

CLINICAL RESEARCH / KLİNİK ÇALIŞMA

EFFECTS OF CANCER AND NON-CANCER SURGERIES ON
PREOPERATIVE ANXIETY SCORES OF PATIENTSKANSER VE KANSER DIŞI CERRAHİLERİN PREOPERATİF DÖNEMDE
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SUMMARY

Objective: About two-thirds of patients awaiting surgery show anxiety. Anxiety may be developed against surgery, anesthesia or the environment where they feel like a stranger. Concerns about the success of upcoming surgery, fears regarding anesthesia and postoperative pain are among the factors that determine level of preoperative anxiety. We hypothesized that patients undergoing cancer surgery may have higher preoperative anxiety scores.

Method: One hundred American Society of Anesthesiologists (ASA) I-2 patients over 18 years and scheduled to have an elective surgery were recruited. Patients undergoing a cancer surgery were in Group 1 (n=50) and undergoing a non-cancer surgery were in Group 2 (n=50). One day before the surgery, all patients were analyzed using the Amsterdam Preoperative Anxiety and Information Scale (APAIS) and the Spielberger State Trait Anxiety Inventory Test (STAI) to identify their anxiety scores.

Results: Both APAIS and STAI scores of cancer patients were significantly higher compared to non-cancerous patients (p<0.001). In patients with malignancy, there was a significant negative correlation between APAIS scores and the number of previous surgeries (p<0.001). In patients undergoing non-cancer surgery, the APAIS scores of female patients were significantly higher (p=0.011). There was not a statistically significant correlation between both the APAIS and STAI scores and age, sex, education level, and marital status in patients undergoing cancer surgery.

Conclusion: Both APAIS and STAI scores were found to be higher in patients having cancer surgery. We are of the opinion that, anxiolytics may be useful as premedication in the preoperative period for this patient group.

KEY WORDS: Anxiety, Cancer surgery, APAIS, STAI

ÖZET

Amaç: Cerrahiye bekleyen hastaların yaklaşık üçte ikisi kaygılıdır. Bu endişe cerrahiye, anesteziye, ölüme yada yabancı oldukları ortamlara karşı geliştirilen bir fenomendir. Geçirilecek cerrahinin başarısıyla ilgili endişeler, anestezi veya postoperatif ağrıyla ilişkili korkular preoperatif anksiyetenin düzeyini belirlemektedir. Bu çalışmadaki hipotezimiz kanser cerrahisi geçirecek olan hastalarda daha yüksek preoperatif anksiyete skorlarının saptanabileceğidir.

Yöntem: American Society of Anesthesiologists (ASA) fiziksel durumu I-2 olan, 18 yaşından büyük, elektif cerrahi geçirecek olan 100 hasta çalışmaya dahil edildi. Hastalar kanser cerrahisi geçiren (Grup 1, n=50) ve kanser dışı cerrahi geçiren (Grup 2, n=50) olarak 2 ayrı gruba ayrıldılar. Tüm hastaların cerrahiden 1 gün önce anestezi viziti sırasında Amsterdam Preoperative Anxiety and Information Scale (APAIS) ve Spielberger State Trait Anxiety Inventory Test (STAI) ölçekleri kullanılarak preoperatif anksiyete skorları belirlendi.

Bulgular: Kanser olan grupta hem APAIS hem de STAI skorları kanser olmayan gruptan anlamlı olarak daha yüksekti (p<0.001). Kanser cerrahisi geçiren grupta APAIS skoru ile hastaların daha önce geçirmiş olduğu operasyon sayısı arasında anlamlı negatif korelasyon mevcuttu (p < 0.001). Kanser dışı cerrahi geçiren grupta kadın hastalarda APAIS skoru erkek hastalardan anlamlı olarak daha yüksekti (p=0.011). Kanser cerrahisi geçiren grupta APAIS ve STAI skoru ile yaş, cinsiyet, eğitim seviyesi, medeni durum arasında istatistiksel olarak anlamlı bir korelasyon yoktu.

