still unknown. Furthermore, visual information materials regarding anesthetic procedures are relatively few. On account of this, we aimed to investigate the effect of showing prerecorded spinal anesthesia procedure video film on perioperative anxiety of patients undergoing inguinal hernia surgery under spinal anesthesia. Our hypothesis was that video-informed patients would have less anxiety levels.

MATERIAL AND METHODS

After the approval of Local Ethics committee of the hospital (07.04.2011, 149-2011) and taking informed consents of the each patient; 18-65 years, American Society of Anesthesiologists(ASA) physical status I-II, 110 patients undergoing inguinal hernia operation under spinal anesthesia were recruited for the study. The study was conducted in Ankara Numune Research Hospital, Turkey, between January and August 2012. Illiterate patients, patients having noticable visual or hearing disorder, those having psychiatric disorder, operated under regional anesthesia for any reason before, having contraindication for spinal anesthesia were excluded from the study. The night before the operation, all patients were visited to be informed and asked to read routine preanesthetic patient information form. Detailed explanation of the spinal anesthesia procedure was made, as well as data of advantages, disadvantages and possible complications were given. Subsequently, all study patients were asked to answer State-Trait-Anxiety Inventory 1-2 (STAI 1-2) and Hospital Anxiety and Depression (HAD) questionnaires. Furthermore, all patients were signed their anxiety levels on 10 cm Visual Analog Scale (VAS) before the operation. Gender, age, educational status and ASA statuses of all the patients were recorded.

The multimedia information video was recorded as a 3 minute-long film consisting of the spinal anesthesia procedure administered by an experienced anesthesiologist to a 37 year old male patient undergoing inguinal hernia repair operation under spinal anesthesia. "Bolero", the one of the most prestigious creations of Maurice Ravel, was used as the background music for the video. Privacy and confidentiality of the patient was protected.

After the patients have filled in the questionnaires, VAS levels and demographic data were recorded by the anesthesiologist. The patients were randomly allocated into one of the two groups using a closed envelope method. The study group was named as Group I (n=55), whereas the control group as Group II (n=55). Patients in the Group I watched the abovementioned video film after filling in the questionnaires, whereas those in the Group II did not. Patients in the both groups were visited in the morning of the operation and were asked to fill in the STAI forms by the same anesthesiologist.

No anxiolytic drugs were administered to the patients as premedication, as this is a common practice in our hospital and one of the routine approaches for the patients being operated under regional anesthesia. Routine monitorization of the patients in the operation rooms consisted of electrocardiography, non-invasive blood pressure and peripheral oxygen saturation (Datex-Ohmeda S5 Avance, Finland) measurement. The patients had intravenous access via 20-gauge catheter on the non-dominant hand and 10 mL kg^{-1} of isotonic sodium chloride solution was infused prior to the spinal anesthesia procedure. Afterwards, the patients were placed in sitting position on the table and a 25-gauge Quincke spinal needle (Spinocan®, B.Braun Melsunger AG, Germany) was administered through L 3-4 interspinal space for lumbar puncture, after an appropriate skin antisepsis by povidone iodine. The anesthesia procedure was done by a blinded anesthesiologist to the study. Three mL of 0.5% hyperbaric bupivacaine (Marcaine® Spinal heavy 0.5%, AstraZeneca, Sweden) was injected through the needle in 30 seconds after CSF appearance in the needle hub. Surgery was permitted to start after the acquisition of T_{10} sensory level. Inguinal herniorrhaphy operation was carried out by meshed Lichtenstein method.

All study patients were visited again on the operation night; STAI and HAD questionnaires were filled, and the VAS scores were recorded again by the same anesthesiologist.

Statistical analysis was performed with Statistical Package for Social Sciences for Windows 11.5 software (SPSS 11.5, Chicago, Illinois, USA). The character of the distribution of constant variables was analysed by Shapiro Wilkins test. Descriptive statistics were demonstrated as mean ± standard deviation for constant variables, and as case number and per cent (%) for categorical variables. The importance of difference for means and medians between the groups was tested by Student's t test and Mann Whitney U tests, respectively. Categorical variables were analyzed by Pearson's Chi-Square test. Wilcoxon signed test was used to analyze the presence of significant difference between pre- and postoperative scores within the groups. Spearman's Correlation test was used to investigate the presence of any significant relation between constant variables. $P<0.05$ was accepted as significant. We calculated that 50 subjects were required in each group to detect a clinically significant difference in the patients' anxiety scores between the groups of >5 points with $\alpha=0.05$ and $\beta=0.02$. We had chosen 55 patients in each group considering the possibility of losses during the study.

