

A study of comparison of duration of intrathecal bupivacaine plus midazolam vs bupivacaine alone for postoperatively analgesia in the patients of caesarean delivery

Prashant Mohanrao Patole¹, Amruta Vishwanath Dawari^{2*}

¹Assistant Professor, Department of Anesthesiology, MIMER Medical College, Talegaon, Dabhade, Pune, INDIA.

²Assistant Professor, Department of Pharmacology, MIMSR Medical College, Latur, Maharashtra, INDIA.

Email: gajananchavan2@gmail.com

Abstract

Background: Considering the special group of patients (Mothers) undergoing caesarean section, it is moral responsibility of Anaesthesiologist to provide a safe and pain free postoperative period with various drug combinations and techniques. **Aims and Objective:** A Study duration of intrathecal bupivacaine plus midazolam vs bupivacaine alone for postoperatively analgesia in the patients of caesarean delivery **Methodology:** The present study was carried out during period of January 2009 to September 2009. sixty patients of age group 18-40 years were selected for the presented study. Group A: (n=30) received Inj. Bupivacaine 0.5% heavy 2 ml (10 mg), Group B: (n=30) received Inj. Bupivacaine 0.5% heavy 2 ml (10 mg) + inj. Midazolam 0.5%, 0.2 ml (1mg). The statistical analysis was done by Chi-square test, unpaired t-test calculated by SPSS 19 version software. **Result:** In our study we have seen that The mean age in group A and Group B was 23.8 ± 3.47 Yrs. and 24 ± 4 comparable ($t=0.207, p>0.05$). The duration of anesthesia was more in Group B i.e. 88.66 ± 17.75 as compared to 86 ± 16.15 but the difference was not statistically significant ($t=0.608, p>0.05$) The duration of analgesia was more in Group B i.e. 246 ± 39 as compared to 200 ± 21 but the difference was not statistically significant ($t=0.608, p>0.05$). The doses required for analgesia was less in group A i.e. 2.93 ± 0.630 vs in Group B i.e. 2.96 ± 0.490 but the difference was not statistically significant ($t=0.226, p>0.05$) **Conclusion:** Our results not shown any significant differences in both the group hence the combination of use should be compared with side effects and used as per requirement of individual patients

Key Word: intrathecal bupivacaine, midazolam, caesarean delivery

*Address for Correspondence:

Dr. Amruta Vishwanath Dawari, Assistant Professor, Department of Pharmacology, MIMSR Medical College, Latur, Maharashtra, INDIA.

Email: amruta.dawari@gmail.com

Received Date: 05/04/2019 Revised Date: 30/05/2019 Accepted Date: 22/07/2019

DOI: <https://doi.org/10.26611/101511117>

Access this article online

Quick Response Code:



Website:

www.medpulse.in

Accessed Date:
26 July 2019

INTRODUCTION

Considering the special group of patients (Mothers) undergoing caesarean section, it is moral responsibility of

Anaesthesiologist to provide a safe and pain free postoperative period with various drug combinations and techniques. The I_2 -adrenergic agonist Clonidine has a variety of different actions including the ability to potentiate the effects of local anesthetics¹. Intrathecal Clonidine is being extensively evaluated as an alternative to neuraxial opioids for control of pain and has proven to be a potent analgesic, free of some of the opioid-related side effects². Fentanyl, a phenylpiperidine derivative, is a synthetic μ opioid receptor agonist. It is preferred as an adjuvant in spinal anaesthesia because of its rapid onset and short duration of action with lesser incidence of respiratory depression. Intrathecal Fentanyl improves the quality of spinal anaesthesia without having any deleterious effects on the neonate or mother³. Discovery

How to site this article: Prashant Mohanrao Patole, Amruta Vishwanath Dawari. A study of comparison of duration of intrathecal bupivacaine plus midazolam vs bupivacaine alone for postoperatively analgesia in the patients of caesarean delivery. *MedPulse International Journal of Anesthesiology*. July 2019; 11(1): 86-88. <http://medpulse.in/Anesthesiology/index.php>

of benzodiazepine receptors in spinal cord triggered the use of intrathecal Midazolam for analgesia⁴. Several investigators have shown that intrathecal or epidural administration of Midazolam produces a dose dependent modulation of spinal nociceptive processing in animals and humans and is not associated with neurotoxicity, respiratory depression or sedation⁵ So we have done a comparative study of duration of intrathecal bupivacaine plus midazolam vs bupivacaine alone for postoperatively analgesia in the patients of caesarean delivery.

