

*Research Article***The effect of using local anesthetics on haemodynamics after caesarian section****Hazem A. Abd el-zaher***, **Omayma S. Mohamed***, **Nagy S. Ali*** and **Neven M. Nour el-din****

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Abstract

Objective: This study is designed to evaluate the effect of local anesthetics on haemodynamic stability after caesarian section. **Patients and Methods:** This prospective, double-blind, randomized, placebo-controlled study will be conducted in Minia University Hospital on a total 70 women (ASA) physical status II scheduled for elective caesarean section who received either saline or bupivacaine locally before skin incision. **Results:** haemodynamics were significant stable more in group II which received local anesthetics than the placebo group. **Conclusion:** the use of bupivacaine locally at the end of caesarian section was useful in haemodynamic stability.

Key words: bupivacaine , caesarian section and haemodynamics.**Introduction**

Delivery by caesarean section (CS) is becoming more frequent. Childbirth is an emotion-filled event, and the mother needs to bond with her baby as early as possible. Any intervention that leads to improvement in pain relief is worthy of investigation. Local anaesthetics have been employed as an adjunct to other methods of postoperative pain relief, but reports on the effectiveness of this strategy are conflicting⁽¹⁾. Bupivacaine and lidocaine are two commonly used local analgesics. The two amino amides are often used concurrently to combine the more rapid onset of lidocaine and the longer duration of bupivacaine. Compared with lidocaine, bupivacaine has a significantly longer duration of action and slower time to onset^(2,3). Absorbable gelatin sponges contain haemostatic material and may be used for local application in surgical procedures with venous haemorrhage and exudation in situations where traditional haemostasis is difficult⁽⁴⁾. In addition to its haemostatic effect, an absorbable gelatin sponge can be used as a drug reservoir to provide sustained release of drugs^(5,6).

Methods

A standardized anesthesia protocol will be used in the form of propofol at 2-3 mg.kg., rocuronium 0.5 mg/kg. for tracheal intubation and ongoing muscle relaxation. Anesthesia will be maintained with sevoflurane in oxygen. and fentanyl at 1µg.kg-1 intravenously after delivery. Reversal of residual neuromuscular blockade will be done by using appropriate doses of neostigmine and atropine. The studied drugs will be prepared an assistant not included in data collection, and were administered by the surgeon who will be blinded to the prepared medication.

Before closure of the skin, a bupivacaine will be placed in the wound subcutaneously after closing the abdominal fascia (between abdominal fascia and skin).

According to the used medications, the patients will be allocated into 2 groups of 35 patients each:

Group I (C group): Will receive 0.9% normal saline.

Group II (B group): Will receive 20 ml bupivacaine 0.25%

All the patients will be treated with I.M. diclfenac / 8hrs with pethidine as a backup when needed.

Parameters will be assessed.**Post operative assessment**

- 1-Systolic and diastolic blood pressure at 1, 1, 2, 4, 8, 12, 18, 24, 36 and 48 hrs.
- 2-Side effects (allergic reactions, nausea & vomiting),
- 3-Wound healing.

Inclusion criteria:

1. Elective CS of gestation 37–40 weeks.
2. Age 18–35 years,
3. Under general anesthesia.

Exclusion criteria:

1. known allergy to any of the used medications.
2. Hypertension, diabetes mellitus.
3. Inability to understand a visual analogue scale.
4. History of pelvic surgery, chronic pelvic pain.
5. Opioid addiction, acute mental illness, uncontrolled major depression and any other psychiatric disorders.

Results

A total of 70 patients were randomly assigned to two groups of 35 patients each.

The groups were comparable in age, weight, ASA and duration of surgery.

Systolic, diastolic and mean arterial blood pressure

There was no statistically significant difference in systolic, diastolic or the mean arterial blood pressure preoperatively, or at 5, 15, 35, and 45 min after intubation between the studied groups.

Postoperatively, there was significant difference in the systolic blood pressure at 10, 30 mints, 1hr, 2hrs and 8hrs between group I and group II with higher readings recorded in group I. The same significant difference between the groups was recorded in the diastolic and mean blood pressure but at 10, 30 mints, 1hr and 2hrs only.

Intergroup comparison of mean arterial blood pressure (MAP) detected significant increase at 5mins after intubation in all groups in comparison to the basal MAP and also at 10, 30mins, 1, 2 and 24hrs postoperative in group I. However, significant decrease was recorded in group II at 1, 2, 4, 24hrs postoperatively (Tables 1 & 2)

Table (1) The changes in the systolic arterial blood pressure (SAP) (mmHg) in the studied groups