RESULTS

The study was concluded with 100 patients; 50 in each group. Ten patients were excluded from the study because of the need for general anesthesia due to inadequate spinal anesthesia, or the patient's change of the mind with the preference of general anesthesia on the operating table.

Demographic data of the patients are represented in the Table I. No significant difference was found between the groups.

VAS, HAD-anxiety, HAD-depression and State-Trait-Anxiety Inventory scores were found to be similar in both the groups, with the exception of the operation morning State Anxiety score, that was lower in the Group I (p=0.007). This difference was statistically significant (Table II).

Analyzing trait anxiety revealed 94% and 84% of the patients with high level of preoperative anxiety in the Groups I and II, respectively. Analyzing state anxiety revealed 86% and 92% of the patients with high level of preoperative anxiety in the Groups I and II, respectively. This number of the patients had decreased to 26% and 46% in the morning of the operation and this difference between the groups was statistically significant (p=0.011), (Table III).

There was positive correlation between the education level and the preoperative HAD-anxiety scores of the patients (r=0.256 p=0.010), whereas the education levels and the postoperative State Anxiety scores were negatively correlated (r=0.266, p=0.008). No correlation was found with education level regarding other scores neither preoperatively nor postoperatively.

Significantly positive correlation was determined between preoperative VAS scores and HAD-anxiety (r=0.386, p=0.001), as well as State Anxiety scores (r=0.300, p=0.002). No significant correlation was found between HAD-anxiety and State Anxiety scores (r=-0.018, p=0.858).

No extraordinary side effect had been observed in the patients.

DISCUSSION

In this prospective randomized controlled study patients undergoing the same surgical procedure under spinal

Table I. Demographic properties of the patients.

Variables	Group I (n=50)	Group II (n=50)	P
Age	49.3±12.3 (23-65)	49.1±12.8 (19-65)	0.924
Gender			1.000
Male	47 (94.0%)	46 (92.0%)	
Female	3 (6.0%)	4 (8.0%)	
Education status			0.885
Primary school	27 (54.0%)	25 (50.0%)	
High school	20 (40.0%)	21 (42.0%)	
University	3 (6.0%)	4 (8.0%)	
ASA			1.000
I	21 (42.0%)	21 (42.0%)	
II	29 (58.0%)	29 (58.0%)	

Note: The numbers in the parentheses represent maximum and minimum values for age.

Table II. Preoperative and postoperative VAS, HAD and STAI scores of the patients.

Variables	Group I (n=50)	Group II (n=50)	P
VAS			
Preoperative	3.5±1.4 (1-7)	3.7±1.3 (1-7)	0.504
Postoperative	1.7±0.6 (1-3)	1.7±0.6 (1-3)	0.671
HAD-anxiety			
Preoperative	6.9±3.1 (0-16)	7.3±2.7 (0-16)	0.284
Postoperative	3.3±2.3 (0-10)	3.6±1.8 (0-10)	0.289
HAD-depression			
Preoperative	6.4±2.9 (2-14)	6.3±2.5 (2-12)	0.964
Postoperative	3.5±2.2 (1-9)	3.3±1.8 (1-8)	0.925
Trait Anxiety			
Preoperative	52.5±5.6 (43-66)	50.5±5.2 (40-66)	0.121
Postoperative	44.4±6.5 (31-63)	43.8±5.4 (34-61)	0.769
State Anxiety			
Preoperative	49.7±4.7 (38-59)	49.6±3.9 (38-59)	0.716
Operation morning	42.1±3.7 (35-49)	44.2±3.4 (38-50)	0.007*
Postoperative	37.1±5.6 (27-51)	39.2±4.8 (30-51)	0.055

Note: Numbers in the parentheses represent minimum and maximum values. *$p < 0.05$

anesthesia were informed by showing an informative short film a day before the surgery during preoperative assessment. The main outcome of the study was that in the morning of the operation State Anxiety scores were significantly lower in the group which was provided with short video information during preoperative evaluation, although this difference probably had low clinical relevance. The rate of the patients having high level of anxiety was more than it was reported by Jlala et al (1). Our results were concordant with the rates reported by Klopfenstein et al (4). Moreover, considering operation morning State Anxiety, video-informed patients had significantly lower rates of high level of anxiety.

