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Research Paper

Using Midazolam and Propofol as a Sedation During Spinal Anesthesia in Elective Cesarean Section

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ABSTRACT:

BACKGROUND:

The most typical setting for performing an elective cesarean section is under spinal anesthesia. To lessen the patients' dread and foster greater acceptance, a sleeping dose of anesthetic medication (propofol or midazolam) is necessary.

OBJECTIVE:

The ability of a sleep-inducing dose of propofol or midazolam to increase pregnant women undergoing elective cesarean sections (c/s) under spinal anesthesia's acceptance of regional anesthetic.

PATIENTS AND METHODS:

Seventy five American Society of Anesthesiologists (ASA) physical status II pregnant ladies undergoing elective C/S under spinal anesthesia (bupivacaine 12mg 0,5%) and after clamping the umbilical cord, we gave normal saline immediately for the first group (IV 1 ml, n = 25, which is considered group A), the second group received propofol (bolus 1 mg/kg, n = 25, which is considered group B), and the third group received midazolam (bolus 1–2 mg, n = 25, which is considered group C). And we recorded the Ramsey score, blood pressure, pulse rates, nausea, and vomiting.

RESULTS:

We found a significant difference in the p-value was found in the modified Ramsay score in the 1st minute (group A was 1.5±0,8), group B was 4,0 ± 1,01, and group C was 4.5 ± 1,08). In the 15th minute, (group A was 1± 2,1), (group B was 3 ± 0,7), and (group C was 3.5 ± 1,04). After we gave the sleep-inducing dose of midazolam or propofol, there was no significant difference in the 40th minute (group A was 1, group B was 1, and group C was 1). In all groups. Also, there is a lower incidence in the p-value for nausea and vomiting in group B (nausea was 2, vomiting was 0) and group C (nausea was 3, vomiting was 0) than in group A (nausea was 14, vomiting was 3) and no significant difference in the p-value for respiratory depression or cardiac instability in all groups.

CONCLUSION:

The study showed that using a sleeping dose of propofol or midazolam improved the patient's well-being and increase the acceptance of regional anesthesia. And there were no significant hemodynamic changes.

KEYWORDS: propofol, midazolam, Ramsay score, bupivacaine, spinal anesthesia.

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INTRODUCTION:

Local anesthesia has been used frequently in recent decades in order to reduce the complications that come with general anesthesia for Cesarean sections, which include difficult intubation, aspiration of gastric contents into the airways, and increased mortality [(1)]. The advantages of local anesthesia for cesarean sections include lowering the risk of aspiration, lowering mortality from difficult intubation, lowering bleeding from surgery, and lowering the need for taking medications that impair the central nervous and respiratory systems that are passed to the baby through the placenta [(2)].

Even after using the proper medications, nausea and vomiting continue to be among the most frequent anesthesia-related side effects that give patients a bad surgical experience [(3)]. One of the causes of nausea and vomiting following spinal anesthesia is hypotension (systolic blood pressure less than 80) [(4)]. Psychological influences, vagus stimulation, and stimulation during surgery, such as pushing over the abdomen to deliver a fetus and manipulating the viscera [(5)]. Patient tension and anxiety are decreased, and their postoperative satisfaction is increased with adequate sedation under spinal

anesthesia [6]. In order to achieve drowsiness during spinal anesthesia, the intravenous anesthetic medication propofol is often administered as a steady infusion; however, occasional bolus delivery is also an option [7]. Due to the fact that spinal anesthesia is the treatment of choice for surgeries lasting less than three hours and that propofol's half-life does not increase during the first few hours of infusion, in spinal anesthetic treatments carried out with propofol infusion, awakening may not be postponed. The most typical drug utilized as a preoperative medicine is midazolam (usually benzodiazepines) [8]. These treatments' most significant effects are their sedative-hypnotic effects and amnesic qualities. Additionally, benzodiazepines have an anticonvulsant effect and are frequently used to treat seizures. [9,10]. A generalized feeling of unease and discomfort known as nausea is frequently mistaken for the urge to vomit [11]. Vomiting is the involuntary, forceful discharge of one's stomach contents through the mouth and occasionally the nose [12]. It is also referred to as puking, throwing up, barfing, and emesis. When ventilation is insufficient (hypo meaning "below") to carry out necessary respiratory gas exchange, hypoventilation (also known as respiratory depression) takes place [13]. The Apgar score is a rapid way to assess a newborn's health in relation to infant mortality [14]

Spinal anesthesia history

James Leonard Corning, a neurologist in New York who practiced from 1855 to 1923, gave the first spinal analgesia in 1885 [15]. During a cocaine experiment on a dog's spinal cord, he unintentionally punctured the dura mater.

OBJECTIVE OF THE STUDY:

The effectiveness of a sleep-inducing dosage of midazolam or propofol to increase the tolerability of regional anesthesia in pregnant patients undergoing elective cesarean sections under spinal anesthesia.

