

Comparison Review of the Effects of Dexamethasone and Ondansetron Intravenous on Preventing Headache after Spinal Sedation of Patients Under a Caesarean Section in the Alavi Hospital 2016-2017

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Abstract

Background and Objective: Headache is one of the most common complications of regional anesthesia in the postoperative period due to Dura's perforation. Considering that has been proven the effect of dexamethasone and ondansetron reducing the incidence of headache in patients with regional anesthesia. In this study, was compared the effect of these two drugs on the reduction of headache caused by spinal anesthesia.

Methods: This study was conducted as a double blind clinical trial. After obtaining permission from the university's ethics committee and enough explanations for the patients about how to perform the anesthetic technique and obtaining written consent, 150 pregnant women who were candidates for caesarean surgery by regional anesthesia were divided into 3 groups of 50 patients. Group A received placebo, group B 4 mg ondansetron, and group C 8 mg dexamethasone, then in each group was checked headache (up to 48 hours after surgery), nausea and vomiting (during and after surgery) and hypotension and bradycardia (during surgery). Finally, the information was coded and entered into the computer and analyzed by SPSS software version 16.

Results: In the placebo group after regional anesthesia, 18% had headache, 20% had nausea and vomiting during surgery, and 10% had postoperative nausea and vomiting, but in the two groups receiving ondansetron and dexamethasone there were no symptoms such as headache, nausea and vomiting, Bradycardia and hypotension. These differences were statistically significant ($p < 0.05$).

Discussion and Conclusion: The results of this study showed that both dexamethasone and ondansetron have the same effect on reduction of complications after regional anesthesia, especially headache. Therefore, due to the importance of complications after anesthesia in caesarean section and considering the low risk of regional anesthesia in mothers of the candidate for cesarean section, the adoption of necessary measures to reduce the unwanted side effects of this method can increase the patients' ability to use this anesthetic method.

Key words: Dexamethasone, Ondansetron, Regional anesthesia

INTRODUCTION

Caesarean is an abnormal type of delivery in which the baby emerges by creating a shear in the abdominal wall

and womb of the mother. In special situations and because of medical reasons when a pregnant woman is not able to have a normal delivery, the cesarean is used to provide childbirth, which is a type of surgical procedure. Since cesarean deliveries are less painful, this is a very common method of delivery and many pregnant women tend to use this method. Although the World Health Organization recommends that a maximum of 26% of births be performed by cesarean section, the prevalence of cesarean delivery in most countries is more than this. About 91% of births in the United States and 50% of births in China is done by cesarean. In Iran, there is a lot of tendency toward

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cesarean method. Cesarean can be performed under both general anesthesia and spinal anesthesia. However, the spinal anesthesia has advantages over general anesthesia, such as better control of hypotension with lower doses of ephedrine and venous fluid, more analgesia after surgery and fewer deaths (1, 2).

One of the most common complications of regional anesthesia in the post-operative period is headache, which occurs due to Dora's perforation. Nowadays, there are two mechanisms for causing a headache, however, none of which has been completely proven: one is the reduction of Csf pressure, which causes intracranial elongation and the other is cerebrovascular vasodilation compensatory (3). Studies have reported prevalence of headache after spinal anesthesia between 11 and 66% (4, 5).

Headache occurs in the frontal and occipital region after regional anesthesia, which is exacerbated in a standing or sitting position and is relieved in sleep mode. This headache develops about 48 to 72 hours after regional anesthesia. Measures such as placing the bevel to the spinal needle laterally and using a conical and thinner needle can help reduce headaches (6). Headache treatment after spinal anesthesia can include non-opioid analgesics, caffeine 300 mg oral or 500 mg / L in serum for one to two hours. In the absence of response to treatment, the only remaining method is blood transfusion in epidural way (7-9).

Regarding the fact that many surgical procedures are performed under the regional anesthesia, preventing unwanted side effects of anesthetics improves the quality of anesthesia and increases the patient's desire to use regional anesthesia instead of general anesthesia and reduce the incapacity and complications of the postoperative period. Since dexamethasone and ondansetron effects have been proven in reducing the incidence of nausea and vomiting in the subsequent period of the patients of regional anesthesia candidacy (10). Moreover, because of few studies aimed at comparing two dexamethasone and ondansetron drugs in the prevention of headache later on spinal anesthesia or both have been studied in comparison with other drugs so in this study, was investigated and compared the effect of these two drugs on the reduction of headache caused by spinal anesthesia.

METHOD

This study was conducted as a double blind clinical trial. The statistical population of this study included all women who were candidates for cesarean surgery with regional anesthesia in Alavi Hospital. After obtaining

permission from the university's ethics committee and enough explanations for the patients about how to perform the anesthetic technique and obtaining written consent, 150 pregnant women who were candidates for cesarean surgery by regional exacerbation were divided into 3 groups of 50 patients. Group A received placebo, group B 4 mg ondansetron, and group C 8 mg dexamethasone, then in each group was checked headache (up to 48 hours after surgery), nausea and vomiting (during and after surgery) and hypotension and bradycardia (during surgery). In addition, in order to observe ethical considerations, all patients were assured that the participation was voluntary in the study and their name will not be mentioned in any place. Finally, the data was coded and entered into the computer and analyzed by independent t-test, chi-square, and SPSS version 16.

FINDINGS

In all three groups, the highest percentages were in the age group of 20-30 years and the lowest percentage was in the age group of 15 to 20 years. There was no significant difference between the three groups in terms of age (Table 1).

