ISSN No:-2456-2165

A Comparative Study of Intrathecal Plain Bupivacaine Versus Bupivacaine with Midazolam for Subarachnoid Block in Lower Abdominal and Lower Limb Surgeries

Dr. Pujari Harika
Postgraduate
Anaesthesiology
Kurnool medical college
Kurnool, India

Dr. Sharada
Assistant professor
Anaesthesiology
Kurnool medical college
Kurnool, Andhra Pradesh

Abstract:-

➢ ***Background***

A comparative study of intrathecal plain bupivacaine versus bupivacaine added with midazolam for subarachnoid block in lower limb surgeries and lower abdominal surgeries .

➢ ***Methodology***

Patients were randomized as 30 patients each into two groups. Group 'B' - received 3.5 ml of 0.5% hyperbaric bupivacaine + 0.4 ml of 0.9% saline intrathecally. Group 'BM' - received 3.5 ml of 0.5%hyperbaric bupivacaine + 0.4 ml preservative free midazolam(5mg/ml) intrathecally.

➢ ***Results***

The sensory blockade onset in group- BM was 165.76 sec and in group-B was 189.30 sec. The results were statistically highly significant (P-value<0.05).

➢ ***Conclusion***

Based on the above study, the combination of 2mg preservative free midazolam and 0.5% hyperbaric bupivacaine for subarachnoid block in lower limb surgeries and lower abdominal surgeries prolonged the duration of effective analgesia as compared to plain bupivacaine and delays requirement of post operative analgesia . Intrathecal midazolam at a dose of 2 mg have no clinically significant effects on perioperative haemodynamics

I. INTRODUCTION

- Spinal anaesthesia is not able to maintain postoperative analgesia for a longer duration by drugs used commonly has been one of the most serious deficiencies in pain management today.
- Intrathecal morphine prolonged the period of postoperative analgesia but at the same time had other adverse events such as itching, nausea, urinary retention, sedation, ileus and life threatening respiratory depression.
- Intrathecal midazolam has an advantage of sedation, amnesia and antinociception without any neurotoxic effects.

➢ *Aim of the Study*

- The aim of the study was comparision of intrathecal bupivacaine added by midazolam with plain bupivacaine for the extent and the quality of subarachnoid block for patients undergoing lower limb and lower abdominal surgeries.

II. STUDY AND DESIGN

- It is a prospective study and double blinded randomized control trial.
- The study population included 60 in-patients belonging to either sex scheduled for elective lower abdominal and lower limb surgeries under subarachnoid block .
- Patients were randomized into 2 groups of 30 each in one group:
- **Group 'B'-** received 3.5 ml of 0.5% hyperbaric bupivacaine + 0.4 ml of 0.9% saline intrathecally.
- **Group 'BM' -** received 3.5 ml of 0.5% hyperbaric bupivacaine + 0.4 ml preservative free midazolam(5mg/ml) intrathecally.

➢ *Inclusive Criteria*

- Patients of ASA grade I & II
- Patients scheduled for elective lower limd and lower abdominal surgeries under subarachnoid block
- Age group 20 to 60 years
- Patients of either sex

➢ *Exclusion Criteria*

- Patient refusal
- Local site infection at the site of puncture.
- Coagulation disorders
- Intracranial hypertension
- Disease and deformities of spinal cord or vertebral column
- Allergy to study drugs

ISSN No:-2456-2165

III. STATISTICAL ANALYSIS

Data collected was analyzed by various statistical software such as SPSS and appropriate tests.

- Student's T-test (single tailed) used to find the significance of study
- Chi-square test used to find the significance of study parameters on categorical scale among the two groups.
- Significance was assessed at level of significance of 5%.