METHODOLOGY

The present study was carried out during period of January 2009 to September 2009. sixty patients of age group 18-40 years were selected for the presented study. Patients undergoing caesarean section as SA grade I and II and not having fetal distress selected for study. Preoperative evaluation of all patients was done. Through general and systemic examination was done to rule out any systemic disease. All patients undergone all routine testing patients having fetal distress were excluded from the study. Group A: (n=30) received Inj. Bupivacaine 0.5% heavy 2 ml (10 mg), Group B : (n=30) received Inj. Bupivacaine 0.5% heavy 2 ml (10 mg) + inj. Midazolam 0.5%, 0.2 ml (1mg). The statistical analysis was done by Chi -square test, unpaired t-test calculated by SPSS 19 version software.

RESULT

Table 1: Distribution of the patients as per the age

Group	Mean age (Years)	S.D	t-value	p-value
A	23.8	3.47	0.207	p>0.05
B	24	4		

The mean age in group A and Group B was 23.8 ± 3.47 Yrs. and 24±4 comparable (t=0.207,p>0.05)

Table 2: Distribution of the patients as per the duration of anesthesia

Group	Mean duration of anesthesia (min)	S.D.	t-value	p-value
A	86	16.15	0.608	p>0.05
B	88.66	17.75		

The duration of anesthesia was more in Group B i.e. 88.66± 17.75 as compared to 86±16.15 but the difference was not statistically significant (t=0.608,p>0.05)

Table 3: Distribution of the patients as per the effective analgesia

Group	Mean duration of analgesia	S.D.	t-value	p-value
A	200	21	5.606	p>0.05
B	246	39		

The duration of analgesia was more in Group B i.e. 246±39 as compared to 200 ±21 but the difference was not statistically significant (t=0.608,p>0.05)

Table 4: Distribution of the patients as per the analgesic doses in 24 hours

Group	No. of analgesic doses in 24 hours	S.D.	t-value	p-value
A	2.96	0.490	0.226	p>0.05
B	2.93	0.630		

The doses required for analgesia was less in group A i.e. 2.93±0.630 vs in Group B i.e. 2.96±0.490 but the difference was not statistically significant (t=0.226, p>0.05)

DISCUSSION

Spinal subarachnoid block is one of the most versatile regional anesthesia techniques available today. Regional anesthesia offers several advantages over general anesthesia blunts stress response to surgery, decreases intraoperative blood loss, lowers the incidence of postoperative thromboembolic events, and provides analgesia in early postoperative period. Subarachnoid block provides adequate anesthesia for patients undergoing infraumbilical surgery. Among the local anesthetics, 0.5% hyperbaric bupivacaine is the most commonly used drug for spinal anesthesia⁶. The most important disadvantage of single injection SAB is the limited duration. Adjuvants have long been used along with local anesthetics to prolong the duration of anesthesia and analgesia. Prolongation of pain relief by various adjuvants like opioids like morphine⁷, fentanyl⁸, ketamine⁹, clonidine¹⁰, and neostigmine¹¹ were investigated by various investigators. However, each drug has its limitations and side effects, and the need for an alternative methods and drugs always exist. Discovery of benzodiazepine receptors in spinal cord in 1977¹² triggered the use of intrathecal midazolam for prolongation of spinal anesthesia. In vitro autoradiography has shown that there is a high density of benzodiazepine (GABAA) receptors in Lamina II of the dorsal horn in the human spinal cord, suggesting a possible role in pain modulation¹³. So far different animal studies have revealed no damage to the spinal cord, nerve roots, or meninges and in vitro studies suggested that clinically useful doses of intrathecal midazolam are unlikely to be neurotoxic¹³⁻¹⁷. In our study we have seen that The mean age in group A and Group B was 23.8 ± 3.47 Yrs. and 24±4 comparable (t=0.207,p>0.05)The duration of anesthesia was more in Group B i.e. 88.66± 17.75 as compared to 86±16.15 but the difference was not statistically significant (t=0.608,p>0.05) The duration of analgesia was more in Group B i.e. 246±39 as compared to 200 ±21 but the difference was not statistically significant (t=0.608,p>0.05) The doses required for analgesia was less in group A i.e. 2.93±0.630 vs in Group B i.e. 2.96±0.490 but the difference was not statistically significant (t=0.226,p>0.05)

CONCLUSION

Our results not shown any significant differences in both the group hence the combination of use should be compared with side effects and used as per requirement of individual patients

