ORIGINAL ARTICLE

Compare the Effectiveness of Intrathecal Tramadol and Buprenorphine as Adjuvants to Hyperbaric Bupivacaine for Postoperative Analgesia in Infraumbilical Surgeries

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ABSTRACT

Objective: To compare the effectiveness in term of postoperative analgesia of intrathecal bupivacaine and intrathecal tramadol as an adjuvant to hyperbaric bupivacaine in patients undergoing infraumbilical surgeries.

Study Design: Prospective double-blinded randomized

Place & Duration: Department of surgery, Khairpur Medical College (KMC) Hospital, Khairpur Mirs for duration of six months from February 2020 to July 2020.

Methods: This research involved a total of 100 patients. The patient's age was from 20 to 65. The two equal classes of patients have been separated. Group I had 50 patients who received intrathecally 10 mg 0.5% bupivacaine and 30 mg tramadol while in group II (n=50) received bupivacaine 10 mg 0.5% with 50 µg buprenorphine. Time to block T10 with the 25G blunt needle. comparison between the two groups were evaluated by pin prick process. SPSS 24.0 version of the full data has been analyzed.

Results: Mean age of the patients in group I was 41.84 ± 6.33 years with mean body mass index 27.84 ± 6.33 while in group II mean age was 41.94 ± 9.68 years with BMI 26.84 ± 8.78.Mean VAS scores were greater in group II as compared to group I. Mean onset time for sensory block was earlier in group II (3min) as compared to group I (3.4min). Mean onset time for motor block in group II was earlier (5.1min) as compared to group I (5.6min) with p value 0.005. Mean time for rescue analgesia was higher in group I (5.24 ±5.3h) as compared to group II (4.98±4.9h). No significant difference was observed between both groups.

Conclusion: We concluded in this study that bupivacaine with buprenorphine showed less duration of time for postoperative analgesia in infraumbilicalsurgeriesa as compared to tramadol.

Keywords: Spinal, Anesthesia, Post-operative analgesia, Tramadol, Buprenorphine

INTRODUCTION

Regional innovations such as spinal anaesthesia may provide benefits compared with general anaesthesia, including a decreased stress response to postoperative surgery and analgesia.[1,2] Buprenorphine is thirty times more active than morphine, agonist-antagonist opioid. It has a centrally acting lipid-soluble counterpart of the alkaloid thebaine with both spinal and supraspinal analgesia components[3,4] In addition, the alchaloidthebaine has a ceiling effect on breathing depression, but not analgesics[5].

In recent years, intrathecal/epidural opioids have been widespread[6,7]. Epidurally, morphine binding has been used to provide efficient long-term analgesia with opiate receptors of the spinal cord[8,9]. However, nausea and vomiting, pruritus, urinary retention and in some cases, late onset of respiratory failure are associated with epidural morphine. The new synthetic opioid analgesic is Tramadol hydrochloride. There is a clear preference for any of the identified subsystems of opiate receptors and their overall receptor affinity is lower than morphine. There is no published research compares intrathecal buprenorphine analgesic properties with other opioids, such as tramadol. This prospective, randomised control research was performed to assess and compare subarachnoid block and analgesia postoperatives properties and side-effects to 0% hyperbaric bupivacain with the additional use of buprenorphine (50 µg) or tramadol (30 mg) in infraumbilicsurgeries.

MATERIAL AND METHODS

The research was conducted in the department of surgery, Khairpur Medical College (KMC) Hospital, Khairpur Mirs for duration of six months from February 2020 to July 2020. The research included 100 patients aged 65 years. Complete descriptions were reported following written consent and patients with cardiac, autoimmune, mental retardation, and non-agreed conditions were removed.

Patients with similar numbers have been divided into 2 groups (50). Group I had 50 patients who received intrathecally 10 mg 0.5% bupivacaine and 30 mg tramadol while in group II (n=50) received bupivacaine 10 mg 0.5% with 50 µg buprenorphine. A comparison of block characteristics and the post-operative analgesic period were among the primary findings. Time to block T10 with the 25G blunt needle, contrasts between the two groups were evaluated by pin prick process.

After surgery, pain has been evaluated with VAS every 15 minutes for the first 2 hours and then daily for 4 hours up to the next 24 hours at the ward. Whenever VAS score hit > 4 it took the form of inj tramadol 1 mg / kg IV to provide a rescue analgesia. The first dose of tramadol was reported and the total necessary dose was recorded in the first 24 hours. For categorical results, Chi-square and T-test

were carried out. SPSS 24.0 version of the full data has been analysed. No difference with a p-value<0.05 was noted significantly.