IV. OBSERVATION AND RESULTS

➢ *Height Distribution*

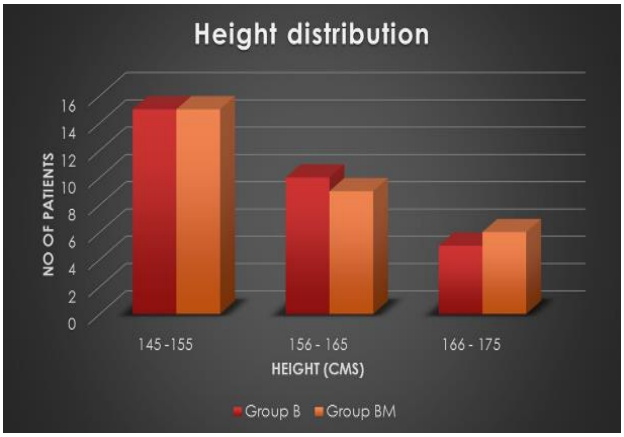

Fig 1 – height distribution

The average height in two groups were similar and in significant (P value = 0.49)

➢ *Sex Distribution*

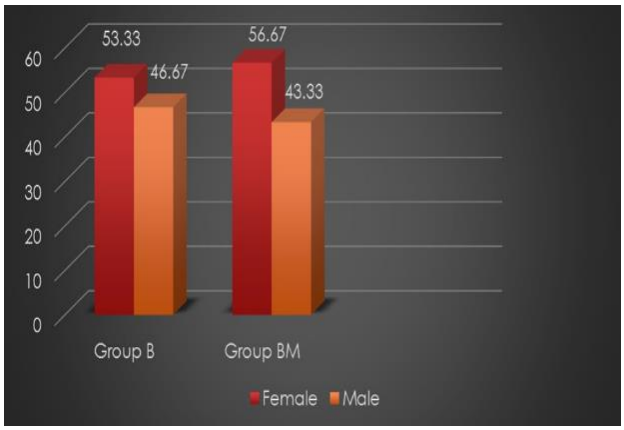

Fig 2 – sex distribution

Shows female male ratio between the 2 groups. In both groups female patients were significantly larger in number than the male patients

