Effect of Anaesthesia Method on Preoperative Anxiety Level in Elective Caesarean Section Surgeries

Mahmut Akildiz1, Yakup Aksoy2, Ayhan Kaydu3, Cem Kivlicim Kaçar1, Ömer Fatih Şahin2, Zeynep Baysal Yıldırım4
1Clinic of Anaesthesiology and Reanimation, Diyarbakır Training and Research Hospital, Diyarbakır, Turkey
2Clinic of Anaesthesiology and Reanimation, Diyarbakır Bismil State Hospital, Diyarbakır, Turkey
3Clinic of Anaesthesiology and Reanimation, Diyarbakır Selahaddini Eyyübi State Hospital, Diyarbakır, Turkey
4Clinic of Anaesthesiology and Reanimation, Dicle University School of Medicine Hospital, Diyarbakır, Turkey

Objective: In this study, the effect of the anaesthesia method on preoperative anxiety in parturients scheduled to undergo elective caesarean surgery was investigated.

Methods: After Dicle University Ethics Committee approval, 100 American Society of Anesthesiologists (ASA) II parturients, aged between 18 and 45 years, were included in this study from 2011 to 2012 at the Dicle University Faculty of Medicine, Department of Anaesthesiology. The parturients were divided into two groups, with 50 patients in each group: general anaesthesia (GA) and spinal anaesthesia (SA). Patients were evaluated during the preoperative visit. Demographic data and STAI TX-1 form to measure preoperative anxiety were recorded.

Results: There were no significant differences between the two groups in maternal age, gestational age, level of education and number of children (p>0.05). The average anxiety score was significantly higher in the SA group than in the GA group (p<0.05).

Conclusion: In conclusion, spinal anaesthesia is associated with a higher preoperative anxiety level than general anaesthesia in obstetric patients. Therefore, it is necessary to take prevention against preoperative anxiety for the patients undergoing caesarean section surgeries under spinal anaesthesia.

Keywords: Preoperative anxiety, pregnancy, spinal anaesthesia, general anaesthesia

Introduction

Although pregnancy and delivery is a physiological process, they cause an important load and stress for the body of a woman. This period can lead to permanent psychological and physiological changes. The presence of a fetus developing in a mother's womb and physiological and hormonal changes related to pregnancy constitute the source of psychological changes (1).

It is important to know the degree and causes of anxiety for understanding a patient's psychology. In the preoperative period, patients have anxiety associated with many factors (2). In addition to general concerns about their health and surgery, uncertainty, becoming distant from home and family, and interrupted daily routines, they also have anaesthesia-related concerns such as unsuccessful recovery, postoperative pain, and intraoperative awareness (3). These concerns become more severe in pregnancy.

In this study, it was aimed to investigate the effects of demographic features, such as age, educational status, gestational week, and the number of living children, and anaesthesia type on preoperative anxiety levels in pregnant women who would undergo elective caesarean section.

Material and Methods

After receiving ethical approval from Dicle University and written informed consent from patients, this questionnaire study was conducted on 100 pregnant women between the ages of 18 and 45 years and with ASA II who were followed in the Clinic
of Gynecology and Obstetrics between 2011 and 2012 and planned to undergo surgery under elective conditions. Considering the preference of patients for the type of anesthesia administration, they were divided into two groups, general anesthesia (GA) and spinal anesthesia (SA), each of which included 50 patients. The patients who were younger than 18 years old or older than 45 years old, had a known psychiatric or mental disorder, used a sedative drug, and refused to be included in the study were excluded from the study.

Patients were asked to sign written informed consent before surgery and to complete the State-Trait Anxiety Inventory (STAI) Form TX-1. For each group, demographic information was first questioned and recorded. The anxiety levels of the GA and SA groups in the preoperative period were evaluated with STAI Form TX-1.

**STAI-1**

Many questionnaire studies have been performed in order to measure the degree of preoperative anxiety. These studies should be updated in parallel with the differences among countries and regions and socioeconomic changes in a society. The most common test used for evaluating anxiety level in medicine is the STAI (4). This scale was constructed by Spielberger and Gorsuch in 1964 with the aim of measuring state-trait anxiety levels in normal and abnormal individuals. Cattle and Scheier's Anxiety Scale, Taylor's Manifest Anxiety Scale, and Welsh's Anxiety Scale were benefited while preparing the items of the inventory (5). Its validity in Turkish society was demonstrated by Le Compte and Öner (6).

In our study, for the STAI-1 test to be applied, the participants were requested to mark the most appropriate choice among “not at all,” “somewhat,” “moderately so,” and “very much so” for each statement enumerated from one to four in the scale.