Sonuç: Sonuç olarak kanser cerrahisi geçiren hastalarda hem APAIS hem de STAI preoperatif anksiyete skorlarının diğer hastalardan daha yüksek olduğunu belirledik. Bu hasta grubunda preoperatif dönemde anksiyolitik ajanların premedikasyonda yeri olabileceği kanısındayız.

ANAHTAR KELİMELE: Anksiyete, Kanser cerrahisi, APAIS, STAI

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INTRODUCTION

About two-thirds of patients awaiting surgery show anxiety (1,2). Anxiety is a phenomenon that may be developed by patients against surgery, anesthesia and death or the environment where they feel like a stranger (3). Also, levels of anxiety vary depending on various reasons. Concerns about the success of upcoming surgery, fears regarding anesthesia and postoperative pain are among the factors that determine level of preoperative anxiety (4). Socio-demographic characteristics such as age, sex and education level; type and importance of surgery; underlying disease and patient's expectations related to that underlying disease; previous surgeries of patient, and his/her sensitivity against stressful circumstances are some other factors affecting the anxiety level. Anxiety in the preoperative period is regarded as a natural reaction, especially in the situations where patients have none or limited experience regarding the surgical procedure. However, presence of excessive anxiety in the preoperative period may lead to pathological responses and some negative effects such as the development of preoperative tachycardia, hypertension, arrhythmia, difficulty in establishing vascular access (1), cough appearing during induction, delayed jaw relaxation, or increased need for analgesics (5), nausea-vomiting, high level postoperative pain, and extended recovery time and hospitalization (6). Therefore, diagnosis of preoperative anxiety is of utmost importance.

As it is a subjective phenomenon, it is hard to analyze anxiety (7); however, anxiety should be analyzed with an objective, reliable and comprehensive method in order to obtain reliable results. Although there is a possibility that preoperative anxiety result in negative effects, preoperative anxiety scales cannot be used routinely in preoperative patient visits due to various reasons including time-limitation (8).

Anxiety scales applied in the preoperative period give patients the opportunity to express how and what they feel. Additionally, these scales ensure preoperative patient evaluation to be performed electively by enabling the identification of patient groups that need anxiolytic medications. Previous studies have proven that the Amsterdam Preoperative Anxiety and Information Scale (APAIS) is a reliable scale for analyzing preoperative anxiety (9-12). Reliability of the Spielberger State-Trait Anxiety Inventory (STAI) has been also investigated earlier (13-16).

A meta-analysis has reported that anxiety prevalence rate of cancer patients is 10.3% (17). In this study, we hypothesized that patients undergoing cancer surgery may have higher preoperative anxiety scores. Additionally,

we aimed to indicate the correlations between anxiety scores and patient characteristics.

MATERIALS AND METHODS

This prospective observational study was conducted in Marmara University hospital after obtaining Ethics Committee Approval (protocol no: 09.2012.0073, date: 14/06/2012) and patients' written informed consents, and extended over a one-year period. One hundred ASA 1-2 patients who were over 18 year of age and scheduled to have an elective surgery were recruited in the study. Patients taking psychotropic medication, having psychiatric disease, having difficulty in understanding the principles of the study and that were not diagnosed with malignant tumors were not included in the study. Patients included in the study were separated into two groups: 'patients undergoing a cancer surgery (Group 1, n=50)' and 'patients undergoing a non-cancer surgery (Group 2, n=50)'.

One day before the surgery, all patients were analyzed using the Amsterdam Preoperative Anxiety and Information Scale (APAIS) and the Spielberger State Trait Anxiety Inventory Test (STAI) to identify their anxiety scores. For APAIS, patients filled in a 6-item test in Turkish and were asked to evaluate each question on a five-point Likert scale. On the other hand, patients filled in a 20-item test in Turkish for STAI, then gave points to each question from 1 to 4. Patients did not take any anxiolytic during or after visits. All patients received midazolam with 0.15 mg kg⁻¹ im atropine as premedication 45 minutes before the surgery.

