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Effect of anexiolytic dose of medazolam on Incidence of intraoperative nausea and vomiting during spinal cesarean section

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Abstract. *Opioids have sedative properties and can lessen intraoperative nausea and vomiting (IONV), even if they may cause nausea and vomiting. The current work was aimed to evaluate the effect of anxiolytic dose of midazolam on Incidence of intraoperative nausea and vomiting during spinal cesarean section. The study was conducted from October 2023 to April 2024 with approval from the research and ethics committees of the university. once an informed consent form has been signed, full-term (90) pregnant participants were included, and scheduled for cesarean section (CS) under spinal anesthesia at Al-Shifa Private Hospital in Baqubah, Diyala. Data from all participants were analyzed. demographic data was non-significant (P≤0.05) variance in the experimental group compared with the control group. The mean blood pressure in both groups, as it was measured every 10 minutes, starting from 0 to 40 minutes of the operation, and there were no significant (P≤0.05) variance between the two groups. The findings showed that the 27 (60%) cases of Nausea and vomiting in the control group, which revealed a significant (P≤0.05) variance compared with the medazolam group, if the number of cases was 8 (17.8%). We conclude that the incidence of intraoperative nausea and vomiting during cesarean sections performed under spinal anesthesia is significantly influenced by the dosage of anxiolytic drugs.*

Keywords: *midazolam; spinal anesthesia; cesarean section; vomiting.*

1. INTRODUCTION

For a Caesarean section, spinal anesthesia has been demonstrated to be a simple, quick, and safe procedure [1]. Nevertheless, a few adverse effects have been noted with this method, such as intraoperative nausea and vomiting [2]. Presently, regional anesthesia is administered to 80% of patients undergoing anesthesia, whereas only 20% receive general anesthesia because of possible advantages such as reduced airway intervention, decreased symptoms of cardiopulmonary depression, decreased post-operative nausea and vomiting, and shortened hospital and recovery room stays [3]. When a neuraxial anesthetic technique cannot be applied in time for an emergency grade 1 cesarean section, general anesthesia is typically used [5]. Because of both anesthetic and non-anesthetic variables, intraoperative nausea and vomiting (IONV) is a complicated multifactorial issue. Though uterotonic drugs, surgical stimulation, and elevated vagal activity are some of the other variables that might cause it, hypotension is the primary cause [6-7]. In addition to potentially harming the abdominal organs, concomitant sudden diaphragmatic contractions linked to IONV may lower patient satisfaction. So, in order to avoid vomiting aspiration, IONV needs to be regulated [6]. Sedative medications such midazolam and propofol can be used to reduce the occurrence and severity of IONV [7-9]. Although the methods of application of these medicines vary, their overall effects are comparable [10]. Between 7% and 42% of non-

obstetric spinal anesthetic procedures result in intraoperative nausea and vomiting. Depending on the anesthetic method and the preventative and curative treatments implemented, after regional anesthesia for a cesarean section, the overall incidence of intraoperative nausea and vomiting can differ significantly, reaching up to 80%. Different factors are implicated in the etiology of intraoperative nausea and vomiting, and the incidence may vary greatly depending on the stages of the surgical process [11]. Pharmacological interactions, particularly synergism, involving midazolam, fentanyl, sufentanil, alfentanil, and propofol are being used by anesthetists to purposefully co-induce anesthesia. It is useful for all phases of anesthesia, which comprises induction, maintenance, and recovery. Gamma aminobutyric acid (GABA) receptor-mediated chloride ion conduction is facilitated by the benzodiazepine midazolam [12]. It is utilized for premedication sedation, anxiolysis, induction, and anaesthesia co-induction [13]. Midazolam is used as a co-induction agent with propofol. Benefits of combining midazolam with propofol include a reduction in propofol dosage, which lowers the risk of side effects and associated costs [14]. Therefore, the current work was aimed to evaluate the effect of anxiolytic dose of midazolam on Incidence of intraoperative nausea and vomiting during spinal cesarean section.

2. METHODS

Patients

This current investigation is a randomized, double-blind, prospective trial. The research and ethical committees at the university provided their approval for the study, which occurred from October 2023 to April 2024. Ninety full-term pregnant subjects signed an informed consent form, and they were scheduled for a cesarean section (CS) under spinal anesthesia at Al-Shifa Private Hospital in Baqubah, Diyala.

Inclusion criteria

Ages 18 years old or older, physical status II and III according to the American Society of Anesthesiologists, a BMI of less than 40 kg/m2, pregnancy lasting at least 37 weeks, and a live, single fetus were the inclusion criteria.

Exclusion criteria

Women who were pregnant and had a history of medication hypersensitivity, acute or chronic fetal distress diagnosis, or contraindications to regional anesthetic were also excluded from the study, and prior use of opioids or other CNS depressants during the current hospital stay.

Study groups

- Control Group: Administer normal saline.
- Experimental Group: Administer 1-2 mg Midazolam to the experimental group.

Evaluation of Intraoperative Nausea and Vomiting (IONV)

Throughout the surgical process, cases of intraoperative nausea and vomiting in both groups were closely observed and reported. Regular intervals are utilized to evaluate the presence and severity of nausea and vomiting using a defined scoring system. Additional data collection: to enable group comparison, information on key variables including booking weight and demographic traits like patient age and gestational age were gathered. Keep track of any extra drugs that are given during the surgery.

Statistical analysis

Under the supervision of a board-certified anesthesiologist, the researcher created a questionnaire, which was used to collect data. Prior to statistical analysis, all groups are examined to determine whether the data is normally distributed. The SPSS 24.0 program was used to statistically process the data, the Kolmogorov-Smirnov and Shapiro-Wilk normalcy tests. Using an independent-sample t-test, the measurement results were compared between two groups and represented as mean ± standard deviation (m±SD). The data were reported as frequency/percentage (N/%).

