THE ANALGESIC MODALITIES FOR PAIN MANAGEMENT AFTER CAESAREAN SECTION

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Abstract

Background: There is an increased rate of cesarean sections (CS) in Iraq. Multiple methods are used to manage pain postoperative. This study was conducted aiming to determine the several modalities for pain reduction after CS.

Methods: This is an observation study that was conducted from March 2020 to March 2021. We chose pregnant full-term women, with American Society of Anesthesiology (ASA) class I or II, prepared for elective lower segment CS. A total of 100 women were included, and they were divided into four equal groups in a parallel way; the Group A (NSAID), Group B (opioids), Group C (epidural analgesia), and Group D (peripheral nerve block). Preoperative preparation and postoperative assessment were done.

Results: The mean age of the included cases was 36.27 ± 2.66; 37.48 ± 3.32; 36.02 ± 3.73; 35.66 ± 4.21 years in GA- D, respectively. The mean BMI values were 30.38 ± 3.56; 31.52 ± 4.02; 30.33 ± 4.27; 32.00 ± 2.99 Kg/m^2 for GA -D, respectively. The mean gestational age of 37.89 ± 1.93; 38.55 ± 1.98; 37.49 ± 1.99; 39.04 ± 0.95 weeks in GA- D. The co-morbid conditions were presented in 17, 20, 13, and 22 in GA-D, respectively. Although there was no significant difference among groups regarding VAS score during rest after CS, whereas the subsequent (6 – 12 hrs) recordings revealed marked dropping in the same score in all groups ($p < 0.05$), apart from 24 hrs value, that was not significantly different. On assessment of postoperative complications, the incidence of nausea was significantly different encountered among groups ($p < 0.05$). However, there was no significant difference among other complications.

Conclusion: Nerve blocks appear to be an efficient and safe method that should be considered on managing postoperative pain after CS. It is associated with a decreased pain score, analgesic requirements, opioid consumption, and complications.

Key words: Caesarean delivery, NSAID, opioids, epidural analgesia, peripheral nerve blocks

Introduction

There is a worldwide raise in CS deliveries which may constitute a major obstetrics and gynecological health concern [1]. Currently, there is no single best technique to achieve optimum pain control post CS. Inadequate management of post-operative pain is associated with many complications including pneumonia, DVT, and delayed breast feeding [2]. The available modalities include IV NSAID drugs, opioids, epidural analgesia, and peripheral nerve blocks [3]. Multiple studies have reported the efficacy of nerve blocks in managing pain following CS [2, 4].

This study aimed to determine the several modalities for pain management post CS.

Methods

Study design and setting

This is an observation study that was conducted from March 2020 to March 2021. We chose pregnant full-term women, with American Society of Anesthesiology (ASA) class I or II, prepared for elective lower segment CS.

Participants A total of 64 cases were included, and they were divided into four equal groups in a parallel way; the Group A (NSAID), Group B (opioids), Group C (epidural analgesia), and Group D (peripheral nerve block).

Ethics

Informed written consent was obtained from all women before, and after CS. The study was done after approval.

Preoperative preparation

All cases were clinically assessed, routine laboratory and radiological investigations were performed. A peripheral IV line was secured via cannula. Routine monitoring was done including blood pressure, heart rate, pulse oximetry, and ECG. Spinal anesthesia was performed under aseptic technique using a needle of two ml bupivacaine (0.5%) which inserted into either L 3-4 levels.

Postoperative assessment

Women were transferred to the recovery room. Close monitoring of the vital signs was ensured. Postoperative pain was assessed by Visual Analogue Scale (VAS) [5].

- If patients reported VAS > 4, IV administration of NSAID was done.
- IV morphine was administered when there was no response to NSAID.
- If no responses notice, epidural analgesia or nerve blocked may be of benefits.

The complications including nausea, vomiting, sedation, and itching were documented. Follow up visits were scheduled after 2 to 4 months to assess the presence of chronic pain (persistent continuously or intermittently for more than 3 months) according to the International Association for the Study of Pain (IASP) [6].

Statistical analysis

Data was analyzed using SPSS (Statistical Package for the Social Sciences) version 20. Qualitative data were described as number and percentage while quantitative data were expressed as mean ± SD or median. T-test was used to compare continuous data, whereas Chi-square test was used for categorical data. P value < 0.05 was considered significant.

Results

The mean age of the included cases was 36.27 ± 2.66; 37.48 ± 3.32; 36.02 ± 3.73; 35.66 ± 4.21 years in GA- D, respectively. The mean BMI values were 30.38 ± 3.56; 31.52 ± 4.02; 30.33 ± 4.27; 32.00 ± 2.99 Kg/m^2 for GA -D, respectively. The mean gestational age of 37.89 ± 1.93; 38.55 ± 1.98; 37.49 ± 1.99; 39.04 ± 0.95 weeks in GA- D. The co-morbid conditions were presented in 17, 20, 13, 22 in

GA-D, respectively. All of the previously discussed parameters were not significantly different among all groups. (Table 1)

Table 1: Age, BMI, gestational age, and co-morbidity.