While Sum A (Question 1 and 2) calculated for the assessment of anxiety associated with anesthesia, Sum S (Question 4 and 5) was calculated for identifying the anxiety related to surgery. Also, Sum C (Sum A+Sum S) was calculated as the sum of these two scores.

Patients' age, sex, marital status, education level, number of previous operations and type of surgery were the data recorded.

Statistical Analysis

Sample size calculation: It was assumed that APAIS and STAI scores would show at least 4 units of variation between the two groups and the standard deviation would be 7. When we calculated the standard effect size as 0.57, and accepted alpha 0.05 and beta 80%, 49 would be enough for each group. The SPSS 20.0 program was used for the analysis. The average, standard deviation, ratio and frequency values were used in descriptive data of statistics. Data distribution was examined with the Kolmogorov Simirnov Test. While the Mann-whitney U

Test was used for the analysis of the quantitative data, the Chi-Squared Test was used for the analysis of qualitative data, and the data which could not meet the Chi-Squared conditions was analyzed with the Fischer Test.

RESULTS

One hundred patients undergoing cancer and non-cancer surgeries were included in the study. None of the patients were excluded for the study. There was no significant difference between the patients regarding their demographic characteristics (Table I). Both APAIS and STAI scores of cancer patients were significantly higher compared to non-cancerous patients ($p < 0.001$,

Table I. Patient demographics, APAIS and STAI scores, number of previous operations (mean±SD)

Parameters	n
Age (years)	52.84±13.71
Gender (female/male)	36/64
APAIS score	15.26±5.41
STAI score	41.91±6.81
Number of previous operations	2.20±1.25

Table II. The comparison of APAIS and STAI scores (mean±SD)

	Cancer surgery	Non-cancer surgery	p
APAIS	17.62±5.51	12.90±4.18	<0.001
STAI	45.96±4.26	37.86±6.49	<0.001

Table III. Correlation between APAIS scores and age, sex, number of former operations, education level, marital status (mean±SD)

APAIS		Cancer surgery		Non-cancer surgery	
		n	p	n	p
Gender	Female	18.18±6.07	0.613	14.79±4.53	0.011
	Male	17.33±5.27		11.74±3.55	
Marital Status	Single	19.56±8.08	0.420	13.14±3.63	0.870
	Married	17.20±4.81		12.86±4.30	
Education	Primary school graduate	17.65±4.85	0.951	13.14±4.29	0.508

Table IV. Correlation between STAI scores and age, sex, number of former operations, education level, marital status and type of surgery

STAI		Cancer Surgery			Non-cancer Surgery		
		mean±sd	r	p	mean±SD	r	p
Age			-0.279	0.050		-0.111	0.443
Gender	Female	46.76±4.42		0.343	39.37±5.10		0.202
	Male	45.55±4.18			36.94±7.14		
Marital Status	Single	46.67±3.24		0.588	36.86±3.80		0.664
	Married	45.80±4.47			38.02±6.85		
Education	Primary school graduate	45.78±4.29		0.626	38.41±6.97		0.321
	High school/university graduate	46.46±4.29			36.31±4.80		

Table II).

There was not a statistically significant correlation between the APAIS score and sex, education level and marital status in the group undergoing cancer surgery (Table III). In the same group there was a significant negative correlation between APAIS score and the number of previous surgeries ($r: -0.546$, $p < 0.001$ in cancer group and $r: 0.157$, $p: 0.275$).

In patients undergoing non-cancer surgery, no significant correlation could be documented between APAIS score and age and number of former operations. In the same group the APAIS scores of female patients were significantly higher than scores of male patients ($p=0.011$). In that group, APAIS scores did not show a significant difference related to education level and marital status (Table III).

We could not find any significant correlation between STAI scores and sex, number of former operations, education level and marital status in the group having cancer surgery. Within the group having non-cancer surgery, no significant correlation was found between STAI scores and sex, number of operations, range of education, and marital status (Table IV). Number of operations did not differ between cancer and non-cancer surgery groups ($r: 0.043$, $p: 0.767$ in cancer group and $r: 0.220$, $p: 0.225$ in non-cancer group).

