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Orjinal Araştırma / Original Article

The Relation of Regional and General Anesthesia Applied in Cesarean Patients with Postpartum Depression

Sezaryen Hastalarında Uygulanan Bölgesel ve Genel Anestezinin Doğum Sonrası Depresyon İle İlişkisi

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Abstract

Aim: The purpose of the study is to investigate the relationship between the frequency of depression and the type of anesthesia given to the women that deliver by cesarean section.

Material and Method: The study was carried out prospectively on cesarean patients. The study included 58 patients with general anesthesia (GA) and 61 patients with spinal anesthesia (SA). Right before the surgery the patients filled State Trait Anxiety Inventory-1(STAI-1), a form surveying the anesthesia concerns. Edinburg Postpartum Depression Scale was filled six weeks after the delivery. The data were analyzed by IBM SPSS 20 statistical analysis program.

Results: The difference between the GA and SA groups were insignificant in terms of age, education, socio-economic level and number of pregnancy ($p<0.05$). Both groups had high STAI-1 mean values but the difference between them were insignificant ($p>0.05$). Edinburg Postpartum Depression Scale indicated that depression points were high in 15.5% of the GA group and 8.1% of the SA group. This was statistically significant ($p< 0.01$).

Conclusion: This study showed that postpartum depression rate was higher in patients that had GA compared to the patients with SA. Thus, it is crucial to select the type of anesthesia after careful examination of the patient.

Keywords: Pre-anesthetic anxiety, anesthesia, cesarean, postpartum depression

Öz

Amaç: Çalışmanın amacı sezaryen ile doğum yapan kadınlara verilen anestezi tipi ile doğum sonrası depresyon sıklığı arasındaki ilişkiyi araştırmaktır.

Gereç ve Yöntem: Çalışma prospektif olarak sezaryen hastalarında yapıldı. Çalışmaya 58 genel anestezi (GA) hastası ve 61 spinal anestezi (SA) hastası dahil edildi. Ameliyattan hemen önce hastalardan anestezi endişelerini araştıran bir form olan Durumluk-Sürekli Kaygı Envanteri-1'i (STAI-1) doldurmaları istendi. Edinburg Doğum Sonrası Depresyon Ölçeği, doğumdan altı hafta sonra dolduruldu. Veriler IBM SPSS 20 istatistiksel analiz programı ile analiz edildi.

Bulgular: GA ve SA grupları arasında yaş, eğitim, sosyoekonomik düzey ve gebelik sayısı açısından fark yoktu ($p <0.05$). Her iki grupta da yüksek STAI-1 ortalama değerleri vardı ancak aralarındaki fark önemsizdi ($p> 0.05$). Edinburg Doğum Sonrası Depresyon Ölçeği, GA grubunun% 15.5'inde ve SA grubunun% 8.1'inde depresyon düzeylerinin yüksek olduğunu göstermiştir. Bu fark istatistiksel olarak anlamlı olarak bulunmuştur ($p <0.01$).

Sonuç: Bu çalışma, GA uygulanan hastalarda, doğum sonu depresyon oranının SA uygulanan hastalara göre daha yüksek olduğunu göstermiştir. Bu nedenle, hastanın dikkatle incelenmesinden sonra anestezi tipinin seçilmesi çok önemlidir.

Anahtar Kelimeler: Anestezi öncesi anksiyete, anestezi, sezaryen, doğum sonrası depresyon

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INTRODUCTION

Cesarean was a lifesaving operation for the mothers and the babies, today the rate of elective cesarean has increased.[1,2] During pregnancy, the mother goes through psychosocial and physiological changes. In order to end the pregnancy successfully, mother and the health providers cooperates. Most of the times, type of the delivery and the type of anesthesia in case of cesarean are determined beforehand. Of course, in emergency situations this decision is made by doctors considering all risks. An anesthetist should know the obstetric information and the physical properties of the mother very well; should be able to foresee impacts of anesthetic agents on the mother and the fetus, and therefore, should guide the mother accordingly. Although there is sufficient time for all these procedures in a scenario of an elective cesarean section, in an emergency there is a race against the time. In addition to the patient's anxiety regarding her health, baby's health, delivery, pain, being away from daily routine and unpredictability during the prenatal period, the sensitivity of the mother increases once she faces with an emergency operation.[3] Whereas some mothers prefer participating actively despite the fact that they are going through cesarean, some mothers do not want to see the operation at all and have high level of preoperative anxiety.[4] Such high level of anxiety may cause postpartum depression.[5] Several clinical phenomena for the postpartum period were described in the literature, including maternity blues and postpartum depression.[6] The maternity blues or postnatal blues usually characterizes the first week after giving birth, and it is defined as a sad disposition that could be accompanied by affective lability, soft crying, confusion, fatigue, anxiety, insomnia, lost appetite and irritability and these symptoms had a maximum duration of 10 days and spontaneously and totally regressed.[7-10] Postpartum depression (PPD) is a mental disorder usually occurring within 12 months after birth, which can causes serious harm to both the mothers and families.[11]

