

## COMPARISON OF EPIDURAL MIDAZOLAM WITH BUPRENORPHINE FOR POST-OPERATIVE ANALGESIA

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### ABSTRACT

The present study was carried out to evaluate the efficacy of epidural midazolam in relieving post-operative pain compared to epidural Buprenorphine. Thirty patients of ASA Grade I & II, of both sexes were randomly selected for study. Half of them received Inj. Buprenorphine 4µg/kg (Group A) and rest of the patients received Inj. Midazolam 30µg/kg (Group B) epidurally on complain of pain. Pain score was determined by subjective method that is visual analogue scale. Mild sedation with epidural midazolam was favorable in decreasing agitation & apprehension in post-operative period. The duration of analgesia lasted for 5-24 hrs in Group A & 16-48 hrs in Group B. Patients were stable as far as vitals were concerned.

**Key Words:** Epidural analgesia, Buprenorphine, Midazolam.

### INTRODUCTION

Pain is an unpleasant sensory &/or emotional experience, sad situation, hard to bear associated with potential tissue damage.

It requires immediate relief.

Post op analgesia<sup>1</sup> may provide comfort, improves morale and mobility, decrease the pulmonary complications and reduces the incidence of thrombophlebitis. Good pain relief will contribute to more rapid and complete recovery of patients undergoing major surgeries. Epidural analgesia<sup>2</sup> with opioids is an established and valuable technique for post-op pain relief. To evaluate the effectiveness of epidural Midazolam compared to epidural Buprenorphine<sup>3</sup>. We have selected two pharmacological agents, to be given by epidural route and compared them to find out efficacy, side effects<sup>4</sup> & advantages of one over another.

### MATERIAL AND METHOD

Thirty patients of ASA grade I & II in routine & emergency were randomly selected for the study. Thorough pre-op evaluation & investigations were carried out & after taking informed consent from the patients, they were divided into two groups.

The procedure of keeping epidural catheter & visual analogue scale were explained to the patient and written consent was obtained. Epidural catheter was put preoperatively/ postoperatively after locating epidural space by negative pressure / loss of resistance test.

The baseline of pain score (VAS) obtained at first complain of pain. Epidural Midazolam (Grade-B) 30µg/kg or Buprenorphine (Grade-A) 0.15 mg diluted in Normal Saline given at VAS of  $\leq 3$  and half of the initial dose was repeated when patient c/o mild pain (VAS). All parameters – HR, BP, RR, VAS, sedation & analgesia were recorded at regular intervals. Any side effects asked for and treated. Epidural Catheter removed after 24 hrs. Monitoring for side effect and its treatment was carried out.

### RESULTS

Thirty patients were randomly & allocated to two groups of fifteen each. Analgesia with Buprenorphine lasted minimum for five hours and maximum for 24 hours. Analgesia with Midazolam lasted minimum for 16-24 hour and maximum for more than 24 hours. The duration of analgesia was longer with Midazolam than with Buprenorphine and it is statistically highly significant. In both groups patients had complete pain relief in around one hour

In Buprenorphine group second dose was given by 6 hours but in Midazolam group second dose was almost not required. The

incidence of side effects like nausea and vomiting were observed in group A while some of group B patients had sedation.

**Table – 1: Distribution of duration of analgesia in hours**

Hours	Group A ( Buprenorphine)		Group B (Midazolam)	
	No. of patients	Percentage	No. of patients	Percentage
5 – 8	5	33.33	0	0.00
9 – 12	1	6.67	0	0.00
13 – 16	0	0.00	0	0.00
17 – 20	1	6.67	1	6.67
21 – 24	8	53.33	14	93.33

**Table – 2: Comparison of duration analgesia (in minutes) between two groups.**

	Group A (Buprenorphine)	Group B (Midazolam)
Mean	981.33	1424.00
SD	479.43	61.97
SEM	123.79	16.00
‘t’		3.536
‘p’		0.001 (<0.01)
Inference		Significant

**Table – 3: Visual Analogue Score in post-operative period.**

Time	Group A (Buprenorphine)	Group B (Midazolam)
0 min.	2.60 +/- 0.13	2.80 +/- 0.31
15 min.	1.20 +/- 0.11	1.13 +/- 0.24
30 min.	0.27 +/- 0.15	0.20 +/- 0.11
1 hour	0	0
2 hour	0	0
4 hour	0	0
6 hour	0.47 +/- 0.22	0
8 hour	0.53 +/- 0.22	0
12 hour	0.07 +/- 0.07	0
16 hour	0.73 +/- 0.34	0
20 hour	0.60 +/- 0.25	2.60 +/- 0.13
24 hour	0.13 /- 0.09	0

**Table – 4: Incidence of side effects**

Hours	Group A Buprenorphine)		Group B (Midazolam)	
	No. of patients	Percentage	No. of patients	Percentage
Nausea	7	46.67	0	0.00
Vomiting	3	20.00	0	0.00
Pruritus	0	0.00	0	0.00
Respiratory depression	0	0.00	0	0.00
Retention of urine	0	0.00	0	0.00
Sedation	0	0.00	2	13.33

## DISCUSSION

Pain after surgical trauma is a complex phenomenon, the culmination of complex sensory signals produced by initial injury & incorporating sociologic, cultural & psychological influence which may be accompanied by anxiety and apprehension requiring essential effective pain control. So, post-op analgesia is a subject which has been receiving wide attention in the recent years. Pain relief helps in preventing complications like : decreased respiratory function leading to hypoxia , hypercarbia, retention of secretions & atelectasis, Sympathetic stimulation causing cardiovascular effects like tachycardia, hypertension, Neuroendocrine stress response, Nausea , vomiting, urinary retention etc., DVT, pulmonary embolism, Fear, anxiety, insomnia, apprehension, The demonstration at specific opiate receptors<sup>5</sup> & GABA receptors<sup>6</sup> in spinal cord & clinical application of opiates & Midazolam given by epidural route are being used for post-op analgesia.