DISCUSSION

In the present study, we utilized APAIS and STAI

anxiety indexes for patients having adult cancer surgery, but preoperative anxiety scores were found to be higher in patients undergoing cancer surgery. Moreover, as in previous related studies both indexes were founded to be correlated with each other in the present study (1,3).

Previous studies have examined preoperative anxiety in patients undergoing surgery for breast cancer (18) or neurosurgical cancer (9). However, this study notably differs from previous studies: to the best of our knowledge, this is the first study comparing anxiety scores of cancer and non-cancerous patients. While the study population comprised patients diagnosed with malignant tumors, patients diagnosed with benign tumors were not recruited in the study. In short, the present study included only major surgeries. Therefore, anxiety scores were found to be higher in this study compared to other similar studies (4,9).

In this study, we identified two factors that affected patients' anxiety scores. One of them is sex, and the other is the number of surgeries undergone by the patient. Mean APAIS score of female patients was significantly higher than male patients in the non-cancerous patients' group. However, we did not observe such a situation within cancer patients. Similarly some other studies reported a positive correlation between female gender and anxiety (11,19). Also, there was a negative correlation in the cancer group between the APAIS scores and number of previous operations. This situation which could not be identified with the STAI scale may be because of the fact that patients have fear and worry about the issues that they have limited information or experience. On the other hand, no difference could be documented between the groups of cancer and non-cancerous patients regarding level of education, marital status or surgery type.

Many patients everyday experience anxiety related to surgery and anesthesia. As preoperative anxiety may result in various negative results such as postoperative pain, analgesic consumption, incidence of nausea-vomiting or extension in hospitalization period, it is important to identify it routinely. However, the fact that conducting surveys takes time, it leads to limitations in their application. The present study compared the results of a 6-item short survey with a 20-item long survey, but neither of the surveys had superiority to the other regarding the identification of patient anxiety level. Therefore, we are in the opinion that the APAIS scale which takes shorter time and is easier to complete may be more appropriate for operating rooms or ward environments where there is always an intensive patient circulation. Because anesthetists mostly allocate limited time to preoperative patient visits and generally could not make time for a

query regarding patient anxiety within that period.

The study in which Laufenberg-Feldmann et al. (8) examined preoperative anxiety has indicated that there is a positive correlation between importance of surgery and patient's anxiety level. In their study, Laufenberg-Feldmann et al.(8) discussed the issues that patients' medical conditions are not considered, patients undergoing cancer surgery may be expected to have higher levels of fear and that fear may affect patient's anxiety level. As all the patients included in the study underwent major operations, we did not need to make a separate evaluation regarding the importance of surgery. However, the results of the study verified our hypothesis proposing that patients undergoing cancer surgery may develop higher levels of anxiety. Additionally, in the scope of the study patients were interviewed in the services one day before the surgeries. Moreover, it has been reported earlier that patients show the highest level of anxiety in the morning of surgery, i.e. just before the operation takes place (20).

The reasons of preoperative anxiety reported in previous studies include basically patients' fears of having problems during emergence from anesthesia, the possibility of failure in surgical procedure, damage to body, losing self-control or death as a result of anesthesia or surgery (2,14). Considering the patients scheduled to have cancer surgery, the most important reasons of anxiety were fear of death and the possibility of failure in the procedure. Almost all of the patients (98%) had given high scores to the item stating 'I feel myself safe'. Patients with low anxiety scores mostly trusted on the surgeon that would perform the surgery, therefore, that trust may have decreased the fear they had against anesthesia and resulted in lower anxiety scores. As the hospital where the study was conducted is a university hospital, patients had the idea that what can be done would be done here in the best way possible. We considered that such an idea may have had a role in decreasing the anxiety levels of patients.

One of the limitation of the study was that anesthesia type performed for the surgery was not recorded. This may be one of the factors affecting the depth of anesthesia.

Conclusion

In conclusion, both APAIS and STAI preoperative anxiety scores were found to be higher in patients having cancer surgery as compared to the others. We are of the opinion that, anxiolytics can be used as premedication in the preoperative period for this patient group.

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