PATIENTS AND METHODS:

Study design and context: After receiving patient permission, a prospective, randomized, double-blind clinical trial was conducted after approval of the scientific conceal of anesthesia and intensive care. In the obstetrics and gynecology institution in Erbil, Iraq, this prospective study is being carried out. between September 2018 and April 2019.

Ethical consideration: After receiving adequate information about the trial, each patient voluntarily provided their informed consent. Randomization was carried out by allocating several patients to each group because this experiment was double-blind and only had a few groups.

Study participants:

Three groups of pregnant women are shown on the standardized data collection form. The first group (group A) underwent spinal anesthesia and got bupivacaine intrathecal, and we administered normal saline (1 ml) after the baby was delivered. After the infant was delivered, the second group (group B) underwent spinal anesthesia and got bupivacaine intrathecal as well as propofol intravenously. After the infant was delivered, the third group (group C) had spinal anesthesia and got bupivacaine intrathecal as well as midazolam intravenously.

Inclusion criteria

Age from 18 - 40 years
ASA ll
Full term pregnant women
Schedule as an elective c/s under spinal anesthesia

Exclusion criteria

Patient refusal
Contraindications to spinal anesthesia
Allergy to one of the studying drugs
Patient with reflex esophagitis or hiatus hernia
Smoker patient
The patient received opioids, or antiemetic medication in 24 hours before the operation.

Procedure and data collection

To avoid hypotension, 7 mL/kg of normal saline (0,9%) was given to each group as a preload. The buprenorphine group (A) and the propofol group (B) were two of the three groups into which the patients were randomly assigned. group (C) of midazolam as soon as the patient entered the operating room, baseline readings of their heart rate and systolic and diastolic blood pressure were taken. I set up a wide-bore, functional I/V line and all the monitors before starting. An 18-gauge inter-Venus cannula was inserted in both hands, and 7 ml/kg of normal saline (0,9%) preload was administered every 15 minutes for the first 15 minutes. After that, the inter-Venus infusion was lowered to the lowest rate necessary to maintain vein patency. After that, 12 mg of the local anesthetic hyperbaric bupivacaine (0,5%) was prepared for intrathecal injection. Then the skin infiltration of the local anesthetic lidocaine was corrected. All of the cases that complained of spinal anesthetic failure and those that underwent treatment for severe hemodynamic instability were discarded. Results

Statistical analysis

A questionnaire designed to collect data. Data are reported as means ± standard deviation (SD) or

median. Data were analyzed via T- test and Chi square using SPSS statistical software ver. 19. at p value < 0.05 was the measure for statistical significance.

RESULTS:

There were no discernible variations between the study groups when the demographic data of the three groups were statistically analyzed for weight, age, height, anesthesia time, and body mass index.

Table 1: Characteristics of the participants.

Characters	Group A	Group B	Group C	P-value
Age (yr.) mean± SD	27,50 ± 5,17 yr.	28,97± 4,27 yr.	27,01± 4,95 yr.	0,463
W.t (kg)mean±SD	61,46± 5,45kg	60,01± 5,31kg	63,50± 6,04kg	0,982
Duration (min.) ± mean SD	68,98± 4,21	70,21± 6,42	71,84± 5,52	0,835
Respiratory depression	0	0	0	

Table 2: The heart rates comparison (beats/min).

heart rate (beat/min) ±S. D	Group A	Group B	Group C	P-value
In the 5th minute before delivery	88,6± 6,41	87,41± 5,12	89,3± 6,01	0,313
In the first minute after delivery	89,1± 7,05	86,9 ± 4,76	88,1± 5,41	0,284
In the 15th minute after delivery	86,9± 1,01	87,4± 5,91	87,2± 3,62	0,304
In 14th minute after delivery	87,1± 4,12	87,1± 3,01	86,4± 5,32	0,241

Table 3: The mean systolic blood pressure (B.P) comparison.

Mean B.P ±SD	Group A	Group B	Group C	P-value
In the fifth minute before delivery	121,54 ± 5,72	119,32± 5,03	120,82 ± 3,17	0,236
In the first minute after delivery	120,30± 2,08	110,20±3,13	103,53± 3,20	0,201
In the 15th minute after delivery	115,02± 3,41	107,13± 3,09	109,46± 4,08	0,293
In The 40 minutes after delivery	110,51± 5,01	110,09± 2,60	108,21± 3,01	0,251

Table 4: The mean diastolic blood pressure comparison.

Mean B.P ±SD		Group A	Group B	Group C	P-value
In the fifth minute before delivery	B.p.(mmhg)mean in the 5th min ±SD before delivery	82,23± 5,01	83,50± 5,12	82,10± 4,10	0,413
In the first minute after delivery	B.p.(mmhg)mean in the 1st min ±SD after delivery	78,10± 3,31	76,40± 6,08	77,21± 6,14	0,389
In the 15th minute after delivery	B.p.(mmhg)mean in the 15th min ±SD after delivery	80,62± 5,23	79,02± 3,11	79,51± 3,27	0,354
In The 40 minutes after delivery	B.p.(mmhg)mean in the 40th min ±SD after delivery	81,20± 4,37	80,31± 3,87	79,60± 4,15	0,412

Table 5: Ramsay score comparison.