The scales have two kinds of items: direct and reverse-worded items. Direct-worded items represent negative feelings, and reverse-worded items represent positive feelings. While scoring the second type of statements, those having one point convert into four points, and four points into one point. In direct-worded statements, four-point responses indicate a high anxiety level. On the other hand, in reverse-worded statements, one point responses show a high anxiety level, and four-point responses show a low anxiety level (6).

The STAI includes 10 reverse-worded statements. These are the first, second, fifth, eighth, 10th, 11th, 15th, 16th, 19th, and 20th items. Of these items, four points are given to one, three points to two, two points to three and one point to four (6). This scale includes 10 direct-worded statements, which are the third, fourth, sixth, seventh, ninth, 12th, 13th, 14th, 17th, and 18th items. Of these items, one point is given to one, two points to two, three points to three, and four points to four.

For calculating the score of the STAI, the results obtained from direct-worded and reverse-worded statements are added up. Values below 40 are evaluated as normal, values between 41 and 60 as mildly anxious, values between 61 and 80 as moderately anxious, and values above 80 as severely anxious. In our study, values of 40 and below were evaluated as normal, and values of 41 and above were evaluated as anxious.

**Statistical analysis**

Data were analyzed by using Statistical Package for the Social Sciences 16.0 for Windows (SPSS Inc., Chicago, IL, USA) statistical software. In the comparison of groups' demographic data, student t-test, chi-square test, and Fisher's exact test were employed. The Pearson correlation analysis was used for determining the presence of a relationship between demographic features, such as age, educational status, gestational week, and the number of living children, and anesthesia type and preoperative anxiety levels. The value of p<0.05 was accepted to be statistically significant.

**Results**

The study included 50 parturients from each group, and all patients could undergo elective caesarean section. The mean age of patients between the ages of 18 and 45 years was calculated to be 29.6±5 years in the GA group and 31.6±5 years in the SA group. No statistically significant difference was found between the groups in terms of gestational week, number of pregnancies, number of alive children, and educational status (p>0.05) (Table 1).

Considering the educational status of the groups, 52% of patients were elementary school graduates, 32% were illiterate, 13% were secondary school graduates, and 3% were high school graduates.

**Findings related to anxiety**

The mean anxiety score was 48±5.4 in the GA group and 51±7.5 in the SA group. The level of anxiety was found to be significantly higher in the SA group (p<0.05) (Figure 1). In addition, the mean STAI was detected to be 49 in our study.

The anxiety level was moderate in the whole GA group. In the SA group, it was mild in three patients, moderate in 38 patients, and severe in nine patients. In the comparison of two groups, the anxiety level was found to be significantly higher in the SA group (p<0.05) (Table 2) (Figure 2).

**Discussion**

In our study, in which the effect of anesthesia technique on preoperative anxiety levels was examined in parturients who were planned to undergo elective caesarean section, it was revealed that SA caused more anxiety.

Anxiety disorders, with the rate of 28.8%, are among the most common psychiatric disorders encountered in lifetime (7).
Surgery-induced anxiety is a serious vital stress even for emotionally strong individuals because patients have to face the possibility of pain, loss of strength, or death (8). The decision of surgery and waiting period lead to anxiety at the level that cannot hinder the treatment in most of patients. Therefore, many questionnaire studies have been performed for measuring the degree of preoperative anxiety and revealing its causes (9). The most common test that is used in medicine is the STAI. In a study conducted in our country in 1998 for comparing high dose of fentanyl and barbiturate anaesthesia strategies in cerebral hypoperfusion cases after cardiac surgery, the STAI-T and Zung tests were used for preoperative neuropsychiatric evaluation (10). In our study, the STAI-1 test was first used in parturients in order to evaluate preoperative anxiety.

In the study of Domar et al. (11), the mean preoperative anxiety score was reported to be 45 according to the STAI. Gönüllü et al. (12) found the level of anxiety as 40.76 before informing participants. In our study, the mean STAI score was found to be 49. High scores in our study were attributed to the type of surgery and different patient profiles.

Patients have preoperative anxiety due to many factors. The studies investigating preoperative anxiety levels have reported apparent anxiety in 60–80% of patients (2). Anxiety level was found to be higher in women than in men, in young population than in elderly population, and in patients with poor anaesthesia experience than ones without poor anaesthesia experience (13). In the study conducted by Erdem et al. (14), the mean preoperative STAI-S score was found to be significantly higher in females than in males. In our study, it was observed that all patients (100%) had mild, moderate, or severe anxiety. This was because of all patients being parturients, the presence of preoperative stress, and the small number of total cases.

