

Preoperative Anxiety in Patients Undergoing Thoracic Surgery

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ABSTRACT

BACKGROUND

Preoperative anxiety is closely associated with poor surgical outcomes and potential complications. This study aimed to investigate the risk factors affecting the level of anxiety in patients who were candidates for thoracic surgery.

METHODS

A prospective study was conducted among 100 patients who would undergo thoracic surgery under general anaesthesia for both malignant and benign diseases. Data concerning age, gender, educational status, length of preoperative hospital stay, past surgical history and indication of the proposed operation were collected, and preoperative anxiety was graded via State-Trait Anxiety Inventory (STAI) for each patient.

RESULTS

Among a total of 65 male and 35 female patients, mean age was 54.1±11.5 years. High level of preoperative anxiety was presented in 56% of the patients. Statistical analysis revealed that the higher level of state anxiety was associated with male sex, young age, existence of past surgical history, benign disease and high educational status ($p<0.05$); whereas, longer length of preoperative hospital stay was not related with a significant difference in the state anxiety level ($p>0.005$).

CONCLUSIONS

Regarding the conflicting findings obtained from recent reports and this study, individual assessment of each surgical patient is necessary to perform a valid risk analysis of preoperative anxiety.

KEY WORDS

Preoperative Anxiety, Risk Factors, Thoracic Surgery, State Anxiety.

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BACKGROUND

Anxiety is described as an emotion of worry, unease, fear and tension about an uncertain outcome.¹ Perioperative period is a distressing event which usually induces emotional and cognitive alterations. Experience of anxiety before a surgery is mostly considered as a usual patient response whereas extended level of preoperative anxiety results in a delay of healing and a poor recovery.² Preoperative anxiety has been reported to affect surgical patients at a rate up to 80% and result in large number of postoperative complications including pain, nausea, cardiovascular disorders and increased risk of infection.³⁻⁶

The degree of each patient's reaction to preoperative anxiety ranges widely depending on many factors such as age, gender, educational status, past surgical experiences, current health status, indication of the proposed surgery and natural susceptibility to anxiety.⁷⁻⁹ The objective of this study was to assess the prevalence preoperative anxiety and causative factors among the adult patients undergoing thoracic surgery.

METHODS

Following the approval of Faculty's Ethic Committee, a cross-sectional, questionnaire-based study was conducted to include 100 patients who would undergo elective thoracic surgery under general anaesthesia for both benign and malignant diseases resulting from non-traumatic aetiology between April and August 2018. This study included patients aged over 18 years who had consented to reply the questionnaire. The patients with a psychiatric illness or ongoing anxiolytic treatment or alcohol addiction were excluded from the study. Moreover, the surveys including three or more unanswered statements were regarded as invalid and not graded.

Sample Size Estimation

The main outcome measure was demonstrating the factors affecting the level of preoperative anxiety. Regarding that the preoperative anxiety rate in surgical patients was reported as 80±8% in the current literature, population proportion was taken as 80% with 95% confidence level and 8% margin of error estimating a number of 97 patients.

Study Method

For each participant, the following data were collected: age, gender, educational status, length of preoperative hospital stay, past surgical history and indication of the proposed operation. Educational status was determined in four levels as the graduation from primary, secondary, high schools and university. Any surgical intervention which had been performed under general or spinal anaesthesia was approved as a positive past surgical history. The indication of the present surgery was noted as a benign or a malignant disease. Spielberg's State-Trait Anxiety Inventory (STAI Form TX-1 and TX-2) were applied to patients thirty minutes before the transportation to operating room. The answers were recorded and calculation of scores was performed via computer aided software. The scores obtained from each scales range between 20 and 80 whereas higher points

express elevated levels of anxiety¹⁰. High and low anxiety levels were defined as over and under 52 points which was the median value of state anxiety scores in this series.

Statistical Analysis

SPSS (IBM SPSS for Windows, Ver. 24) statistical package program was used for calculations. Descriptive statistics for continuous variables in this study were expressed as mean, standard deviation, minimum and maximum; categorical variables were expressed as number (n) and percentage (%). Independent T-test was used to compare average of measurements for patient groups and Chi-square test was employed to reveal the relation between categorical variables. The statistical significance level (α) was taken as 5%.

RESULTS

Parameters	Mean	Standard Deviation	Minimum	Maximum
Age (years)	54.1	11.5	23	74
Hospital stay (days)	2.16	1.15	1	5
State anxiety score	51.1	10.2	28	72
Trait anxiety score	48.0	10.7	25	70

Table 1. General Features of the Study Group

Parameters	Groups	n	%
Gender	Male	65	65
	Female	35	35
Educational status	Primary School	20	20
	Secondary School	12	12
	High School	44	44
	University	24	24
Past surgical history	Present	32	32
	None	68	68
Indication of surgery	Benign disease	44	44
	Malignancy	56	56
Level of state anxiety	Low	44	44
	High	56	56
Total		100	100