➢ *Heart rate between 2 groups at different time intervals*

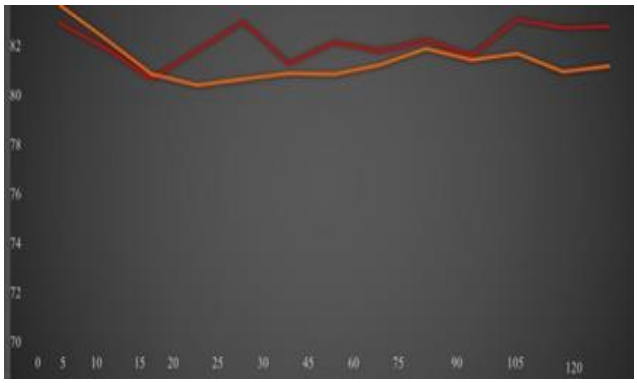

Fig 3- heart rate comparison

➢ *Systolic blood pressure between 2 groups at different time intervals.*

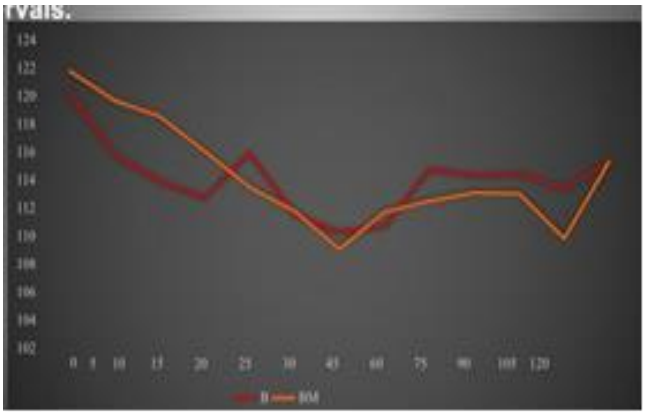

Fig 4 – SBP comparison

➢ *Diastolic blood pressure between 2 groups at different time intervals.*

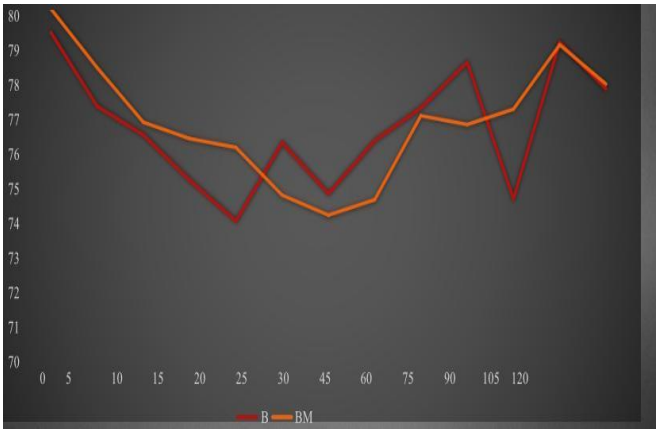

Fig 5 – DBP comparison

- The sensory blockade onset in group- BM was 165.76 sec and in group-B was 189.30 sec.
- The difference was significant statistically (P-value<0.05).

ISSN No:-2456-2165

Table 1 - Onset of sensory blockade (in sec) in 2 groups

Group-B	Group-BM	P value
Mean±SD	Mean±SD	
189.30±7.72	165.76±30.22	0.00005

Table 2 – onset of the motor blockade in 2 groups

Group-B	Group-BM	P value
Mean±SD	Mean±SD	
223.87±6.12	225.03±5.70	0.22

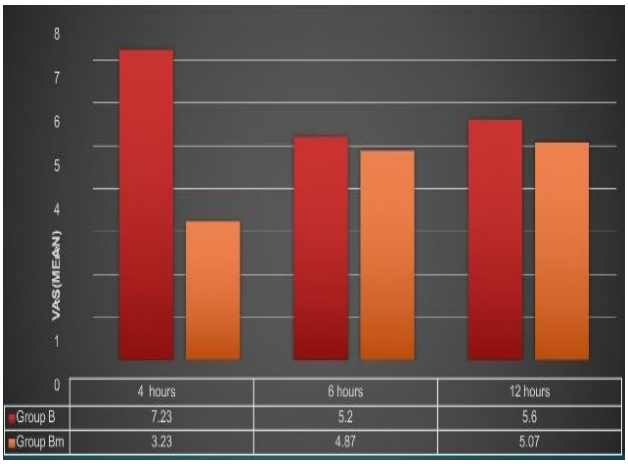

Fig 6 -Post operative Visual Analogue Score at varioustime levels

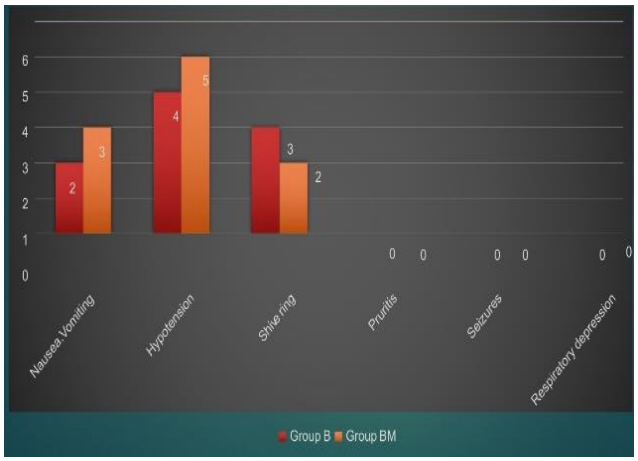

Fig 7 -Adverse effects

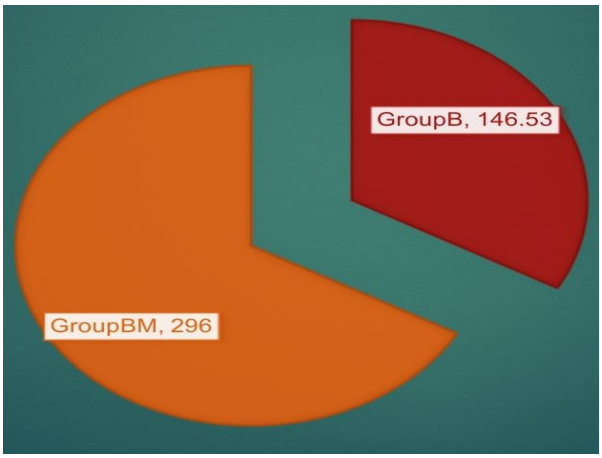

Fig 8 -Time (in minutes) of first analgesic request by the patients in either group