The term "depression, in addition to "mood", is used to define one of the most common psychological disorders. In depression the patient feels deep sadness, slowing down of speaking, acts, thinking and all physiological functions. Weakness, vanity, aversion, and pessimism dominate the mood.[12] Postpartum depression is considered as depressive episode that is formed within a year after delivery.[13] After delivery, most of the mothers have temporary and self-restricting mood changes that last up to 2 weeks. Thus, presence of postpartum depression can be indicated 2 weeks after the delivery.[14] Early diagnosis is crucial for treatment. Some studies indicated that the cesarean birth procedure could be considered as a more controlled and safe way of giving birth.[15] Others indicated that the type of birth did not impact the affective disorders during the postpartum period.[16,17] On the other hand some studies indicated that cesarean section is associated with increased risk for postpartum depression.[18]

Aim

The aim of the study is to investigate the relationship between the frequency of depression and the type of anesthesia given to the women that delivers by cesarean section.

MATERIAL AND METHOD

This single-centered prospective study was carried out in a maternity hospital between October 2018 - March 2019 on emergency cesarean section patients that satisfied the study criteria and volunteered to participate in the study. The study included 130 patients of which 65 had general anesthesia (GA) and 65 had spinal anesthesia (SA). The patients who had stillbirths and the ones who did not continue the study after delivery were excluded. The study was finalized with 58 GA and 61 SA cases. Patients that were under 18, the ones that had communication problems and known psychiatric illnesses, and the ones that could not cooperate due to emergency were excluded from the study.

In order to determine the current anxiety of the patients before the cesarean section, "State" part of the State Trait Anxiety Inventory (STAI) was used. Two forms that were prepared in accordance with the literature was filled: A questionnaire form inquiring descriptive properties, socio-demographic properties, obstetric histories and chronic illness of the patients as well as a form consisting of 10 questions that inquire anxiety of patients regarding anesthesia.[19] Postpartum depression clinically is observed two weeks after the delivery at the earliest. Therefore, in this study Edinburg Postpartum Depression Scale was filled six weeks after the delivery. The patients that scored 13 and above were considered as depressive.

STAI-state scale is a self-evaluation inventory consisting of 20 questions that is sensitive to physiological and cognitive phases such as anxiety, uneasiness, nervousness, and worry and it measures subjective fear.[20] The patients are asked to choose one of the options "none, little, a lot, and completely" according to intensity of their feelings, thoughts and behaviors. There are straight and reverse expressions. The reverse expressions correspond to positive feelings; thus, the ones scoring 1 are converted to 4 and vice versa. This scale contains 10 reverse expressions. Oner and Le Compte measured the validity and reliability of this inventory. The alpha reliability of the scale is 0.83-0.87 and the retest reliability is 0.71-0.86. They reported that the item reliability may fluctuate between 0.34 and 0.72. Low scores indicate a low level of anxiety and high scores indicate a high level of anxiety They reported the average score to be between 36 and 41.

Edinburg Postpartum Depression Scale, one of the self-evaluation scales, consisting of 10 questions was developed to indicate postpartum depression.[21] Each question has a score 0-3. Questions 1, 2 and 4 are numbered as 0-1-2-3; the others are numbered as 3-2-1-0. The scores are added. Maximum score is 30 and the breakpoint is calculated as 13.

The data were analyzed by IBM SPSS 20 statistical analysis program. Mean, median, standard deviation, minimum, maximum, percentage, and numbers were used to present the data. If the sample size was <50 Shapiro Wilk-W test and if the sample size was ≥50 Kolmogorov Smirnov test were used to examine the normal distribution of continuous variables.

While comparing the two independent groups, if the normal distribution condition was satisfied, the Independent Samples t-test was used and if the normal distribution condition was not satisfied, the Mann Whitney u-test was used.

When the expected count is >5, Pearson Chi-square test; when the expected count is between 3-5, the chi-square test, and when the expected count is <3 Fisher's Exact test were used for 2x2 comparisons between categorical variables. The statistical significance level was p<0.05.

G*Power 3.1.9.2 software was used for power analysis. The power of this data was 1-β=0.99 with GA group=55, SA group=55, α=0.05 and an effect size of d=1.0.

Permission of the University of Health Sciences, Erzurum Regional Training and Research Hospital Ethics Committee was obtained for the study (document no: 3773258-514.10-2018/10-65).

