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SPECIAL ARTICLE

Premedication with midazolam prior to caesarean section has no neonatal adverse effects☆

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Abstract Like all surgical patients, obstetric patients also feel operative stress and anxiety. This can be prevented by giving patients detailed information about their operation and with preoperative pharmacological medications. Because of depressive effects of sedatives on newborns, pharmacological medications are omitted, especially in obstetric patients. The literature contains few studies concerning preoperative midazolam use in Caesarian section (C/S) patients. Our aim in this study was to help patients undergoing C/S surgery. One group scheduled for elective C/S received midazolam 0.025 mg kg^{-1} intravenously, the other received saline. Maternal anxiety was evaluated using Amsterdam Preoperative Anxiety and Information Scale (APAIS) scores, and newborns were evaluated using Apgar and the Neonatal Neurologic and Adaptive Capacity Score (NACS). In conclusion, patients receiving midazolam 0.025 mg kg^{-1} as premedication had significantly low anxiety scores, without any adverse effects on the newborns. Midazolam can therefore safely be used as a premedicative agent in C/S surgery.

Introduction

Anxiety is a natural reaction arising in response to entering a different environment, such as an operating theater. Like all patients scheduled for surgery, obstetric patients may also feel operative stress and anxiety, and an autonomic stress response can develop in association with this. This stress response leads to vasoconstriction in the uterine arteries and may cause fetal distress.[1,2] This can be prevented by giving patients detailed information about their operations and also with preoperative pharmacological medications such as benzodiazepines or narcotics. Because of the depressive effects of sedatives on newborns, pharmacological medications are omitted, especially in obstetric patients. Many case reports have been published concerning low motor tonus at birth among newborns and pregnant women given diazepam, especially in the 1960s.[3,4] These events led to a widespread antipathy to benzodiazepines, and as a result, there is an insufficient number of studies on this subject in the literature. The literature contains few studies concerning the use of the fast-acting and short-term agent midazolam in Caesarian section (C/S) patients.

☆ Study conducted at Universidade Federal de São Paulo, São Paulo, Brazil.

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	Not at all	1	2	3	4	5	Very much
1. I am worried about the anesthetic.							
2. The anesthetic is on my mind continually.							
3. I would like to know as much as possible about the anesthetic.							
4. I am worried about the procedure.							
5. The procedure is on my mind continually.							
6. I would like to know as much as possible about the procedure.							

Figure 1 Amsterdam Preoperative Anxiety and Information Scale.

The aim of this study is to determine the ability of midazolam premedication to reduce stress in obstetric patients. We compared anxiety scores in obstetric patients scheduled for elective caesarian surgery who were undergoing regional anesthesia.

This study was intended to compare anxiety scores in obstetric patients scheduled for elective Caesarian surgery with the regional anesthesia technique in groups administered sedation using midazolam or without sedation and to compare Apgar and Neurologic and Adaptive Capacity Score (NACS) scores between newborns in these groups.[5]

Materials and methods

We conducted this study with 50 cases aged between 18 and 40 indicated for elective Caesarian surgery for their first baby. The subjects were briefed about the study beforehand and provided written consent and consisted of American Society of Anesthesiologists (ASA) groups 1 and 2 after we obtained Ethical Committee approval.

The exclusion criteria were non-elective cases, multiple pregnancies, preterm pregnancies, cases with fetal anomalies and retarded fetal development, pathologies that might affect the acid-alkaline balance, patients with diabetes mellitus, hypertensive patients, cases with obstetric complications such as antepartum hemorrhage and congenital malformations, infants with a birth weight below 2,500 g or at risk of meconium/amniotic fluid aspiration and cases contraindicated for regional anesthesia or refusing a regional technique. During the study, we excluded four pregnant women on whom spinal anesthesia could not be performed and one baby with meconium.

We allocated patients randomly into two groups of 25 members each. The first group was given iv. premedication with 0.025 mg kg^{-1} midazolam (Group I), while the control group was given an equal quantity of SF (Group II) in the waiting room thirty minutes before surgery.

We evaluated patient anxiety with the Amsterdam Preoperative Anxiety and Information Scale (APAIS), and measured newborn well being using the Apgar and NACS scales. We visited patients scheduled for surgery in their rooms for APAIS evaluation. One such scale is the Amsterdam Preoperative Anxiety Information Scale (APAIS)[6] (Fig. 1). Developed by a Dutch group in 1996, APAIS contains six questions enquiring into patients' concerns and anxieties. We elected to use APAIS for the objective analysis of anxiety in patients scheduled for Caesarian surgery since it is short and easy to administer.

On the day of surgery, we administered midazolam 0.025 mg/kg i.v. to Group I patients in the preoperative waiting room when they arrived at the theater for elective surgery. Group II patients were given an equal volume of SF. The same anesthesia assistant, who was not one of the authors, applied both. A researcher repeated APAIS 5 min later. Patients were then taken into the operating theater.

Thirty minutes before surgery, all patients received crystalloid fluid replacement at a speed of 15 mL kg^{-1} per hour via two 20 gauge intravenous cannulae through the back of the hand or the antecubital region. We applied standard monitoring to patients taken for surgery. We performed non-invasive arterial tension, ECG monitorization and pulse oximetry throughout the operation. We enabled all patients to receive 2 L min^{-1} oxygen by mask throughout surgery.

For spinal anesthesia, 12.5 mg intrathecal levobupivacaine was given using a 25-G spinal needle with patients in the decubitus position. We determined level of sensory block with hot-cold and pinprick tests. Surgery commenced when a sufficient level of sensory block was achieved. Following spinal anesthesia, we maintained systolic arterial blood pressure above 90 mmHg. We administered a 10 mg iv. bolus of ephedrine to cases falling below this level.

Once the baby had been removed, we performed basic neonate examination, and recorded Apgar scores at minutes 1 and 5 (Fig. 2). Following basic neonate care and the severing of the cord by clamping, we measured and recorded NACS at minute 15 (Fig. 3).

Postoperatively, we evaluated patients in terms of complications: convulsion, nausea, vomiting, vertigo, headache, trembling, ringing in the ears, confusion, a metallic taste in the mouth, itching, hallucination or respiratory depression (respiratory rate less than 10/min and SpO_2 below 91%). Patients were kept in the recovery room for 30 min and then sent to the ward.

We analyzed demographic data means and standard deviation using the t test. We analyzed correlation between Apgar, APAIS and NACS scores using the chi square test. $p < 0.05$ after analysis was regarded as significant and $p > 0.05$ as insignificant.

Results

Weight, average age and ASA values of the obstetric patients in the study are shown in Table 1.

We determined no significant difference between the patient groups in terms of age ($p = 0.93$), weight ($p = 0.54$) or ASA ($p = 0.63$). The APAIS results significantly differed between the two groups, but there was no difference