Table 2. Data Concerning the Categorical Variables

Parameters	Low Level of Anxiety	High Level of Anxiety	P	
Gender (n)	Male	13	52	<0.001
	Female	31	4	
Education (n)	Primary School	17	3	<0.001
	Secondary School	3	9	
	High School	20	24	
	University	4	20	
Past History of Surgery (n)	Yes	42	26	<0.001
	No	2	30	
Indication of Surgery (n)	Benign disease	5	39	<0.001
	Malignancy	39	17	
Age (Mean ± SD, years)		62.3±5.98	47.6±10.7	0.006
Preoperative Hospital Stay (Mean ± SD, days)		1.86±1.11	2.39±1.14	0.076
Trait Anxiety Score (Mean ± SD)		38.2±6.28	55.7±6.17	<0.001

Table 3. Factors Contributing to the Level of Anxiety

The mean age was 54.1±11.5 (range=23-74) years among the whole group of patients including 65 (65%) males and 35 (35%) females. The majority of the patients (n=44) were high school graduate. Mean preoperative length of hospital stay was 2.16±1.15 days. Thirty-two (32%) cases shared a past surgical history whereas 56 (56%) patients had been diagnosed with a malignant disease. Mean score was calculated as 51.1±10.2 by state and 48±10.7 by trait anxiety scales, respectively. High level of anxiety was presented in 56% of the patients. Data concerning the demographic and clinical features of the patients are given in Table 1 and Table 2. Analysing the subgroups of patients, higher level of state

anxiety score was detected in the highly educated male patients with younger age who had undergone a previous surgery, scored higher points in the trait anxiety scale and presented with the diagnosis of a benign disease ($p < 0.05$) whereas longer length of preoperative hospital stay did not reveal a significant difference in the state anxiety level ($p > 0.005$) (table 3).

DISCUSSION

The findings of this study clearly show that the higher level of preoperative anxiety is closely associated with male sex, young age, existence of past surgical history, currently presented benign disease and high educational status. The overall prevalence of preoperative anxiety in this series was 56% as calculated by STAI score of more than 52 which was the median value. Despite of the population and surgery based variations, this finding shared similarity with the previously reported prevalence rates ranging widely between 45% and 80%.^{2-4,6,11,12} The recent papers in the literature mostly advocate that the prevalence of preoperative anxiety is higher in females stating that women are more sensitive to stressful events and are inclined to express their anxiety more easily.^{7,11-13} On the contrary, the findings of this study demonstrated higher preoperative anxiety in male patients when compared to females.

The other factors closely related and also associated with preoperative anxiety were young age and presence of a benign disease as the ground for the forthcoming surgery. The current reports claiming that the younger patients are more vulnerable to develop preoperative anxiety appear to be parallel to the findings of this study.^{7,8,12-14} Strongly arguing against previous studies which had announced the history of cancer as an independent risk factor for preoperative anxiety, this series revealed higher prevalence of preoperative anxiety in the patients who had developed benign diseases.^{6-9,13-15} The difference could be because of the common and routine practices of the thoracic surgery in which the majority of patients present malignant diseases such as lung cancer at elder ages while unexpected surgical interventions including lung and pleural biopsies or pneumothorax surgery such as bullectomy and wedge resections are performed for young patients regarding that the prevalence of pneumothorax is naturally higher for the patients aged between 19 and 25 years. Moreover, younger patients may be more distressed by predicting the potential complications and outcomes of the proposed surgery but elder patients with malignancies adapt to the situation during a relatively longer period required for diagnosis and preoperative arrangements.

In this study the prevalence of preoperative anxiety presented positive correlation with the history of previous surgical experiment. This may result from the expectation of more serious complications and outcomes than the previous less risky operation. The literature includes studies that both confirm^{14,16,17} and stand against this finding.^{12,15} The results of this study revealed that the level of anxiety elevated with the increasing level of education. Education is believed to raise awareness related to surgery and helps patients prepare themselves preoperatively. On the other hand, highly

educated patients obtain detailed information about the potential complications which is likely to increase preoperative anxiety. This evidence was supported^{13,16} but also declined¹⁵⁻¹⁷ by other similar studies. Unfortunately, recent studies include more heterogeneous cohorts for whom comparisons of preoperative hospital stay were performed in intervals rather than days.¹⁶⁻¹⁸ However, the analysis of this study failed to demonstrate an association between preoperative anxiety and duration of preoperative hospital admission.

Limitations

The principal limitation of this study was the design as a single-centered workup including only adult patients. Cases were not classified relating the severity or stage of the causative diseases, particularly lung cancer. Moreover, the findings of this study supported some of the previous statements but also disagreed with many, proving that the surgical patients may demonstrate differential preoperative features.

CONCLUSIONS

In this study, the prevalence of preoperative anxiety was significantly associated with gender, age, educational status, presence of past surgical history and type of the underlying disease. Regarding the conflicting results obtained in dissimilar populations and different surgical cohorts, individual assessment of each surgical patient is necessary in order to perform a valid risk analysis of preoperative anxiety.

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