RESULTS

The GA group had 58 and the SA group had 61 patients. Their mean ages were 28.6 ± 6.2 and 28.3 ± 5.3, respectively. With regards to education, number of elementary school graduates was the most in both groups (43.1%, 44.2%). The second ranking group was high school graduates (43.1%, 42.6%). The GA patients who had problems during pregnancy was 22.4% whereas this rate was 47.5% for the SA patients (p=0.04). The rate of family depression history was 5.2% in GA group and 18% in SA group (p=0.01). Both were statistically significant (**Table 1**).

Table 1. Descriptive and obstetric properties

	General anesthesia				Spinal anesthesia				Chi-Square test
	n	%	mean	SD	n	%	mean	SD	
Age	58		28.6	6.2	61		28.3	5.3	
Weight	58		70.3	10.5	61		74.5	12.1	
Education									
Illiterate	10	17.0			4	6.6			$X^2 = 4.1$ P>0.05
Elementary	25	43.1			27	44.2			
High School	18	31.1			26	42.6			
University	5	8.6			4	6.6			
Socio-economic level									
Bad	16	27.6			27	44.3			X^2 =4.8 p>0.05
Average	30	51.7			28	45.9			
Good	12	20.7			6.0	9.8			
Smoking									
Yes	1	1.7			3	4.9			X^2 =0.9 p>0.05
No	57	98.3			58	95.1			
Weeks of pregnancy	58		37.8	1.9	61		38.2	1.8	
Number of pregnancy	58		3.2	1.9	61		3.4	1.4	
Number of deliveries	58		2.6	1.6	61		2.6	1.2	
Alive children	58		2.5	1.4	61		2.5	1.3	
Problems during pregnancy									
Yes	13	22.4			29	47.5			X^2 =8.2 P=0.04
No	45	77.6			32	52.5			
Weight of the baby	58		2817	635	61		3101	574	
General situation of the baby									
Bad	3	5.2			0	0			$X^2 = 3.2$ p>0.05
Average	3	5.2			4	6.6			
Good	52	89.7			57	93.4			
Number of Cesarean									
1	38	65.5			32	52.5			
2	15	25.9			10	16.4			
3 and more	5	8.6			19	31.1			
Chronic illnesses									
Yes	9	15.5			12	19.7			$X^2 = 0.3$ p>0.05
No	49	84.5			49	80.3			
Family's depression history									
Yes	3	5.2			11	18.0			$X^2 = 4.73$ P= 0.03
No	55	94.8			50	82.0			

When the patients were asked about their concerns regarding the anesthesia, 74.1% of the GA patients indicated that they were scared of postoperative pain and 62.1% was scared of needles; whereas 67.2% of the SA patients were afraid of harm that might be given to the baby and 65.6% of them were afraid of postoperative pain. The fear of postoperative paralysis and the needle phobia in the GA group were significantly higher compared to the SA group (p=0.03, p=0.00).

The STAI-State scale indicated that both groups had high levels of anxiety. The mean of the GA group was 42.93±5.45 (58.6 % was above average); the mean of the SA group was 41.85±5.92 (69.1% was above average). There were not statistically significant differences between two groups.

According to evaluation under Edinburg postpartum depression scale, 9 of 58 GA patients (15.5%), 5 of 61 SA patients (8.1%) scored above 13. This was statistically significant (p<0.01) (**Table 2**).

Table 2. Mean of STAI-State and Edinburg Depression Scale of the Cases

	General anesthesia (n=58)		Spinal anesthesia (n=61)	
	Mean	SD	Mean	SD
STAI-1	42.93	5.45	41.85	5.92
Edinburg	9.05	5.25	6.78	4.51

DISCUSSION

This study investigated the impact of anxiety related to anesthesia on postpartum depression in addition to high level of anxiety that is already present in cesarean section patients. Age, weight, socio-economic and education levels of the patients were similar in both groups. Both groups had high levels of postoperative anxiety and the difference between two groups was insignificant. In a study on elective cesarean section patients by Maheshwari et al.[5] preoperative anxiety levels of the GA patients were significantly higher than the SA patients, and the anxious patients preferred GA over SA. This was mainly because the conscious patients were unable to cope with the difficulties that may realize. In a cohort study, postpartum depression level was higher in a cesarean section patients compared to vaginal delivery patients. The idea of going through an operation increases the anxiety level.[22] There is sufficient time to inform the patient that will have elective cesarean section. In a study by Fernandes et al.[4] postpartum anxiety levels increased in patients that had epidural anesthesia. Generally, the patients that will have an operation get concerned about anesthesia and they would like to have some information beforehand.[23] Almost half of the patients in both groups expressed that they were not given enough information about the anesthesia (**Table 3**). This can be listed as one of the factors increasing the anxiety.