REFERENCES

- Eisenach JC, De Kock M, Klimscha W: Alpha (2)-adrenergic agonists for regional Anaesthesia: A Clinical Review of Clonidine (1984-1995). *Anaesthesiology*, 1996; 85(3):655-674.
- Neves JF, Monteiro GA, Almeida JR, Sant'anna RS, Saldanha RM, Moraes JM, Nogueira ES, Coutinho FL, Neves MM, Araujo FP, Nobrega PB: Postoperative analgesia for caesarean section: Does the addition of clonidine to subarachnoid morphine improve the quality of analgesia? *Revista Brasileira de Anestesiologia*, 2006;56(4):370-376
- Hunt CO, Naulty JS, Bader AM, Hauch MA, Vartikar JV, Datta S, Hertwig LM, Ostheimer GW: Perioperative analgesia with subarachnoid fentanyl-bupivacaine for cesarean delivery. *Anaesthesiology*, 1989; 71(4):274-278.
- Mohler H, Okada T: Benzodiazepine receptor: demonstration in central nervous system. *Science*, 1977; 198(319):849-851.
- Naguib M, el Gammal M, Elhattab YS, Seraj M: Midazolam for caudal analgesia in children: comparison with caudal bupivacaine. *Canadian Journal of Anesthesia*, 1995; 42(9): 758-764.
- G. E. Morgan Jr., M. S. Mikhail, M. J. Murray, and C. P. Larson Jr., *Clinical Anaesthesiology*, Lange, New York, NY, USA, 4th edition, 2002.
- P. H. Tan, Y. Y. Chia, Y. Lo, K. Liu, L. C. Yang, and T. H. Lee, "Intrathecal bupivacaine with morphine or neostigmine for postoperative analgesia after total knee replacement surgery," *Canadian Journal of Anesthesia*, vol. 48, no. 6, pp. 551-556, 2001.
- C. O. Hunt, J. S. Naulty, A. M. Badder *et al.*, "Peri operative analgesia with subarachnoid fentanyl-bupivacaine for caesarian section," *Anesthesiology*, vol. 71, no. 4, pp. 535-540, 1989.
- S. Karthival, Sdhasivam S, A. Saxena, T. R. Kannah, and P. Ganjoop, "Effects of intrathecal ketamine added to bupivacaine for spinal anesthesia," *Anarsthesia*, vol. 55, no. 9, pp. 899-904, 2001.
- Dobrydnov I, K. Axelsson, J. Samarutel, and B. Holmstrom, "Post operative pain relief following intrathecal bupivacaine with intrathecal or oral clonidine," *Acta Anaesthesiologica Scandinavica*, vol. 46, no. 7, pp. 806-814, 2002.
- S. Liu, "Dose-response effects of spinal neostigmine added to bupivacaine spinal anesthesia in volunteers," *Anesthesiology*, vol. 90, no. 3, pp. 710-717, 1999.
- H. Mohler and T. Okada, "Benzodiazepine receptor: demonstration in the central nervous system," *Science*, vol. 198, no. 4319, pp. 849-851, 1977.
- R. L. M. Faull and J. W. Villiger, "Benzodiazepine receptors in the human spinal cord: a detailed anatomical and pharmacological study," *Neuroscience*, vol. 17, no. 3, pp. 791-802, 1986.
- M. E. Crawford, F. Molke Jensen, D. B. Toftdahl, and J. B. Madsen, "Direct spinal effect of intrathecal and extradural midazolam on visceral noxious stimulation in rabbits," *British Journal of Anaesthesia*, vol. 70, no. 6, pp. 642-646, 1993.
- T. Nishiyama, T. Matsukawa, and K. Hanoaka, "Acute phase histopathological study of spinally administered midazolamin cats," *Anesthesia and Analgesia*, vol. 89, no. 3, pp. 717-720, 1999.
- T. Nishiyama, N. Sugai, and K. Hanaoka, "In vitro changes in the transparency and pH of cerebrospinal fluid caused by adding midazolam," *European Journal of Anaesthesiology*, vol. 15, no. 1, pp. 27-31, 1998.
- A. P. Tucker, C. Lai, R. Nadeson, and C. S. Goodchild, "Intrathecal midazolam I: a cohort study investigation safety," *Anesthesia and Analgesia*, vol. 98, no. 6, pp. 1512-1520, 2004.

Source of Support: None Declared
Conflict of Interest: None Declared