Buprenorphine<sup>7</sup> is a synthetic opioid with partial agonist antagonist type of efferent at  $\mu$  &  $\kappa$  receptors and it produces longer duration of analgesia with nausea, vomiting, pruritus, urinary retention like side effects while Midazolam is a highly lipophilic Benzodiazepine which has anti

nociceptive effect<sup>8</sup> by action on a  $\mu$  fibers & GABA receptors<sup>9</sup> & it provides prolonged analgesia with drowsiness, sedation and anaesthesia which is favourable in postoperative patients. It can be concluded from the present study that there was adequate postoperative analgesia<sup>10</sup> in both groups of patients and of prolonged duration with Epidural Midazolam. Although no serious side effects were observed in both the groups, nausea & vomiting were troublesome in few patients with epidural Buprenorphine while favourable mild sedation with epidural Midazolam was observed which decreases apprehension and agitation. The cardio-respiratory parameters were remained almost stable in both the groups, clinically.

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This is to certify that the paper titled "COMPARISION OF EPIDURAL MIDAZOLAM WITH BUPRENORPHINE FOR POST-OPERATIVE ANALGESIA" has not been published or submitted to or accepted for publication in any form in other journals. The undersigned author / author's vouche safes that the authorship of this article will not be contested by anyone whose name is not listed. On acceptance, the article will become copyright of "International Journal of Pharmaceutical Chemistry and Analysis".

## REFERENCES:

1. Anaesthesiology Clinics of North America (1989). The management of post operative pain.
2. Costa E., Guidotti A. Mao C.C and Suria A. New concepts on mechanism of action of benzodizepines. Life Science, 1995; 17; 167-172.
3. Cousins M.J., Mather L.E. Intrathecal and Epidural administration of opioids. Medical intelligence. Anaesthesiology; 1984; 61; 276-310.
4. Gustafsson L.L, Schildt B. and Jacobson K.J. Adverse effects of extradural and intrathecal opiates. Report of nationwide surgery in Sweden. British J. anaesthesia; 1982; 54; 479-486.
5. Morgan M. The rational use of intrathecal and extradural opioids. British J. Anaesthesia; 1989;63; 165-188.Pharmacological basis of anaesthesiology; Epidural analgesia with benzodizapines. 1983; 69-76.
6. Edwards M.Serrao J.M., Gent J.P. and Goodchild C.S. GABA involvement in spinal analgesia with Midazolam. Br. J. Anaesth.; 1989; 62; 233p.
7. Bilsbak P., Polly G. and Tampobolon U. Efficacy of the extradural administration of Buprenorphine in the management of postoperative pain. British J. Anaesthesia, 1995; 57; 943-948.
8. Niv D., Whitwam J.G. and Loh L. Depression of noiceptive sympathetic reflexes by intrathecal administration of Midazolam, British J. anaesth.; 1983; 55; 541-547.
9. Sawynok J. GABAnergic mechanism in antinociception, Prog. Neuropsychopharmacol. & Biol. Psychiat., 1984; 8; 580-586.
10. Nishiyama T., Odaka Y., Hirasaki A, Seto K. Epidural Midazolam for treatment of postoperative pain . Masui; 1991;40(9); 1353-1358 (Japanese).
11. Usha Rathi, Singh M. Evaluation of different doses of Buprenorphine given epidurally with lignocaine to relieve postoperative pain. Indian J. Anaesthesia; 1993; 41; 122.

12. Nishiyama T., Odaka Y., Hirasaki A, Mikane T., Kobayashi O, Seto K. Epidural administration of Midazolam with saline or Bupivacaine for postoperative pain; Masui; 1991; 40(10); 1525-1530 (Japanese).
13. Nishiyama T., Hirasaki A, Odaka Y., Konishi H., Seto K., Epidural Midazolam with Saline – optimal dose for postoperative pain; Masui; 1992; 41(1); 49-54
14. Nishiyama T., Hirasaki A, Odaka Y., Mikane T., Kobayashi O., Seto K., Epidural Midazolam with Bupivacaine – optimal dose for postoperative pain relief. Masui; 1992; 41(7); 1113-1118 (Japanese).
15. Nishiyama T., The postoperative analgesic action of Midazolam following epidural administration. Eur. J. anaesthesiol. ; 1995; 12(4); 369-374.
16. Kiran U and Kaul M.L. Comparison of intravenous, intramuscular and epidural Buprenorphine for postoperative pain relief. Ind. J. Anaesthesia Analg.; 1984; 63; 593-598.
17. Lt. Col., Y. Bhargava and Col. T. Saikia. Postoperative pain relief with epidural morphine and Buprenorphine. Ind. J. of Anaesthesia (Abridged reports). Pg. 32.
18. Yoshimi Inagaki, Takashi Mashimo. Mode and site of analgesic action of epidural Buprenorphine in humans. Anaesthesia and Analgesia; 1996; 83; 530-536.