

COMPARISON OF LIGNOCAINE 1.5% ALONE AND LIGNOCAINE 1.5% WITH TRAMADOL FOR POST OPERATIVE EPIDURAL ANALGESIA

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ABSTRACT

Objective: Aim of this study was to establish new synthetic opioid analgesic Tramadol as better agent for post operative pain relief. **Material and Methods:** Study consists of 25 patients undergoing lower abdominal surgeries with the epidural anaesthesia supplemented inj. Tramadol for post operative pain relief. Effect of drug on vital parameters, onset and level of block, muscle relaxation were taken as indicators of study. **Result:** Tramadol when mixed with lignocaine was better tolerated without interfering each other. Duration and quality of anaesthesia was not affected. The age, gender and type of surgery had well correlation in both groups. The vitals as pulse, BP (systolic and diastolic), respiratory rate were raised in-group 2 (lignocaine alone) and significant prolongation of duration of analgesia 544.48 ± 182.94 min in group 1 than 62.44 ± 13.82 min in group 2 was noted. **Conclusion:** The newer synthetic opioid analgesic tramadol with atypical clinical profile can be used epidural safely with rapid onset, effective and prolonged post operative analgesia allowing cardiovascular, respiratory stability and minimum side effects as well high acceptability.

Keywords: post operative epidural analgesia ,opioid analgesic, postoperative pain relief

INTRODUCTION

Pain an unpleasant sensation which only an individual can appraise and hence cannot be precisely defined as it is only the individual suffering from it who perceives it, not the observer. (1) The relief of pain during surgery is the "Raison d etre of Anaesthesia which should be appropriately in to the post operative period. The identification of opiate receptors in substantia gelatinosa of posterior horn cells of the spinal cord opened a new era in pain relief. (2) In regional anesthesia major development was the adoption of Tuohys catheter technique devised for continuous spinal anesthesia to

epidural anesthesia by Curbello. (3) Simpson et al (1961) and Bromage (1967) emphasized the superiority of epidural anesthesia over other techniques for relieving post operative pain. (4,5) With the knowledge about pain receptors, transmission and pathways opiates and other narcotics have been used along with regional anesthetic agents for post operative pain relief through intrathecal and epidural route.

Tramadol is introduced by Grunenthal in late 1970s in German market as a weak opioid with atypical clinical profile. (6, 7) It interacts with opioid receptors (μ , α , and δ) through

active metabolite O-demethyl Tramadol. The apparent lack of tolerance and dependence with low incidence of respiratory depression suggests its advantage over other established opioids. It is found one thirtieth as potent as morphine in post operative pain relief (PCA) in lower abdominal surgeries and even more effective than epidural Bupivacaine. (8) The absence of respiratory depression in comparison to morphine may be attributed to different mechanism of action with efficacy equivalent to pethidine.(9) In the view of above limited research and ample of scope and advantage it is decided to evaluate post operative pain relief through epidural Tramadol.

MATERIAL AND METHODS

Study consists of 25 patients undergoing lower abdominal surgeries with the epidural anaesthesia supplemented inj. Tramadol for post operative pain relief. Effect of drug on vital parameters, onset and level of block, muscle relaxation were taken as indicators of study.

RESULT

Clinical evaluation of post operative analgesia by epidural Tramadol in lower abdominal surgeries shows significant decrease in pulse rate and systolic BP observed in group 1 as compared to control group 2. The mean time of onset of analgesia was 14.08 ± 3.49 min in group 1 as compared to 12.96 ± 3.43 min in group 2. The mean duration of action of pain relief was in group 1 544.48 ± 182.94 min and 62.44 ± 13.82 min in group 2 patients. The side effects noted only in 16% patients were nausea and vomiting which were not serious and alarming, treated symptomatically.

DISCUSSION

The present study was done to evaluate post operative pain relief by adding Tramadol hydrochloride with Lignocaine 1.5% through epidural approach. Relief of pain during surgery is the "Raison d etre of anaesthesia" which should appropriately be extended in to the post operative period. In this context, Hippocrates said."Divine is the task to relieve pain" Pain receptors appear to consist of peripheral plexus of non myelinated nerves activated by high intensity stimuli, which may be thermal, mechanical, electrical or chemical. Pain is conducted by 2 types of fibers in periphery the A-delta (myelinated, rapidly conducting at 12-30 m/sec for well localized the quickly) and C fibers (non myelinated, slow conducting at 2-3 m/sec for delayed felt pain)

Peripheral sensory nerves have their cell bodies in DRG and their central projections enter the dorsal horn in lateral division of dorsal root principally terminating in rexed laminae 1 & 2 (substantia gelatinosa). Then the nociceptive impulse are conducted to thalamus via the spinothalamic tract with substance P as neurotransmitter. Collaterals supply medulla and central gray mater. Enkephalin (or morhin like transmitters) activates descending serotonergic and noradrenergic pathways that inhibit primary afferent transmission. Within dorsal horn there are local endorphins –enkephalin (opiates) inhibitory system. These same receptors are responsible for inhibitory effects of opioids analgesic on pain level.

A new concept has been opened for relief of postoperative pain since the identification of

specific opiate receptors by Synder in substantia gelatinosa of post horn cells of spinal cord. **(10)**

Tramadol Hcl, the newly introduced opioid agonist with atypical clinical profile has been used epidural for relief of post operative pain. **(7)** The absence of clinically relevant respiratory depression following epidural morphine may be attributed to different mechanism of their analgesic action. **(11)** It can be used to produce post operative analgesia without serious side effects. **(11, 12)**

In our study fifty patients (ASA class 1 & class2) were selected for routine planned surgery below the level of umbilicus.

