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A Comparison between Intrathecal Bupivacaine alone and Intrathecal Bupivacaine in Combination with Nalbuphine for Post-Operative Analgesia

V. C. Chandak[1], Nishtha Sharma[2]

[1]Anaesthesiology/Associate Professor/Jawaharlal Nehru Medical College, Sawangi (M), Wardha, Maharashtra

[2]Anaesthesiology/MD Resident/Jawaharlal Nehru Medical College, Sawangi (M), Wardha, Maharashtra

Abstract: ***Background: In this study, we compared intrathecal Bupivacaine alone and intrathecal Bupivacaine in combination with Nalbuphine in terms of post-operative analgesia. Methods: 50 patients of ASA physical status I & II, aged 16-55 years, of either gender, undergoing elective lower abdominal and lower limb orthopaedic surgeries under subarachnoid block were enrolled in this study. Patients were divided into 2 groups of 25 each. Assessment of motor and sensory blockade was done by Bromage scale and pin-prick method. Post-operative analgesia was assessed by VAS score. Results: There is no significant difference between the 2 groups for onset of motor and sensory blockade. Two segment regression time of sensory blockade and duration of effective analgesia were prolonged in the Nalbuphine group. Conclusion: In this study we found that intrathecal Nalbuphine in the dose of 0.8mg along with Bupivacaine produces prolonged post-operative analgesia without increased incidence of side effects.***

Keywords: Bupivacaine, Nalbuphine, Subarachnoid block, Post-operative analgesia

1. Introduction

Subarachnoid block (SAB) is the most commonly employed technique for most of the elective lower abdominal and lower limb surgeries. Local anaesthetic agents used for SAB do not have the advantage of prolonged post-operative analgesia. That is why adjuvants are added to them to prolong post-operative pain relief.

In the late 1970s, shortly after the documentation of spinal opioid receptors by Yaksh and Rudy, opioids were given spinally and epidurally[(1)].

Nalbuphine is a mixed agonist–antagonist i.e. a strong kappa receptor agonist and a mu receptor antagonist[(2)].

This study was designed to compare intrathecal Bupivacaine alone and intrathecal Bupivacaine in combination with Nalbuphine to evaluate the duration and quality of post-operative analgesia.

2. Material & Methods

This prospective randomized study was conducted on 50 patients aged 16-55years, of ASA physical status I & II, of either gender, after obtaining institutional ethical committee clearance and written informed consent from all the participants.

Patients with ASA grades more than II, local infection at injection site, coagulation derangements, allergy to local anaesthetic agents, obstetric patients and unwilling patients were excluded from this study.

A thorough pre-anaesthetic evaluation was carried out in all the patients and the procedure was explained to them in detail. Patients were explained about the Visual Analogue Scale (VAS) and were taught how to express the degree of pain on the scale.

Fasting was advised for at least 6 hrs before the procedure. Peripheral intravenous (18G) access was secured in the theatre. Routine monitors were attached. Under all aseptic precautions, SAB was performed with drug injected in L3/4 or L4/5 intervertebral space, using a 25 gauge Quincke spinal needle, in the sitting position.

Intraoperative fluid replacements were given as necessary depending on the blood loss and hemodynamic parameters. Intraoperative hypotension and bradycardia was managed with crystalloids/colloids and atropine 0.6 mg, respectively. Advanced equipments and drugs for resuscitation, airway management and ventilation were kept ready.

Group B received 15mg of 0.5% Bupivacaine with 0.5ml of normal saline whereas Group N was given 15mg of 0.5% Bupivacaine with 0.5ml of 0.8mg[(3)] Nalbuphine and normal saline.

3. Results

Table 1: Comparison between intrathecal Bupivacaine alone and intrathecal Bupivacaine in combination with Nalbuphine

	Group B	Group N	p value
Time of onset of sensory blockade (sec)	68± 1.5	66 ± 1.4	> 0.05
Time of onset of motor blockade (min)	3.2 ± 0.8	3.0 ± 0.6	> 0.05
Two segment regression time	98 ± 6.4	126 ± 5.8	<0.05
Duration of analgesia (min)	180 + 20.5	390 + 18.6	<0.05

In our study there is no significant difference between the 2 groups for onset of motor and sensory blockade. The two

segment regression time of sensory blockade and duration of effective analgesia was prolonged in the Nalbuphine group. No patient in our study developed any side effects.

4. Discussion

In this study we found that intrathecal Nalbuphine in the dose of 0.8mg along with Bupivacaine produces prolonged two segment regression time of sensory blockade.

It also produces prolonged motor blockade as well as prolonged post-operative analgesia without an increased incidence of side effects.

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