In the placebo group, after regional anesthesia, 18% had headache, 20% had nausea and vomiting during surgery, and 10% had nausea and vomiting after surgery, but in the two groups receiving ondansetron and dexamethasone there were no symptoms such as headache, nausea and vomiting, bradycardia and hypotension. These differences were statistically significant ($p < 0.05$). These findings are presented in Table 2 and Figure 1.

DISCUSSION

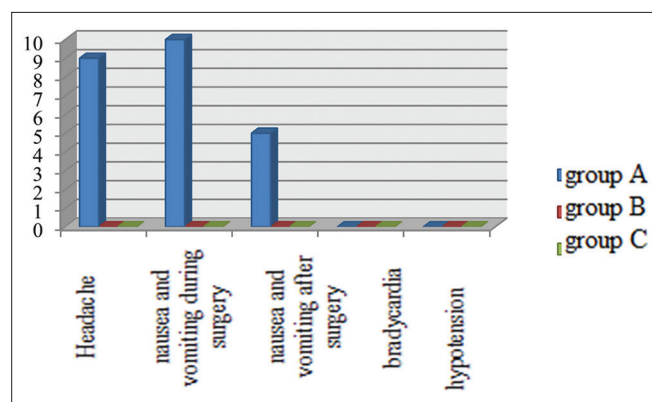
One of the side effects of spinal anesthesia is headache. In previous studies, the incidence of headache after spinal anesthesia was reported between 11% and 66%. A headache after a spinal anesthesia occurs due to the perforation of Dora. Nowadays, there are two mechanisms for causing a headache, but none of these is completely proven. One is the reduction of Csf pressure, which causes intracranial elongation and the other is cerebrovascular vasodilation compensatory (6). The characteristic of this headache is its occurrence in the frontal and occipital region, which is exacerbated in a standing or sitting position and is relieved in sleep mode, divided into two types of tensile, and pressure. This headache develops about 48 to 72 hours after regional anesthesia. The incidence depends on the following factors: female gender, young age, needle size, etc. (7-9).

Table 1: Distribution of study subjects

Group	Group A		Group B		Group C		P-value
	No	Percentage	No	Percentage	No	Percentage	
20-15 years	2	4	1	2	2	4	>0/05
30-20 years	29	58	33	66	28	56	
45-30 years	19	38	16	32	20	40	

Table 2: Distribution of symptoms after anesthesia

Group Symptoms	Group A		Group B		Group C		P-value
	No	Percentage	No	Percentage	No	Percentage	
Headache	9	18	0	0	0	0	<0/05
Nausea and vomiting during surgery	10	20	0	0	0	0	
Nausea and vomiting after surgery	5	10	0	0	0	0	
Bradycardia	0	0	0	0	0	0	
Hypotension	0	0	0	0	0	0	

**Figure 1: Distribution of symptoms after anesthesia**

In this clinical trial, entered to study 150 pregnant women who were candidates for caesarean surgery by regional anesthesia. They were divided into three groups of 50 (placebo, ondansetron recipients and dexamethasone recipients). The findings showed that in all three groups, the highest percentages were in the age group of 20-30 years, the lowest percentage was in the age group of 15-20 years, and there was no significant difference in age in all three groups. In the Tavakol et al., study on the effect of dexamethasone on headache after spinal anesthesia in cesarean, the highest age group was reported in the range of 20-25 years. In the study of Bani Hashim et al. on the effects of ondansetron and dexamethasone on the reduction of nausea and vomiting after spinal anesthesia in cesarean, the mean age was 29.32 ± 4.58 in the ondansetron group and 28.32 ± 4.55 in dexamethasone group.

Nausea and vomiting during surgery are a disturbing complication for the surgeon and patient after spinal anesthesia, which can interfere with the surgeon's work and poor patient cooperation. Therefore, using these drugs can reduce nausea and vomiting during surgery and cause the

satisfaction of the surgeon and patient during operation. The findings of this study also showed that in the placebo group, 18% had headache after regional anesthesia, 20% had nausea and vomiting during surgery, and 10% had postoperative nausea and vomiting. However, there were no symptoms in both groups receiving ondansetron and dexamethasone, including headache, nausea, vomiting, bradycardia, and hypotension. Similarly, in study by Fattahi et al in 2015 found that the use of ondansetron can significantly reduce post-spinal headaches (11). Another study by Ali Shah et al. (2014) found that the use of ondansetron could reduce hypotension and bradycardia after spinal (12). Regarding the effect of dexamethasone, a study by Klanni et al in 1383 showed that dexamethasone significantly reduced post-spinal headaches (13). The results of study are in agreement with the results of this study. However, in a study by Yang et al., it was found that the use of 8 milligrams of ondansetron had no effect on the prevention of post-spinal headache (14), which contradicts with the results of this study.

Overall, the results of this study showed that both dexamethasone and ondansetron reduce the post-regional complications, especially headache. Considering the importance of complications after cesarean and the need for a newborn to mother, the use of these two drugs can reduce the complications. Since headache is one of the complications that causes the patient's low desire for cesarean surgery, using these measures and reducing headaches causes cesarean surgery to be uncomplicated and safe for the patient.

At the end, we can point out the incomplete information of the cases studied as limitations of this study. In addition, the limited number of patients in the three study groups was the other limitation, which suggests to use more samples in future studies.

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