Original Article

Comparison of Mean Narcotic Analgesia Requirement in Patients Undergoing Caesarean Section with and without Bupivacaine Infiltration

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Abstract

Objective: To compare the mean postoperative narcotic analgesia in patients undergoing cesarean section with and without bupivacaine infiltration

Methodology: Its a randomized controlled trial conducted in Obstetrics & Gynecology Department, Fatima Memorial Hospital, Lahore. Study was carried out over a period of six months from February 2016 to July 2016. Sample size of 300 cases (150 in each group) was calculated. Collected data was entered in SPSS version 11.

Results: Age distribution of the patients was done which shows 55.33%(n=83) in Group-A and 60.67%(n=91) in Group-B between 25-30 years, 44.67%(n=67) in Group-A and 39.33%(n=59) in Group-B were between 31-35 years, 27.4±5.2 in Group-A and 28.1±4.9 were in Group-B, 64%(n=96) in Group-A and 88%(n=58.67) in Group-B were between P0-P2 while 36%(n=54) in Group-A and 41.33%(n=62) were between P3-P5c. comparison of mean pain score post operatively shows mean pain score of 5 in group A and mean pain score of 8 in group B. Comparison of mean postoperative narcotic analgesia requirement reveals 102±18.34(mg) in Group-A while 157±23.6 (mg) in Group-B, p vale was 0.002 i.e. ≤0.05.

Conclusion: Comparison of mean narcotic analgesia required in patients undergoing cesarean section with and without bupivacaine infiltration reveals that patients with bupivacaine infiltration had significantly shorter doses of narcotic required analgesia

key words: Caesarean section, post-operative pain, post-operative analgesia, bupivacaine infiltration

Cite this article as: Khurshid S,Tarar MY, Imtiaz H, Hashmi SY. Comparison of Mean Narcotic Analgesia Requirement in Patients Undergoing Caesarean Section with and without Bupivicaine Infiltration. J. Soc. Obstet. Gynaecol. Pak. 2017; Vol 7(4):182-186

Introduction

Pain has been defined as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage”.[1] Pain in cesarean section wound immediately after surgery till next few days is quite common which, is due to inadvertent damage to cutaneous supply of skin and parietal peritoneium.[2]

Any interventions that lead to improvement in pain

Authorship Contribution: [1]literature review and research design and also finalized the manuscript, [2,3]helped in collection and analysis of data, [4]helped in final draft. All authors contributed significantly to the submitted manuscript.

Funding Source: none
Conflict of Interest: none

Received: Nov 14, 2017
Accepted: Jan 19, 2018

relief can positively impact early breast feeding which helps to contract uterus and accelerate the process of uterine contraction in postpartum period.[3] So immediate and adequate pain relief is important component of cesarean delivery that make postoperative period more gratifying.[4]

The ability of obstetricians to perform the procedure was limited by anaesthesia and infection control. However, despite the increased potential for abdominal procedures provided by anaesthesia, mortality from the procedure from infectious morbidity remained high following caesarean delivery.[5] A midwife Mary Donally did a successful caesarean section with the survival of mother and child, in 1738 at Charlemaunt in Ireland.[6]The evolution of caesarean section during the twentieth century as relatively safe procedure, largely because of improved anesthetic technique and antiseptic procedures. Many vaginal procedures such as internal version, destructive operations and symphysiotomy have become obsolete.[7]

Wilder-Smith et al. observed that the combination of a narcotic and a NSAID was more effective for the provision of postoperative cesarean delivery analgesia and the prevention of sensitization than the two drugs given individually.[8]Toradol has been listed as being compatible with breast-feeding by the American Academy of Pediatrics, and has been demonstrated to be effective for post-cesarean delivery analgesia.[9]

Pain after cesarean section is usually relieved by two ways; one by parenteral analgesia, other by local analgesia. Parenteral analgesia is either in form of non-steroidal anti-inflammatory drugs NSAIDs or narcotics.[10] Narcotic analgesia continues to be main stay of treatment despite side effects like respiratory depression, vomiting, show return of bowel functions and its secretion into breast milk.[11]

Wound infiltration with local anesthetic drugs like bupivacaine is an acceptable method for management of pain relief.[12] Epidural catheter is placed under rectus sheath. It blocks anterior division of T6-T11 thoracoabdominal intercostals nerves. It achieves good pain relief and not associated with side effects, it provides complete analgesia and reduces need for narcotic analgesia.[13-14]

International Literature review shows that there is no appreciable difference in patient visual analog pain scores between the bupivacaine and the placebo group, while a recent study in Pakistan[1] reveals a significant difference. This discrepancy between local and international study and the difference of 10 years between the studies makes the rationale of the study stronger. another advantage of the study would be that only one above mentioned study on this issue has been published yet which is not sufficient to set the protocols for the management of post-operative pain score and narcotic analgesic requirement.

