Brazilian Journal of Anesthesiology 2022;72(4): 533—535

Sociedade Brasileira de Anestesiologia

Brazilian Journal of ANESTHESIOLOGY

SHORT COMMUNICATION

Postoperative pain management after cesarean delivery: cross-sectional study

Júlia Gonçalves Zandomenico [a,*], Georgia Zandomenico Perito[a], Jean Abreu Machado[b,c], Helena Caetano Gonçalves e Silva[b]

[a] *Universidade do Sul de Santa Catarina, Tubarão, SC, Brazil*
[b] *Universidade do Sul de Santa Catarina, Ciências da Saúde, Tubarão, SC, Brazil*
[c] *Hospital Nossa Senhora da Conceição e Hospital Socimed, Residência em Anestesiologia, Tubarão, SC, Brazil*

Received 14 May 2021; accepted 24 October 2021
Available online 1 February 2022

Introduction

Cesarean delivery is the most frequently performed surgery in several countries and its incidence has increased in recent decades, underlining the need to discuss cesarean delivery management.[1] Spinal anesthesia is recognized as the technique of choice for both elective and emergency cesarean delivery. The main disadvantage of spinal anesthesia is the absence of long-lasting postoperative analgesia, requiring administration of additional analgesia drugs postoperatively to maintain high-quality and prolonged pain control.[2] Puerperal patients with pain have difficulty walking and they may adopt an antalgic position that challenges breastfeeding.[3] Thus, adjuvant drugs can be associated with local anesthetics to enhance the quality of spinal anesthesia and prolong postoperative analgesia. Currently, combining local anesthetics with opioids is the most frequently used approach.[2] Due to the negative impact caused by pain on the mother's recovery and the newborn, we proposed to assess postoperative pain management and correlate it with the prevalence of postoperative pain in patients undergoing cesarean delivery under spinal anesthesia in a hospital in the southern region of Brazil.

Methods

This is a retrospective cross-sectional observational study. Data were acquired from paper and electronic medical charts of patients submitted to cesarean delivery under spinal anesthesia in 2019, performed at a reference hospital for obstetric care in the southern region of Brazil.

The sample was calculated from a total of 879 patients submitted to cesarean section under spinal anesthesia in 2019, considering 80% prevalence of cesarean sections performed with spinal anesthesia and intrathecal morphine,[4] and adopting 95% for the level of confidence and a 5% sampling error. The sample size was estimated as 268 patients. The medical charts assessed were chosen by simple randomization.

The study included patients over 18 years old, ASA (American Society of Anesthesiologists) physical status II or III, and presenting single-fetus pregnancy submitted to cesarean delivery under spinal anesthesia. We excluded patients with a body mass index higher than 40 $kg.m^{-2}$, medical history of more than three cesarean deliveries, psychiatric or cardiopulmonary disorders, decompensated diabetes mellitus, and patients on chronic use of analgesics.

The variables analyzed were patient sociodemographic data, use of intrathecal morphine, the adjuvant medications administered by the anesthesiologist intraoperatively and by the obstetrician in the first 24 hours post-cesarean,

* Corresponding author.
E-mail: juzandomenico@gmail.com (J.G. Zandomenico).

https://doi.org/10.1016/j.bjane.2021.10.020

occurrence of pain in the 24 hours post-cesarean, and the use of additional analgesia during this period.

In the first 24 hours post-cesarean, pain was evaluated by a physician, nurse or nursing technician obtained by a Visual Analog Scale (VAS) score. The VAS score was registered on the patient medical chart in the first 24 hours post-cesarean delivery. Additional analgesia consisted of administration of rescue analgesic medications not included in the regular pain control orders. In the hospital where the study was carried out, additional analgesics are administered when VAS $\geq$ 4. VAS score 0 was considered as no pain; scores 1 to 3, as mild pain; scores 4 to 6, as moderate pain; scores 7 to 9, as severe pain; and score 10, as unbearable pain.

For statistical analysis, we performed a test for association of variables using Prevalence Ratio (PR), and comparison was performed with the Pearson's Chi-Square test. The level of significance was established as 5%.

The study was approved by the Research Ethics Committee of the institution, opinion 4.452.045, on December 10, 2020.

Results

A sample of 268 patients was assessed. Patient age distribution was the following: from 18 to 19 years old, one patient (0.4%); 20 to 29 years old, 67 patients (25%); 30 to 39 years old, 188 patients (70.1%); and 40 years or older, 12 patients (4.5%). Regarding pre-existing disorders, the distribution was the following: endocrinological disorder present in 21 patients (7.8%), respiratory in 9 (3.4%), cardiocirculatory in 6 (2.2%), hematological in 4 (1.5%), and neurological in 1 (0.4%). None of the patients had a pre-existing history of alcoholism or smoking.

The distribution of the medications administered intraoperatively by the anesthesiologist for postoperative analgesia was the following: 267 patients (99.6%) received intrathecal morphine, 210 (78.4%) received ketoprofen, 163 (60.8%) received dipyrone, 142 (53%) received dexamethasone, and 40 (14.9%) received ketorolac.

Table 1 shows the number of analgesic medications administered intraoperatively by the anesthesiologist for post-cesarean analgesia and its correlation with occurrence of postoperative pain in the first 24 hours post-cesarean. There was a trend towards a statistically significant association between pain in the first 24 hours post-cesarean and the number of analgesics administered intraoperatively, so that the group that did not experience pain had a similar chance of receiving two or more medications compared to the group that did experience pain (p = 0.064).