Ramsay score	Group A	Group B	Group C	P-value
In the first minute after delivery	1.5±0,8	4,0± 1,01	4.5+- 1,08	0,003
In the 15th minute after delivery	1± 2,1	3± 0,7	3.5± 1,04	0,002
In the 40 minutes after delivery	1	1	1	0,003

Table 6: Nausea and vomiting compared between the three groups.

	Group A	Group B	Group C	P-value
Nausea	14	2	3	<0,002
vomiting	3	0	0	<0,001

Table 7: Cases need atropine and ephedrine compared between the three groups.

	Group A	Group B	Group c	P-value
Atropine dose	2	1	1	<0,002
Ephedrine dose	3	2	3	<0,003

DISCUSSION:

This study analyzes the efficacy of sleep-inducing doses of midazolam or propofol for enhancing patient acceptance during regional anesthesia and enhancing the patient's well-being. Anxiety is a pathological disease with a sensation of fear followed by somatic symptoms owing to activation of the autonomic nervous system; therefore, when we lower it, we will increase the pleasure between the patients [16]. Sedated individuals can be evaluated and categorized according to a number of validated scoring techniques. Ramsay and colleagues developed the Ramsay scale in 1974 to track sedation caused by alphaxalone and alphadolone. It continues to be the scale that is most frequently used in both clinical research and everyday practice for assessing and tracking sedation. It spans the sedation spectrum but does not distinguish clearly between responses that are intended and those that are not (Table 1). Anxiolytic effects range from a 2 to a 3, mild sedation from a 4 to a 5, and severe drowsiness from a 6 [17]. The ideal sedative for regional anesthesia should have a quick onset of action, induce a level of drowsiness that is comfortable for the patient, and act quickly. When propofol or midazolam are used, there is no detectable apnea in this investigation, which is consistent with Meyers et al.'s [18] observation that there is no incidence of apnea with propofol sedation in surgery. No incidence of apnea was noted after midazolam sedation for surgical procedures, according to Tucker et al. [19]. This study found no substantial respiratory or cardiac depression, which is consistent with Beyazit Zenciri's statement from September 13, 2013, that midazolam is the most commonly used sedative. It is frequently given intravenously in single dosages ranging from 0.5 mg to 2.5 mg. During spinal anesthesia, midazolam quickly induces sleepiness and fogginess while maintaining stable hemodynamics and respiration. According to Dembo [20], propofol has a central sympatholytic action that helps to keep the heart rate steady. In our study, the heart rate was stable in all three groups, with no significant differences between them. According to Rodrigo et al. [21] during patient-controlled sedation with midazolam, there was a little increase in heart rate after local anesthetic administration. During midazolam patient-controlled sedation, Rodrigo et al. [21] discovered a little drop in blood pressure once the sedative started to work. We found a significant difference between the moderate Ramsey score in the first and fifteenth minutes of this experiment. After 60 minutes, there was no discernible difference between groups A and B or A and C due to the effects of the sub hypnotic dose of propofol or midazolam, which is inconsistent with the results. According to Parworth et al. [22] during both 15 and 25 minutes postoperatively, patients receiving propofol were considerably less compliant than those receiving midazolam. In contrast to the midazolam group, the propofol group's mean cooperation score was significantly higher, indicating less patient

cooperation (the higher the score, the less patient cooperation). The patient's increased talkativeness was the cause of the improved score in the propofol group [23]. However, variations in pharmacokinetics between the two sedative techniques cannot account for the disparity in cooperation ratings. Canbay O1, Tarhan O, Shahriari A1, and Khooshideh M found that a bolus dose of midazolam was superior to metoclopramide for the prevention of nausea and vomiting in parturient patients undergoing caesarean section under spinal anesthesia [24], which flies in the face of our findings. They also found that a sleeping dose of midazolam was equally beneficial as a sleeping dose of propofol for the avoidance of nausea and vomiting in pregnant women.

CONCLUSION:

There is no discernible difference in the Ramsay scale when midazolam or propofol at the sleep-inducing dose is used.• Neither the sleep-inducing dose of propofol nor the midazolam significantly decreased the vital signs (P.R., B.P., and SPo2).• When we employed the sleep-inducing doses of midazolam and propofol, there was a significant improvement in the prevention of nausea and vomiting.

Recommendation

To boost the acceptance of regional anesthesia, we advise utilizing the drug's sleep-inducing dose (propofol or midazolam) during elective C/S under spinal anesthesia. We advise performing the same study for emergency situations and evaluating the effects of medications since this study was completed for elective cases.

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