SBP (mmHg)	Group I (n=35)	Group II (n=35)	P value
Preoperative Range Mean \pm SD	(90-130) 121.28 \pm 10.38	(100-150) 123.85 \pm 12.19	0.360
5 min Range Mean \pm SD	(120-150) 138.85 \pm 9.63	(120-160) 140.14 \pm 12.09	0.636
15 min Range Mean \pm SD	(100-142) 121.77 \pm 10.81	(90-155) 123.57 \pm 17.21	0.795
35 min Range Mean \pm SD	(110-140) 118.57 \pm 9.43	(80-150) 118.85 \pm 17.78	0.702
45 min Range Mean \pm SD	(120-150) 129.71 \pm 8.57	(80-160) 131.57 \pm 19.04	0.238
10 min Range Mean \pm SD	(120-150) 132.85 \pm 7.88	(90-150) 119.28 \pm 16.27	<0.001*
30 min Range Mean \pm SD	(120-140) 131.42 \pm 6.36	(90-145) 119.14 \pm 14.67	<0.001*
1h Range Mean \pm SD	(110-150) 131.14 \pm 8.66	(90-140) 118 \pm 15.68	<0.001*
2h Range Mean \pm SD	(110-140) 127.85 \pm 8.42	(90-135) 114.85 \pm 13.14	<0.001*
4h Range Mean \pm SD	(110-140) 125 \pm 6.96	(100-140) 118 \pm 11.95	0.066
8h Range Mean \pm SD	(100-150) 127.42 \pm 10.93	(90-150) 119.54 \pm 15.96	0.015*
12h Range Mean \pm SD	(100-140) 119.42 \pm 9.61	(100-140) 119.42 \pm 12.58	0.491
24h Range Mean \pm SD	(100-130) 112.57 \pm 9.8	(90-140) 117 \pm 13.99	0.249

Table (2): The changes in the diastolic arterial blood pressure (DAP) (mmHg) in the studied groups.

DBP (mmHg)	Group I (n=35)	Group II (n=35)	P value
Preoperative Range Mean \pm SD	(60-90) 76.28 \pm 8.07	(60-100) 76.85 \pm 11.31	0.692
5 min Range Mean \pm SD	(60-100) 83.71 \pm 8.77	(70-110) 89 \pm 10.83	0.081
15 min Range Mean \pm SD	(60-90) 73.71 \pm 9.72	(60-100) 76.85 \pm 13.51	0.273
35 min Range Mean \pm SD	(60-90) 71.71 \pm 7.5	(50-100) 74 \pm 14.38	0.911
45 min Range Mean \pm SD	(70-100) 87.71 \pm 6.89	(50-110) 80.85 \pm 16.15	0.080
10 min Range Mean \pm SD	(70-100) 83.42 \pm 7.64	(60-100) 74 \pm 11.42	<0.001*
30 min Range Mean \pm SD	(70-100) 87.14 \pm 6.67	(60-90) 75 \pm 10.64	<0.001*
1h Range Mean \pm SD	(70-100) 83.42 \pm 8.02	(60-90) 73.28 \pm 9.92	<0.001*
2h Range Mean \pm SD	(60-100) 79.14 \pm 10.11	(60-90) 70.71 \pm 8.41	<0.001*
4h Range Mean \pm SD	(60-90) 75.42 \pm 8.16	(60-90) 73.42 \pm 10.27	0.552
8h Range Mean \pm SD	(60-100) 77.71 \pm 9.42	(60-100) 76.28 \pm 11.26	0.731
12h Range Mean \pm SD	(60-90) 74.28 \pm 7.39	(60-90) 74.85 \pm 9.19	0.766
24h Range Mean \pm SD	(60-80) 72.28 \pm 6.89	(60-90) 73.57 \pm 8.36	0.722

- *One way ANOVA test for parametric quantitative data between the three groups followed by post hoc Tukey analysis between each two groups.*
- **: Significant difference at p value < 0.05*

Post-operative side effects:

there were no signs of toxicity or allergic reactions or any complications regarding to wound healing or the surgical site..

Discussion

In the immediate post-operative period following Caesarean section, one major challenge is to avoid excessive pain and postoperative nausea and vomiting because

both will compromise the mother–child bonding (Kehlet & Dahl, 1993). Also postoperative pain is a potent trigger for stress response, activates the central nervous system, and is thought to be an indirect cause of adverse effect on various organ systems. During the management of postoperative pain, the physician must balance the degree of pain relief with avoidance of undesirable side effects (Kuczkowski, 2004). The effective pain management does not necessarily make the parturient totally insensible to the fact that abdominal surgery (cesarean section) was performed, but rather, it allows adequate degree of comfort and promotes physical recovery and a sense of wellbeing (Leung, 2004).

The results of the current research detected that the studied drugs produced more hemodynamic stability, with less incidence of nausea and vomiting in comparison to the control group.

The reason for the marked variation of pain between individuals remains unclear but could be due to multiple factors, including patient demographics, nature of underlying disease, anesthetic technique, surgical factors (duration of surgery, degree of invasiveness of the procedure), and postoperative care (Saeed & Al Dabbagh, 2009). In this study there were no significant differences among the treating groups in terms of patients demographic characters, type and time of the surgery, and anesthetic technique. Therefore the differences between the treating groups in the rate at which postoperative pain was achieved, can be attributed to the drugs used.

Conclusion

From this study, we concluded that:

Using bupivacaine locally has effectively stabilizing haemodynamics after caesarian section under general anesthesia.

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