Anxiety observed in surgical patients can result from the fear of the surgery or any possible complications, including death due to anesthesia and/or the surgery. The anxiety itself usually does not cause any problem, but in 5% of the patients it can result in a big stress that can even cause refusal of the surgery (5). It has been reported that, both child and adult patients, having high levels of anxiety before the operation, have higher levels of anxiety and sleep disorders postoperatively, encounter more medical complications, have more pain leading to more analgesic usage and longer hospital stay (6-9). A specific type of postoperative anxiety is acute stress disorder related to the operation trauma. This circumstance can turn into post-traumatic stress disorder (10).

Evaluation of preoperative anxiety can be made by objective and subjective tests. In our study, we have used VAS, HAD and STAI tests, which are the examples of subjective tests (11). STAI 1-2 is a valid and reliable assessment form. State anxiety scale determines how an individual feels him/herself at a certain time and in particular conditions. Trait anxiety scale determines how an individual feels him/herself independent from any circumstances. State Anxiety scale and Trait Anxiety scale scores range between 20 and 80. Values between 20-37, 38-44 and 45-80 are considered as low, mild and high level anxiety, respectively. HAD is a qualified measure to determine anxiety and depression risk, level and severity. Aydemir et al. (12) have determined anxiety and depression cutting off scores as 10/11 and 7/8, respectively. Patients having scores over these levels are considered to be in the risk group. VAS is one of the bedside anxiety tests and it is acquired by signing the patient's anxiety degree on a 10 cm long scale. It is well correlated with other anxiety tests. Boker et al (13). suggested that, VAS is comparable with Amsterdam Preoperative Anxiety and Information Scale that is well correlated with the gold standard test STAI.

The most effective approach in the anxiety patient is giving psychological support and assurance. Meeting of the patient with the anesthesiologist and the surgeon before the operation and being given adequate information help patient to trust and be relaxed. Patients should be

Table III. Preoperative and postoperative anxiety levels of the patients.

Variables	Group I (n=50)	Group II (n=50)	P
Trait Anxiety			
Preoperative			0.110
Low Anxiety	-	-	
Mild Anxiety	3 (6.0)	8 (16.0)	
High Anxiety	47 (94.0)	42 (84.0)	
Postoperative			1.000
Low Anxiety	7 (14.0)	7 (14.0)	
Mild Anxiety	21 (42.0)	21 (42.0)	
High Anxiety	22 (44.0)	22 (44.0)	
State Anxiety			
Preoperative			0.338
Low Anxiety	-	-	
Mild Anxiety	7 (14.0)	4 (8.0)	
High Anxiety	43 (86.0)	46 (92.0)	
Operation Morning			0.011*
Low Anxiety	4 (8.0)	-	
Mild Anxiety	33 (66.0)	27 (54.0)	
High Anxiety	13 (26.0)	23 (46.0)	
Postoperative			0.321
Low Anxiety	26 (52.0)	19 (38.0)	
Mild Anxiety	20 (40.0)	24 (48.0)	
High Anxiety	4 (8.0)	7 (14.0)	

***p < 0.05**

Note: Numbers in the parentheses represent percent values.

informed about the procedure and its possible complications to take consent before any medical operation. Giving this information and ensuring that it is understood by the patient is the duty of the doctor. However, while assessing the patient before the anesthesia, the understanding of this information by the patient during preanesthetic assessment could not always be provided. We have demonstrated positive correlation between the education level and the preoperative HAD-anxiety scores of the patients. Although supporting patient interview with written material can increase patient's understanding, studies have shown that video-assisted visual informing provides better patient satisfaction and improves patient's knowledge about the anesthesia procedure compared to the patient interview or written material-assisted interview alone (14-16). Furthermore, lessening preoperative patient anxiety could make having better results after the operation and improve anesthetic satisfaction (17).