	Group A (n= 25)	Group B (n= 25)	Group C (n= 25)	Group D (n= 25)	P value
Age (year)	36.27 ± 2.66	37.48 ± 3.32	36.02 ± 3.73	35.66 ± 4.21	0.88
BMI (Kg/m^2)	30.38 ± 3.56	31.52 ± 4.02	30.33 ± 4.27	32.00 ± 2.99	0.20
Gestational age (Week)	37.89 ± 1.93	38.55 ± 1.98	37.49 ± 1.99	39.04 ± 0.95	0.66
Co-morbid (Yes)	17	20	13	22	0.90

Although there was no significant difference among groups regarding VAS score during rest after CS, whereas the subsequent (6 – 12 hrs) recordings revealed marked dropping in the same score in all groups ($p < 0.05$), apart from 24 hrs value, that was not significantly different. (Table 2)

Table 2: VAS score during the study period.

	Group A (n= 25)	Group B (n= 25)	Group C (n= 25)	Group D (n= 25)	P value
Rest	0	0	0	0	NA
6 hrs	5	3	2	1	0.01
12 hrs	4	2	2	1	0.04
24 hrs	2	1	1	1	0.09

On assessment of postoperative complications, the incidence of nausea was significantly different encountered among groups ($p < 0.05$). However, there was no significant difference among other complications. (Table 3)

Table 3: Post-operative complications in the studied groups.

	Group A (n= 25)	Group B (n= 25)	Group C (n= 25)	Group D (n= 25)	P value
Nausea	6	12	5	2	0.01
Vomiting	0	2	1	2	0.07
Bradycardia	0	1	0	0	1
Hypotension	1	1	1	1	1
Itching	5	3	1	1	0.08
Pain	2	4	2	1	0.06

Discussion

CS is one of the most commonly performed lower abdominal operations in females in the child bearing time. For adequate neonatal care, postoperative pain in women must be well-controlled [7]. Also, adequate pain management is correlated with decreased hospital admission, postoperative complications, and increased patient satisfaction [8, 9].

In line with our findings, another study has also reported that there was no significant difference between the study groups regarding demographics including like age and BMI [3].

In our study, cases who received nerve block experienced less postoperative pain compared to other groups. VAS during rest time had significantly lower values in all group compared to rest and 24 hrs postoperative. As L1 – 2 dermatomes are supplied by ilioinguinal and iliohypogastric nerves, block of these nerves should provide somatic pain relief. However, it is ineffective in managing visceral pain at it is supplied by T10 – L1 segments [10]. Bunting et al, performed that type of block with 0.5% bupivacaine, and reported a significant decrease in postoperative pain VAS scores [11].

Similar to our findings, another recent study has also reported that VAS score showed a significant decrease of pain overall. Nigatu et al reported a significant decrease in pain numerical rating scale either during rest [12].

Moreover, Sakalli and his colleagues reported that nerve block was significantly associated with lower VAS scores. This was evident at 6th, 8th, 12th, 24th hrs at rest ($p < 0.05$) and at 6th, 8th hrs with movement ($p < 0.05$) [10].

On the contrary, another study reported no significant difference between the two groups regarding VAS [2]. Nevertheless, patients in the other group were commenced on patient controlled intravenous analgesia (PCIA), which could explain good pain control in that group. Despite these results, the previous study recommended nerve block as a good option for pain control post CS due to the increased incidence of morphine induced complications [4-9].

In the existing literature, ilioinguinal and iliohypogastric nerve blockade is associated with a 35 to 78% reduction in the need for postoperative analgesia, based on the surgical procedure and anatomical variations [13].

Pekmezci et al, reported the significant reduction VAS in morphine consumption 4 hrs, and in nerve block group 2 hrs ($p < 0.001$) [2]. Furthermore, other two studies have reported the decrease in analgesic requirements after applying the type of block following CS [11, 14]. All of the previous studies support our data.

As regard complications in our study, the incidence of nausea was significantly increased in the groups compared to cases with block. As nausea and pruritis are reported side effects of morphine administration [15], its increased incidence could be explained by the significant increase in morphine request, resulting in more reported side effects. Another study reported that the incidence of nausea increased significantly in the control group (76%) compared to the nerve block group (41%) [2]. This is in accordance with our findings.

In the previous literature, the incidence of chronic postoperative pain has been reported to range between 0.3 and 18% after CS [16]. Other studies reported higher rates ranging from 22.5 to 30.7% [17-19]. Theoretically, acute postoperative pain is a known documented risk factor for postoperative one [20]. This concept was confirmed by multiple studies as adequate pain control during the early postoperative phase declined the incidence of chronic postoperative pain following major laparotomy, thoracotomy, mastectomy, or craniotomy [21-25].

Conclusion

Nerve blocks appear to be an efficient and safe method that should be considered on managing postoperative pain after CS. It is associated with a decreased pain score, analgesic requirements, opioid consumption, and complications.

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