V. DISCUSSION

- Among regional anaesthesia , spinal anaesthesia is the technique used most commonly in practice.
- Local anaesthetics used commonly have adverse effects and have duration of analgesia for a shorter period .
- Here comes the requirement of an adjuvant prolonging the analgesic duration by not increasing the duration of motor blockade and so increasing the post operative analgesic duration, decreasing the need for post operative analgesia ,facilitation of early ambulation, shorter hospital stay .
- Of all agents commonly used intrathecal midazolam almost meets the above requirements
- **Bahar M et al.** found nil difference in the hemodynamic responses to the drugs correlated to the above study.
- **Bharti N et al** studied the intrathecal 1mg of midazolam added with hyperbaric bupivacaine effects in patients posted for lower abdominal surgery and found no change in oxygen saturation.
- **Batra et al** who proved that intrathecal injection of midazolam with bupivacaine in knee arthroscopy prolonged (299.9 min)the time of regression for sensory analgesia to L5-S2 level as compared to bupivacaine group (267 min).
- **Bharti N found** that period of sensory blockade (i.e.time of S2 segment regression was significantly more in the midazolam group.
- **Sen A et al** showed that no adverse neurological symptoms found in the patients who received intrathecal midazolam.
- In this study VAS at 1st pain medication was 7.23 in group-B compared to 4.87 in group-BM. This is similar to the study done by **Aikta Gupta et al** where the VAS was shorter in group-BM
- **Shah FR and et al** showed prolonged duration of postoperative pain relief in patients of midazolam group.
- **Shadangi et al** found that combination of intrathecal midazolam – preservative free and bupivacaine lead to prolonged duration of post operative analgesia without extending the motor block duration.

VI. CONCLUSION

- On this study basis , the addition of preservative free midazolam of 2 mg and 0.5% hyperbaric bupivacaine for subarchnoid block posted for lower limb and lower abdominal surgeries prolongs the quality in terms duration of effective analgesia as compared with plain bupivacaine and prolongs the need for post op analgesic requirements.
- Intrathecal midazolam of 2 mg dose doesn't possess clinically significant effects on perioperative haemodynamics

REFERENCES

[1]. G.Edward Morgan, Jr .Maged S. Mikhail, Michael J.Murray. Clinical Anaesthesiology; 2006, Fourth edition

[2]. J.J.Bonica, The management of pain, Lea and Febiger, Philadelphia, Pa, USA, 2nd edition, 1990.

[3]. Sen, A. Rudra, S. K. Sarkar, and B. Biswas, "Intrathecal midazolam for postoperative pain relief in caesarean section delivery," Journal of the Indian Medical Association, vol. 99, no.12, pp. 683–686, 2001.
[4]. N. Bharti, R. Madan, P. R. Mohanty, and H. L. kaul, "Intrathecal midazolam added to bupivacaine improves the duration and quality of spinal anaesthesia," Acta Anaesthesiologica Scandinavica, vol. 47, no. 9, pp. 1101–1105, 2003. ·
[5]. ·A. P. Tucker, C. Lai, R. Nadeson, and C. S. Goodchild, "Intrathecal midazolam cohort study investigation safety," Anaesthesia and Analgesia, vol. 98, no. 6, pp. 1512–1520, 2004
[6]. N. Agrawal, A. Usmani, R. Sehgal, R. Kumar, and P. Bhadoria, "Effect of intrathecal midazolam bupivacaine on post-operative analgesia," Indian Journal of Anaesthesia, vol. 49, no. 1, pp. 37–39, 2005.
[7]. Covino BG. Pharmacology of local anaesthetic agents. British Journal ofAnaesthesia 1986;58;701-16
[8]. Stoelting RK. Local Anaesthetics In: Pharmacology and Physiology inAnaesthetic 1986:58:701-16
[9]. Malinowsky JM, Cozian A, Lepage JY, Mussini JM, Pinaud M, Souron R. Ketamine and Midazolam neurotoxicity in the rabbit. Anesthesiology 1991;