Tong et al (18). have assessed anesthesia and global satisfaction in outpatient surgery patients and demonstrated the global and anesthesia dissatisfaction to be 2.5 and 1.1%, respectively. They have stated that anesthesia dissatisfaction makes global dissatisfaction to increase 12 times more and suggested that anesthesia dissatisfaction could be used as an indicator of global dissatisfaction. Bardner et al. have reported that anesthesiologists are inadequate for evaluating patient anxiety and they are actually able to lessen it by simply questioning the patients (19). Moreover, they have found the anxiety levels of the patients the night before the surgery to be similar with the immediate preoperative values. Done et al. stated that pre-anesthetic informing made by video assistance would make considerable support (4). They also reported that, although the essential information given to the patients could be standardized by showing dubbed slideshow; anesthesiologists should inform the patients individually while taking their informed consents. Showing an informative short film two weeks before the surgery to the patients scheduled for operation on upper or lower extremities under regional anesthesia

have decreased the patient's anxiety (1). Doering et al. (20) have indicated that, showing a detailed video film about all the events beginning from preoperative admission to the hospital to the discharge time reduces anxiety and stress measured by patients' urine cortisol levels and intra operative systolic blood pressure values. So, based on these results, we had hypothesized that better information of the procedure (i.e. made by video assistance) can result in decrease of the anxiety of the patients.

STAI, HAD and VAS assessment scales have been used in our study. The requirement to have at least 10 point difference to make significant clinical alteration in State anxiety as indicated by Lee et al. (14), couldn't have been provided in this study. The mean State anxiety scores measured in the operation morning compared to preoperative period were decreased by 7.6 and 5.4 points in the video-informed and the control groups, respectively. There was significantly positive correlation between VAS, HAD-anxiety and State anxiety scores in our study. Nevertheless, we didn't find any correlation between preoperative State Anxiety scores and HAD-anxiety scores. Mean HAD-anxiety scores in our study were under 10/11, the cut off level, and HAD-anxiety score alone is inadequate for assessing the preoperative patient anxiety levels.

Klopfenstein et al (4). have demonstrated that anesthetic evaluation of the patients in outpatient policlinics lessens anxiety levels more compared to the preoperative evaluation in-ward. So, it is important to make preanesthetic evaluation of the patients in outpatient settings.

Some anesthesiologists may think that excessive information about the procedure can result in higher levels of anxiety, as people get acknowledged more with the possible complications. Oldman et al. (21) investigated the effects of written material about anesthetic drugs on the patient anxiety and satisfaction. Only 36% of the patients wanted to learn detailed anesthetic drug information. When the prospectus data of the most frequently used drugs such as propofol and remifentanil were given to the patients beside the written material, a significant number of the patients indicated that they were informed too much, however this circumstance did not increase the anxiety levels measured by STAI or VAS. But we think that this condition with the drugs is not true for invasive procedures or surgeries, i.e. the patients should be informed as much as possible regarding the matter. Of course, more studies should be conducted to evaluate this hypothesis.

Ip et al. (22) have demonstrated that postoperative pain prediction is well associated with pre-existing pain, anxiety (or other psychological fears), age and type of the surgery. Caumo et al. (23) have found risk factors for postoperative state anxiety in adults to be as overall pain experience, pain intensity, psychiatric disorders, preoperative state anxiety, smoking and poor ASA physical status. It was also shown that, neuraxial anesthesia, systemic multimodal analgesia and neuraxial analgesia prevent patients from postoperative state anxiety, whereas diazepam, which is frequently used to lessen preoperative anxiety, is not effective for preventing from it (23).

Preoperative HAD-anxiety and HAD-depression scores of the patients were high for both groups. This can be linked to cessation of pharmacological sedation preoperatively. The authors suggest the usage of pharmacological sedation routinely.

The effect of preoperative anxiety on postoperative pain was not assessed due to not evaluating postoperative pain and analgesic consumption in the patients. This could be considered as a limitation of our study, therefore more studies should be performed on this subject.

In conclusion, showing a short film about spinal anesthesia procedure a day before the surgery as a part of the pre-anesthetic evaluation might decrease operation morning anxiety of the patients scheduled for operation under regional anesthesia.

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