The patients were divided in to two groups of 25 each. Cases in group 1 constituted the study group received inj. Tramadol (50 mg)1 ml along with inj. Lignocaine (1.5%)14 ml with single shot epidural approach. Group 2 allocated as control group received inj. Lignocaine alone 1.5 % (15 ml) similarly.

In this study all cases selected at random to avoid any kind of bias and allow comparability of results obtained in two groups. Patients selected were between 40-70 years with male preponderance in both groups equally. Mean age in group1 was 43.6±14.24 years and in group2 41.6 ±12.98 years. In all patients after injection epidurally all parameters recorded in similar manner in both groups.

In the present study it was found that group 1 patients had pulse rate range 70-90 /min and mean change 81.68± 6.55 / min to 81.28±6.13 /min in group 1 which is statically significant ($p < 0.05$). On other hand in group2 range (74-100) with mean change preoperative 82.56±8.30 /min

to 84.72±7.21 /min post operative which is also statistically significant ($p < 0.05$).

Group 1 patients had mean systolic BP 121.6±11.43 mmHg pre operatively to 119.6±9.35 mm Hg post operatively while in group 2 patients it was increased from 122.48±6.04 mm Hg to 124.56±6.77 mm Hg which is statistically significant ($p < 0.05$). Similarly diastolic BP change in group1 was 79.20 ±6.88 mmHg to 79.44 ±5.37 mm Hg and 80.48 ±6.69 mm Hg which is statistically insignificant ($p > 0.05$).

In a study by Rud V et al no significant change in pulse and BP observed. **(13)** Study conducted by Hackl W et al pulse rate was found to be increased slightly but significantly following the use of opiates than Tramadol. **(14)** Fentanyl produces a significant drop in mean arterial pressure by a maximum 16%.

Lehmann K.A et al carried out a randomized double blind study of Tramadol as an intra operative analgesia in comparison with placebo. **(15)**

Mean respiratory rate change observed pre operatively in group 1 was 14.36±1.15 /min to 14.21±1.17 /min and in group 2 14.28±1.06 /min to 14.76±1.13/min which is not statistically significant ($p > 0.05$).

The opiate nature of Tramadol may be responsible for respiratory depression. Although study of Baraka et al found lack of clinically associated respiratory depression following epidural tramadol compared to epidural morphine. **(12)** Study of Husslein P et al in obstetrics cases compared pethidine with

tramadol found ventilator frequency higher in new born in tramadol group than pethedine. (16)

Hackl W et al declared significant drop in respiratory rate after on demand analgesia by computer for tramadol and fentanyl. (14)

Time of onset of sensory loss can be calculated by pin prick sensation in each dermatome on both side of body or by using an alcohol swab to assess loss of temperature sensation. (17, 18) Mean time of sensory loss as per Nunn, Utting and Brown: General anaesthesia 1989 is 5- 15 min. (19) In our study it is 14.08 ± 3.49 min in group 1 and 12.96 ± 3.43 min in group 2 which is comparable and statistically insignificant.

The level of sensory block in both groups varied from T9 to L1 as per spinal segments correspondence to type of surgery.

The mean time of onset of motor loss was 23.2 ± 5.37 min in group 1 and 25.4 ± 5.93 in group 2 patients ($p > 0.05$) statistically insignificant. Time of onset of motor loss is reported to be 20-30 min. (20) Bromage scale is used to calculate time of onset of motor loss. (5)

The mean duration of surgery was 47 min ± 22.82 min in group 1 as compared to 48.4 ± 27.33 min in group 2 patients. ($p < 0.05$) With epidural anaesthesia, a characteristic feature of each local anaesthetic is its "time to two segments regression" i.e. the time from injection to time of maximum sensory level regression two segments. This is 90 to 150 min with lignocaine and epidural lignocaine allow surgery for 60-75 min. (1, 21)

All patients were supplemented with oxygen (4 liter) with ventimask intra operative. Patients

having pain sensation intra operatively were supplemented with antonox 50:50 O₂:N₂O. Supplementation is considered as one of the important steps in smooth conduction of epidural anaesthesia and should be done in a way no discernible either to the patient or to the surgeon in the interest of maintaining acceptability of the technique. Fu YP et al found average duration 11.3 ± 4.8 hrs with epidural tamadol (75mg). (22, 23) In a study Delilkan AE & Vijayan R mean duration with epidural tramadol (100mg) was 9.36 hrs. (24)

AK Pan, Mukherjee, A rudra studied epidural tramadol 50 mg with lignocaine(2%) and significant improvement in duration of pain relief from 2.46 ± 0.54 hrs to 15.39 ± 0.45 hrs. (25) Pinky et al studied epidural tramadol 100 mg and significant improvement in duration of pain relief. In our study no significant side effects were observed which were serious and alarming. (26)

CONCLUSION

It is therefore concluded that the newer synthetic opioid analgesic Tramadol with atypical clinical profile can be used epidural safely for rapid onset, effective and prolonged post operative analgesia allowing good cardio vascular and respiratory stability with minimum side effects and high acceptability.

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Ethical approval: The study was approved by the institutional ethics committee

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