There are different perspectives on education and anxiety level. The study of Caumo et al.[16] stated that patients with higher education had more awareness on anesthesia and surgery, and since they were able to reach information on possible complications more easily they had greater level of anxiety. The study of Buonanno et al.[24] reported that the anxiety level was dependent on the previous positive or negative experiences with operation.

In our study, 65.5% of the GA patients and 52.5% of the SA patients had their first cesarean. It was observed that patients that had cesarean section before had lower level of anxiety. With this respect, anxiety levels between two groups were statistically significant. During the study, the concerns of the patients on anesthesia were questioned. The most common fears in GA were the fear of postoperative pain and the needle phobia. It is concluded that the patients opt for GA most probably because the SA requires use of needles. On the other hand, the most common fears in the SA group were the fear of any harm that might be given to the baby and the fear of postoperative pain. As the anxiety regarding the baby is high, mother's willingness to see the baby healthy plays an important role in her decision to choose SA. The fear of paralysis was significantly high in the GA group; these patients did not want to have SA. In a study by Jlala et al.[23] it was reported that informing patients, who will go through elective cesarean under regional anesthesia, by multimedia reduced their anxiety level. However, since there is no time to inform emergency patients this way, they are given brief information and asked to fill out a consent form.

Table 3. Concerns regarding anesthesia

Questions	General anesthesia (n=58)				Spinal anesthesia (n=61)				Chisquare
	Yes	%	No	%	Yes	%	No	%	
1. Information provided by anesthetist was insufficient	28	48.3	30	51.7	25	41.0	36	59.0	X^2 =0.6, p>0.05
2. Anesthetist was inexperienced	13	22.4	45	77.6	18	29.5	43	70.5	X^2 =0.7, p>0.05
3. Unable to wake up after surgery	27	46.6	31	53.4	22	36.1	39	63.9	X^2=1.3, p>0.05
4. Postoperative pain	43	74.1	15	25.9	40	65.6	21	34.4	X^2=1, p>0.05
5. Postoperative stroke	17	29.3	41	70.7	8	13.1	53	86.9	X^2=4.6, p=0.030
6. Needle phobia	36	62.1	22	37.9	18	29.5	43	70.5	X^2=12.7, p= 0.00
7. Staying in intensive care unit	20	34.5	38	65.5	31	50.8	30	49.2	X^2=2.9, p>0.08
8. Harm to baby	35	60.3	23	39.7	41	67.2	20	32.8	X^2=0.6, p>0.05
9. Attitude of the anesthetist	23	39.7	35	60.3	23	37.7	38	62.3	X^2=0.04, p>0.05
10. Problems with the personnel	22	37.9	36	62.1	22	36.1	39	63.9	X^2=0.04, p>0.05

For this study, the STAI-state inventory was filled before the operation but due to the lack of time STAI-trait inventory was not used. In both groups, state anxiety levels were high. Although the anxiety level above the mean was higher in the GA group compared to the SA group, the difference between them was not statistically significant. In a questionnaire by Burkle et al.[25] the most significant reason for the anxiety was reported as fear of death. In our study, 46.6% of the GA patients and 36.1% of the SA patients had the fear of not being able to wake up after the operation.

The patients try to cope with several challenges such as their own health, baby's health, anesthesia concerns, operation fears, and urgency of the situation. The rush before the operation may cause anxiety. The attitude and the support of the professional health staff helps patients to go through a comfortable operation and prevents postoperative depression. In this study, the postpartum depression rate of the GA patients was 15.5% and postpartum depression rate of the SA patients was 8.1%. These were statistically significant, which could be due to higher level of fear and anxiety experienced by the GA patients. The study by Ross et al.[26] on 150 patients reported that perinatal anxiety had closely connected to postpartum depression.

CONCLUSION

In cases of cesarean, preoperative anxiety is high since the patient is unprepared and not provided sufficient information, and the mother is seriously concerned about her and her baby's health. This high level of anxiety triggers depression. In this study, postpartum depression rate was higher in GA patients compared to SA patients. Thus, it is crucial to select the type of anesthesia after careful examination of the patient. Identifying risk factors for mental disorders that may affect pregnancy is an important prerequisite in developing interventions to lower adverse maternal and neonatal outcomes.

ETHICAL DECLARATIONS

Ethic Committee Approval: Permission of the University of Health Sciences, Erzurum Regional Training and Research Hospital Ethics Committee was obtained for the study (document no: 3773258-514.10-2018/10-65).

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed

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