The analgesic medications administered in the first 24 hours postoperatively ordered by the obstetric surgeon were: 254 patients (95.0%) received dipyrone 1g every 8 hours, 246 (92.0%) received tramadol 100 mg every 8 hours, and 227 patients (85%) received ketoprofen 100 mg every 12 hours. Table 2 describes the prevalence of postoperative pain and the use of additional analgesia for post-cesarean pain whenever VAS $\geq$ 4. A statistically significant association was found between the prevalence of post-cesarean pain and the use of additional analgesics in the initial 24 hours postoperatively, revealing that most patients referring VAS $\geq$ 4 did not receive additional analgesia (p = 0.016).

Table 1 Correlation between occurrence of postoperative pain in the first 24 hours and the number of analgesic medications ordered by the anesthesiologist for post-cesarean pain management.

	Pain (n)	No pain (n)	p-value
One medication	27	43	0.064
Two or more medications	95	98	

Table 2 Visual Analogic Score $\geq$ 4 and additional analgesic medication use in the first 24 hours after cesarean.

	n	%	p-value
Visual Analogic Score $\geq$ 4 in the first 24 hours after anesthesia	39	14.5	0.016
Use of additional analgesic medication in patient referring VAS $\geq$ 4 in the first 24 hours after anesthesia	3	1.1	

VAS was measured in 258 patients (96.2%). When analyzing the distribution of pain classification according to VAS scores in the first 24 hours post-cesarean we observed that 140 patients (52.2%) reported VAS of 0, and VAS pain classifications were distributed as follows: mild pain (29.5%), moderate pain (12.0%), and severe pain (2.6%). None of the patients reported VAS 10.

Discussion

The epidemiological profile of patients undergoing cesarean delivery in Brazil has changed. The current incidence of late pregnancies has increased,[5] as corroborated by this study, as most of the participants were over 30 years of age. The rise in maternal age is associated with higher perioperative and gestational risks,[5] and requires more attention from health professionals.

Inadequate postoperative pain control can be detrimental to recovery from any surgery,[2] and especially in cesarean delivery, postoperative analgesia should be maximized given the risk of reducing the mother's independence and impact on newborn care.[2,6] Thus, several approaches are used to enhance post-cesarean analgesia, such as intrathecal administration of morphine.[2] Indeed, in this study, practically all patients (99.6%) received intrathecal morphine as a postoperative pain management strategy.

VAS is a valuable tool for detecting and quantifying postoperative pain, enabling patient analgesia optimization. Nevertheless, this study revealed an ineffective use of VAS, considering that of all patients referring VAS $\geq$ 4 in the first 24 hours postoperative, only 7.6% received additional analgesia (p = 0.016). The same negative finding was reported, though less significantly, in the study by Kintu et al.,[7] in which 58% of patients did not receive adequate analgesic prescription after cesarean delivery. Obstacles in managing postoperative pain can occur due to the high workload of

health professionals — comprising the number of patients and number of procedures to be performed — and impact negatively on the care provided to each patient.[8]

Also, when we compared patients presenting pain with those with no pain, we found that the use of drugs for postoperative analgesia was similar in both groups (p = 0.064). The trend towards statistical significance may have occurred due to the relatively restricted sample size studied.

The use of secondary data is a limitation of the study, which may underestimate the prevalence of postoperative pain, as pain may have occurred and was not detected or registered on the medical chart. We concluded from this study that the management of post-cesarean pain was unsatisfactory, and can affect newborns' recovery and care. The study underlines the importance of better team communication to establish consistent patient pain assessment and prescription of analgesic medications and other forms of analgesia according to the individual needs of patients. Moreover, further investigation focusing on this topic is encouraged to obtain further insight and new solutions for optimizing postoperative pain management in cesarean delivery.

Funding

This study was supported by a scholarship grant from the Programa de Bolsas Universitárias de Santa Catarina (UNIEDU).

Conflicts of interest

The authors declare no conflicts of interest.

Supplementary materials

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.bjane.2021.10.020.

References

1. Boerma T, Ronsmans C, Melesse DY, et al. Global epidemiology of use of and disparities in caesarean sections. Lancet. 2018;392:1341—8.
2. Macones GA, Caughey AB, Wood SL, et al. Guidelines for postoperative care in cesarean delivery: Enhanced Recovery After Surgery (ERAS) Society recommendations (part 3). Am J Obstet Gynecol. 2019;221:247.e1—9.
3. Carvalho FAE, Tenório SB. Estudo comparativo entre doses de morfina intratecal para analgesia após cesariana. Rev Bras Anestesiol. 2013;63:492—9.
4. Mikuni I, Hirai H, Toyama Y, et al. Efficacy of intrathecal morphine with epidural ropivacaine infusion for postcesarean analgesia. J Clin Anesth. 2010;22:268—73.
5. Pereira SL, Silva TPR, Moreira AD, et al. Factors associated with the length of hospital stay of women undergoing cesarean section. Rev Saúde Pública. 2019;53(65).
6. Gan TJ. Poorly controlled postoperative pain: prevalence, consequences, and prevention. J Pain Res. 2017;10:2287—98.
7. Kintu A, Abdulla S, Lubikire A, et al. Postoperative pain after cesarean section: assessment and management in a tertiary hospital in a low-income country. BMC Health Serv Res. 2019;19:68.
8. Magalhães AMM, Kreling A, Chaves EHB, Pasin SS, Castilho BM. Medication administration - nursing workload and patient safety in clinical wards. Rev Bras Enferm. 2019;72:183—9.