Results & Discussion

Ninety-nine parturients were randomized into two groups, with forty-five parturients placed in the experimental group and forty-five in the control group. Every participant's data was examined. There were non-significant (P≤0.05) variations in the demographic data between the experimental and control groups (Table 1).

Table (1): Demographic properties of both groups

Properties		Control (n=45)	Experimental (n=45)	P value
Age (year)		30.14±5.19	29.05±6.15	0.154
Weight (kg)		71.42±9.63	76.49±7.44	0.093
Height (cm)		163.15±7.28	161.31±5.02	0.185
Pregnancy period (days)		37.83±0.84	38.49±1.74	0.241
Surgery time (minutes)		45.13±4.42	49.84±8.65	0.131
Sensory level	T4	36(80%)	42(93.3%)	-
	T5	9(20%)	3(6.7%)	-

Table 2 shows the mean blood pressure in both groups, as it was measured every 10 minutes, starting from 0 to 40 minutes of the operation, and there were no significant (P≤0.05) differences between the two groups.

Table (2): Mean blood pressure (MAP) in both groups

MAP (mmHg)	Control group (n=45)	Experimental group (n=45)	P value
MAP1 (min)	95.53±12.83	90.31±10.31	0.631
MAP2 (min)	76.42±11.52	73.12±8.04	0.410
MAP3 (min)	67.49±8.13	69.19±6.45	0.352
MAP4 (min)	73.61±5.95	74.25±7.91	0.627
MAP5 (min)	74.52±6.63	75.93±5.62	0.572

Figure 1 shows the number of cases of Nausea and vomiting in women undergoing spinal anesthesia. There were 27 (60%) cases of Nausea and vomiting in the control group, which showed a significant (P≤0.05) difference compared with the medazolam group, if the number of cases was 8 (17.8%).

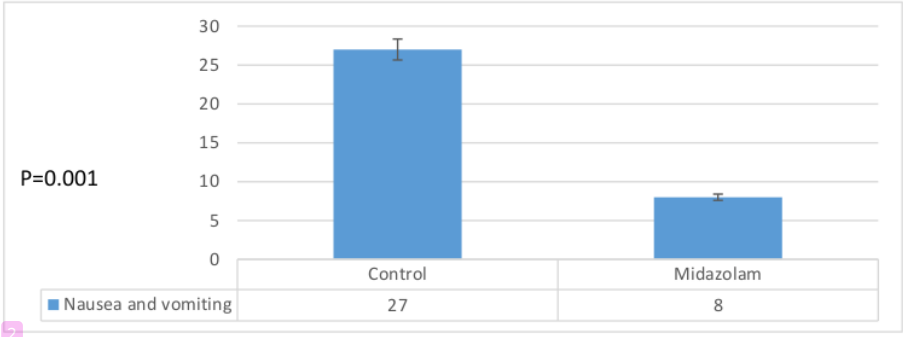

Figure (1): the number of cases with nausea and vomiting in both groups.

There are several pathophysiological mechanisms by which spinal anesthesia causes hypotension, but the primary one is the rapid onset of sympatholysis brought on by the nerve fibers' heightened sensitivity to local anesthetics during pregnancy [15]. Consequently, bradycardia, nausea, and vomiting are brought on by increased peripheral vasodilation and increased parasympathetic activity caused by sympatholysis, which also results in a reduce in venous back and cardiac preload [16]. The use of anti-anxiety medications, including midazolam, has been found in the current investigation to have an effect on surgical patients' incidence of nausea and vomiting. It has been demonstrated that midazolam lowers the incidence of postoperative nausea and vomiting (PONV) when administered for anesthetic induction and maintenance. The impact of fentanyl and midazolam combination on the incidence of PONV in patients undergoing laparoscopic

cholecystectomy was examined in the study conducted by Shin et al. [17]. In comparison to the control group, the study discovered that the combination of fentanyl and midazolam effectively decreased the incidence of PONV. This implies that a reduced frequency of PONV is linked to larger doses of anxiolytics. In a study conducted by Fujii et al. [18], ninety-nine women undergoing surgery of laparoscopic gynecologic operation were randomly assigned to receive either a placebo or one of two doses of midazolam (50 or 75 micrograms/kg intravenously) as soon as anesthesia was induced. When compared to a placebo, they discovered that midazolam was linked to significantly fewer cases of post-operative nausea and vomiting. In addition to being useful for sedation and anxiolysis, subhypnotic doses of midazolam can also be used to prevent nausea and vomiting, which improves patient satisfaction. This is particularly important for conscious patients undergoing procedures like Caesarean sections, as patient satisfaction rates are higher in teaching hospitals than in nonteaching hospitals [19]. This can be achieved by using low doses of the medication appropriately, without risk of overdosing. A reduction in overall nausea, vomiting, and the need for rescue antiemetic drugs has been linked to preoperative or intraoperative intravenous midazolam administration, according to a meta-analysis of 12 randomized controlled studies (N=841) [20]. Incidences of PONV were found to be lower in the early, late, and total recovery periods, according to another meta-analysis [21]. The findings showed that in about 1 in 3 individuals who would otherwise experience PONV if given a placebo, midazolam therapy can prevent nausea and vomiting [21].

3. CONCLUSIONS

The results of this study, along with supporting data from earlier research and surveys of the literature, allow us to reach the conclusion that anxiolytic medication dosage significantly affects the occurrence of nausea and vomiting during cesarean sections performed under spinal anesthesia.

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PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7