Methodology

Non-probability: purposive sampling study was conducted in Obstetrics & Gynecology Department, Fatima Memorial Hospital, Lahore.

Sample size of 300 cases (150 in each group) was calculated with 80% power of test, 95% confidence level and taking expected mean$\pm$sd of mean post operative analgesia requirement in both groups i.e. 95$\pm$27.20 with bupivacaine group versus 151$\pm$29.43 in without bupivacaine group in patients undergoing cesarean section

Inclusion Criteria:

- Age of the patients (25-35 years)
- Gestational age (37-40 weeks) with any parity
- Patients weight <90 kg
- Elective cesarean section under general anesthesia
- Up to two previous cesarean sections (on history and record)
- Pfannenstiel incision with lower segment cesarean section

Exclusion Criteria:

- Elective cesarean section with placenta previa
- Allergic to local anesthetic (previous Hx)
- All subjects with general anesthetic complications during operation

Three hundred patients (150 in each group) were admitted through labor room of Obstetrics and Gynecology department of FMH after fulfilling the inclusion/exclusion criteria. Approval from the ethical committee of the hospital was obtained along-with informed consent of the study population with the

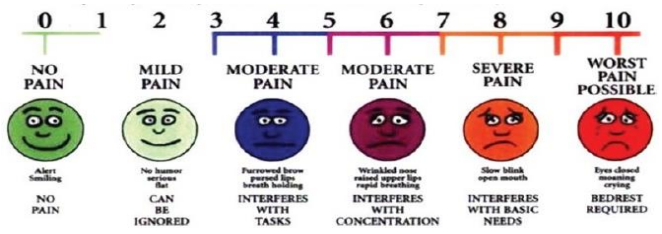
assurance to keep their information confidential. Two groups (A&B) were formed. Patients were randomly allocated to each group based on random number table. Group-A received bupivacaine 0.25% 4cc 2 hourly through wound catheter plus nalbuphine I/V 4 mg on demand (pain score >4). Group-B received nalbuphine I/V 4mg on demand (pain score >4) (total 6 doses 24mg/12 hours). Pain score (on VAS) was recorded by the researcher up to 12 hours post operatively and total analgesia requirement was calculated in each patient. All this information was recorded on a pre-designed proforma attached as Annexure.

Assessment of pain score:

Pain Score:

- Pain score was determined 12 hours after cesarean section on visual analogue scale as following:

0	No Pain
1-3	Mild Pain (Does not interfere with most activities, adapt to pain psychologically)
4-6	Moderate Pain (Interfere with many activities, unable to adapt to pain)
7-10	Severe Pain (Unable to engage in normal activities, patient is disabled to function properly)



Postoperative narcotic analgesic requirement:

- Post-operative narcotic analgesia was administered in case of moderate and severe pain, pain score >4 (on demand) during first 12 hours of cesarean section and total amount used was noted

Data Analysis: Collected data was entered in SPSS version 11. The quantitative variances including age and post-operative analgesia requirement was presented as mean ±sd. Student t test was applied to see the significance between the two groups, for the outcome variable. P value ≤0.05 was considered as significant. Stratification was done with respect to post-operative analgesic requirement for age and parity to control the effect modifier.

Results

A total of 300 patients (150 in each group) fulfilling the inclusion/exclusion criteria were enrolled to compare the mean postoperative pain score and narcotic analgesia in patients undergoing cesarean section with and without bupivacaine infiltration.

Age distribution of the patients was done which shows 55.33%(n=83) in Group-A and 60.67%(n=91) in Group-B between 25-30 years, 44.67%(n=67) in Group-A and 39.33%(n=59) in Group-B were between 31-35 years, 27.4±5.2 in Group-A and 28.1±4.9 were in Group-B. (Table No. II)

Distribution of cases by parity was done, 64 %(n=96) in Group-A and 88 %(n=58.67) in Group-B were between P0-P2 while 36 %(n=54) in Group-A and 41.33 %(n=62) were between P3-P5. (Table No. lll)

Comparison of mean postoperative pain score was calculated (figure 1), in group A pain score ranges from 4-6 with a mean value of 5 on VAS while group B has a mean score of 8 on VAS. T-test was applied which shows significant difference in both groups by calculated p vale as 0.003 i.e. ≤0.05.