In the literature, there are a few studies evaluating preoperative anxiety levels before general and regional anaesthesia administrations. In the study conducted by Erdem et al. (14), no statistically significant difference was found between the mean preoperative STAI-S and STAI-T scores of patients applied GA and regional anaesthesia, and this result was attributed to the high number of male patients in the regional anaesthesia group (14). In the study of Kale et al. (15), in which the authors investigated the effects of GA and SA on maternal and neonatal cortisol levels in elective caesarean sections, the maternal cortisol level was found to be higher in the GA group than in the SA group. In our study, the mean STAI score was revealed to be 53 for SA and 47 for GA. The mean STAI score was significantly higher in the SA group. As is seen, there are various findings and opinions about the...
effects of general and regional anaesthesia administrations on preoperative anxiety. This suggests that further studies should be performed on this issue. In our study, the higher mean STAI score in the SA group was attributed to low educational level in most cases, insufficient knowledge on the effects of GA on mother and baby, discomfort due to being awake, and the sense of privacy.

In the literature, there are contradictory data on the relationship between age and preoperative anxiety level. Shevde and Panagopoulos (16) specified that anxiety level was lower in geriatric patients. Ramsey (17) found the anxiety level to be higher in middle-aged patients and attributed this result to their high sense of responsibility for their families. Aykent et al. (4) stated that anxiety level was higher in the patient group younger than 30 years. The older patients’ being more fatalist than younger patients and young patients’ being more aware of adverse health events owing to communication instruments were evaluated to be effective in this result (4). In the studies of Turhan et al. (18) and Jennings et al. (19), the effect of age could not be demonstrated. Similarly, no significant relationship was found between age and preoperative anxiety levels in our study. The age range of our patients was between 18 and 45 years, and all patients were young parturients. We suggest that the absence of a relationship between age and anxiety was associated with this age range.

Anxiety level was reported to be higher in women than in men in a study (20). From an epidemiological point of view, the fact that depression and anxiety disorders are generally more common among women than among men supports these findings. While Badner et al. (2) attributed this difference to higher anxiety levels in women due to leaving their families, Shevde and Panagopoulos (16) and Domar et al. (11) stated that the fact that women could express their concerns more easily compared with men was a factor. In another study, although male patients stated that they emotionally felt better, vasovagal syncope event during SA was observed to occur more commonly in male patients (2, 21). Caumo et al. (22) explained higher levels of anxiety in female patients with fluctuations in estrogen and progesterone levels.

The presence of preoperative anxiety is more common in patients having one to four children than in patients having five or more children and having no children. The close relationship between having a child and the sense of responsibility was evaluated. Considering the socioeconomic state of the region, it was interpreted that having five or more children coexisted with low socioeconomic status and decreased the piece of responsibility for children as well as problems such as providing proper living condition, unemployment, and financial difficulty. In our study, no statistically significant difference was found between the number of children and preoperative anxiety.

While anxiety was reported to increase in parallel with educational level in some studies, no relationship was found between educational status and anxiety level in other studies (11). Caumo et al. (22) specified in their study that preoperative anxiety levels were higher in patients having received education for more than 12 years. In the study of Turhan et al. (18), it was reported that there was no relationship between education level and anxiety and that anxiety level was lower in primary school graduates and higher in high school graduates, but this difference was not statistically significant. On the other hand, there are also other studies suggesting that the anxiety levels of patients with lower educational backgrounds are higher (15). In our study, although no statistically significant difference was detected between preoperative anxiety and educational level, preoperative anxiety was observed to be more common in the illiterate group. We suggest that pregnancy causes anxiety at similar levels among women regardless of educational status.

**Conclusion**

Preoperative anxiety is generally high among women, and it can increase further in association with pregnancy in caesarean cases. In our study, preoperative anxiety level was found to be higher in SA cases due to being conscious than in GA cases. This revealed that the presence of anxiety in awake patients should not be ignored. In order to avoid surgical and/or anaesthetic problems in patients during operations, anxiety levels of patients should be reduced through non-pharmacological methods in preoperative patient visits considering the fact that patients are pregnant.

In conclusion, surgical operations and anaesthesia administrations are important stress factors for patients. Therefore, for reducing anxiety of patients, we suggest that the frequency of patient visits should be increased in the preoperative period, patients should be informed in detail if they are planned to be administered regional anaesthesia, the questions of patients should be answered intimately, and above all, patients should be inspired to have confidence.

**Ethics Committee Approval:** Ethics committee approval was received for this study from the ethics committee of Dicle University Medical Faculty Ethics Committee for Noninterventional Studies (Decision dated 13.01.2012 no: 350).

**Informed Consent:** Written informed consent was obtained from patients who participated in this study.

**Peer-review:** Externally peer-reviewed.


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References