RESULTS

Total 100patuients were divided in to 2-groups.Mean age of the patients in group I was 41.84 ± 6.33 years with mean body mass index 27.84 ± 6.33 while in group II mean age was 41.94 ± 9.68 years with BMI 26.84 ± 8.78. (table 1)

Table 1: Demographics details of all patients between both groups

Variables	Group I	Group II	Total
Mean Age	41.84 ± 6.33	41.94 ± 9.68	-
Mean BMI	27.84 ± 6.33	26.84 ± 8.78	-
Enrolled Patients	50	50	100

Mean onset time for sensory block was earlier in group II (3min) as compared to group I (3.4min). Mean onset time for motor block in group II was earlier (5.1min) as compared to group I (5.6min) with p value 0.005.Mean time for rescue analgesia was higher in group I (5.24 ±5.3h) as compared to group II (4.98±4.9h).Mean VAS scores were greater in group II as compared to group I. (table 2)

Complications were also indicated between two groups i.e shivering, hypotension, nausea and fever.(table 3)

Table 2:Observations of effectiveness between the both groups

Mean onset time	Group I	Group II	P value
Sensory block(T 10min)	3.4±2.84	3.0 ±0.48	0.005
Motor block(T10 min)	5.6±0.48	5.0 ±1.84	0.005
Post-operative Rescue Analgesia(h)	5.24 ±5.3h	4.98±4.9h	0.05
VAS			
2h	2.98 ± 6.31	3.07 ± 1.13	0.00
6h	3.07 ± 2.13	3.26 ± 3.87	0.04
12h	2.0 ± 1.48	2.79 ± 1.98	0.05
24h	1.93 ± 0.87	1.99 ± 4.45	0.12

Table 3: Complications between the groups

Variables	Group I(50)	GrooupII(50)
Hypotension	10(20%)	6(12%)
Nausea	11(22%)	7(14%)
Fever	4(8%)	2(4%)
Shivering	3(6%)	8(16%)

Significantly no difference was observed with p value>0.05.

DISCUSSION

Two medications have proved to be effective for post-postage analgesia are tramadol and buprenorphine. Actually, in Pakistan only those two drugs can be easily used as an intrathecal adjuvant. However no randomised control test has ever been performed to compare their efficacy in extending postopanalgesic duration, block characteristics and adverse events.

In our research we observed sensory block time (3.4 ±2.84 and 3.0 ±0.48 min) and motor block time (5.6 ±0.48 and 5.0 ±0.84 min) and these results have shown similarity to several earlier studies conducted by Jamadar et al and Meena S et al[11,12] Early studies have also shown not significantly affecting the start-time and peak sensory level after intrathecal addition.[13-15]

However, we have noted the expansion of tramadol. Intrathecally, tramadol was used in 10mg, 20 mg, 25 mg doses and some notable analgesic prolongations were reported[13,16,17]. The variance is seen at the beginning, most likely because of the higher doses of both drugs. Our analysis showed that mean VAS results were higher in group II (3.26 ± 3.87).

The mean time of analgesia for the 60 μg buprenorphine group was 8.2 h. In Capogna et al' study, the mean duration of analgesia was 7.1 h for patients who received 45 μg of buprenorphine[18] Two semi-synthetic opioids are tramadol and bupren-orphine, which are used as adjuvants for a prolonged duration of post-anesthesia. Owing to its high lipid solubility, Buprenorphine is 20 to 30 times stronger than morphine. Tramadol consists of two enantiomers which give analgesia through various methods. Tramadol is a central anodyne. The mu-opioid receptor agonists are (+)-tramadole and (+)-O-desmethyl-tramadole (M1). The dual mechanism of action could explain the longer duration of post-operative analgesia and increased VAS scoring for our study tramadols. (+)-tramadol inhibits serotonin reuptake and (-)-tramadol inhibits norepinephrine reuptakes, increasing the inhibitory impact in the spinal cord.

CONCLUSION

In intrathecalbupivacalin, tramadol and buprenorphine was found to be successful postoperative analgesic adjuvants, however, tramadol was associated with significantly reduced VAS scoring, an extended postoperative analgesic period and a lower total dose of parenteral analgesics used in postoperative 24 hours.

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