Comparison of mean postoperative narcotic analgesia requirement was recorded and presented in Table No. I, where in Group-A 102±18.34(mg) while in Group-B 157±23.6 (mg) analgesia was required, t test was applied which shows significant difference in both groups by calculated p vale as 0.002 i.e. ≤0.05.

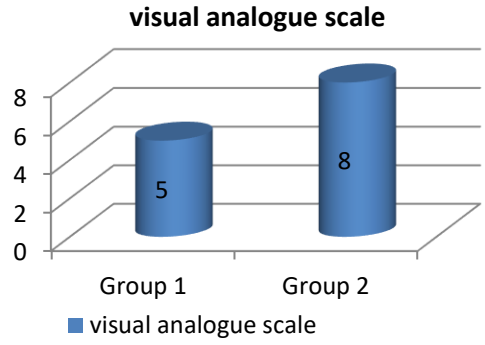


Figure 1. Comparison of Mean Postoperative Pain Score

Table I: Comparison of Mean Postoperative Narcotic Analgesia Requirement (in mg) n =300

Analgesia requirement (in mg)	Group-A (n=150)		Group-B (n=150)	
	Mean	SD	Mean	SD
Amount of analgesia	102	18.34	157	23.6

P value= 0.002

Table II: Distribution of Cases By Age (n=300)

Age (in Years)	Group-A (n=150)		Group-B (n=150)	
	No.	%	No.	%
25-30	83	55.33	91	60.67
31-35	67	44.67	59	39.33
Total	**150**	**100**	**150**	**100**
Mean±SD	**27.4±5.2**		**28.1±4.9**	

Table III: Distribution of cases by parity (n=300)

Parity	Group-A (n=150)		Group-B (n=150)	
	No.	%	No.	%
P0-P2	96	64	88	58.67
P3-P5	54	36	62	41.33
Total	**150**	**100**	**150**	**100**

Discussion

Caesarean section (CS) usually causes pain post-operatively for 48 hours[15].The additional factor to provide early pain relief is early mobilization to reduce further post–op. risk of thrombo-embolic disease, which is increased during pregnancy. Besides these patients need to be pain free to care for their newborn and breastfeed them effectively.

Literature review demonstrates that there is no significant difference in patient demographics or visual analog pain scores at any time interval between the bupivacaine versus the placebo group, while a recent study in Pakistan[1] reveals a significant difference regarding pain score (on VAS) between wound infiltration versus the control group at 12 hours after cesarean section. This discrepancy between local and international study and the difference of 10 years between the studies makes the rationale of the study stronger to determine the efficacy of bupivacaine infiltration in cesarean section wound for postoperative pain score and narcotic analgesic requirement.

We compared of mean postoperative narcotic analgesia requirement which shows Group-A 102±18.34(mg) while in Group-B 157±23.6 (mg) analgesia was required, t test was applied which shows significant difference in both groups by calculated p vale as 0.002 i.e. ≤0.05, these findings are in agreement with Samreen Amin and colleagues who revealed a significant difference in study and control group by calculating p value as 0.001, for analgesic requirement in both groups.

Another study by Despoina D[16] compared the analgesic properties of locally infiltrated levobupivacaine with those of ropivacaine in fleur-de-lys abdominoplasty and concluded that with local tissue infiltration of either ropivacaine or levobupivacaine. post mini abdominoplasty, adequate pain relief is obtained for at least 4 however, if intensity and duration of analgesic in taken into consideration, post mini laparotomy, levobupivacaine was more effective than ropivacaine in reducing postoperative pain.

Bupivacaine is found to be quite effective in reducing postoperative pain. It has high lipid solubility and protein binding properties, which result in rapid onset of action and prolonged duration of action (6-9 hours). Bupivacaine helps to reduce the dosage of analgesia after operation and contributes significantly to early mobilization and discharge from hospital thus reducing overall cost incurred by the patient.[17]

However, the results of the study in accordance with other studies reveal justifies the hypothesis of the study that “there is a difference in mean postoperative narcotic analgesia requirement in patients undergoing cesarean section with and without bupivacaine infiltration” and it may be used in patients our population undergoing cesarean section to control post-operative pain.

Conclusion

Comparison of mean narcotic analgesia required in patients undergoing cesarean section with and without bupivacaine, infiltration reveals that patients with bupivacaine infiltration had significantly shorter doses of narcotic required analgesia

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