Section: Anaesthesia

Research

ASSESSMENT OF INTRATHECAL DEXMEDETOMIDINE WITH LOW-DOSE BUPIVACAINE SPINAL ANAESTHESIA VERSUS A HIGHER DOSE OF BUPIVACAINE IN PATIENTS UNDERGOING TURP

Pawan Kumar Saini[1], MD Shahbaz alam[2], Piyush Kumar[3], Shubhra Srivastava[4]

[1]Associate Professor, Venkateshwar Institute of Medical Sciences, Jyotiba Phule Nagar, Uttar Pradesh, India
[2]Associate Professor, Department of Anaesthesia, Teerthankar Mahaveer Medical College and Research centre, Moradabad, Uttar Pradesh, India
[3]Assistant Professor, Department of General surgery, Teerthankar Mahaveer Medical College and Research centre, Moradabad, Uttar Pradesh, India
[4]Assistant Professor, Department of Obstetrics and Gynaecology, Teerthankar Mahaveer Medical College and Research centre, Moradabad, Uttar Pradesh, India

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Corresponding Author:
Dr. MD Shahbaz Alam,
Email: dralamshahbaz006@gmail.com
ORCID: 0000-0001-6861-1770

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Abstract

Background: To compare intrathecal dexmedetomidine with low-dose bupivacaine spinal anaesthesia versus a higher dose of bupivacaine in patients undergoing TURP. **Materials and Methods:** Eighty- six adult males age ranged 40- 80 years of benign prostate hyperplasia were randomized using convenient random sampling into 2 groups of 43 each. In group I, patients received 7.5 mg of 0.5% hyperbaric bupivacaine hydrochloride and group II patients received 3 µg of dexmedetomidine hydrochloride combined with 6 mg of 0.5% hyperbaric bupivacaine hydrochloride. Parameters in both the groups were recorded. **Result:** Age group 40-50 years comprised of 7 patients in group I and 3 in group II, 50-60 years had 13 in group I and 14 in group II, 60-70 years had 16 in group I and 17 in group II and 70-80 years had 7 in group I and 9 in group II. The difference was significant (P< 0.05). Time to reach T10 sensory block was 12.5 in group I and 10.3 in group II. VAS score at 1 hours was 2.8 and 1.5, 2 hours was 3.0 and 2.7, 3 hours was 2.2 and 1.8 and 4 hours was 1.4 and 1.2. Modified Bromage score at the end of surgery 1 was seen in 3 in group I, 2 in 7 in group I and 13 in group II, 3 seen 33 in group I and 23 in group II. The difference was significant (P< 0.05). Common side effects were nausea seen in 4 in group I and 3 in group II, vomiting 3 in group I and 2 in group II, pruritis 5 in group I and 4 in group II and hypotension 2 in group I and 3 in group II. The difference was non- significant (P> 0.05). **Conclusion:** Addition of 3 µg of dexmedetomidine added to 6 mg bupivacaine produced a faster onset and longer duration of sensory and motor block as well as prolonged perioperative analgesia.

INTRODUCTION

Benign prostatic hyperplasia (BPH) is a common chronic progressive disease resulting in the enlargement of the prostate gland and bladder outlet obstruction in males.[1] Transurethral resection of the prostate or TURP is a procedure where the prostate is resected from an endoscopic approach.[2] It was the first major, minimally invasive surgery of the modern era. This procedure has been in use for many years and is still considered the surgical gold standard for bladder outlet obstruction (BOO), with only some minor changes since its modern introduction in 1943.[3] A TURP can also be used to unroof prostatic abscesses, as well as open the ejaculatory ducts in some cases of obstructive azoospermia.[4]

Spinal anaesthesia is the most routinely used procedure for transurethral resection of prostate (TURP). Sensory block up to T10 is considered favourable to abolish the discomfort caused by bladder distension.[5] Dexmedetomidine is the S-enantiomer of medetomidine with a high degree of specificity for α2-adrenoreceptor. It is also noted that smaller doses of local anaesthetic in combination with additives provide the required sensory level with appropriate analgesia.[6] Considering this, the present study compared

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intrathecal dexmedetomidine with low-dose bupivacaine spinal anaesthesia versus a higher dose of bupivacaine in patients undergoing TURP.

MATERIALS AND METHODS

Eighty- six adult males age ranged 40- 80 years of benign prostate hyperplasia undergoing TURP were selected after considering the utility of the study and obtaining approval from ethical review committee of the institute. All selected patients were ready for their participation in the study.

Demographic data of each patient was noted in case sheet. Patients were randomized using convenient random sampling into 2 groups of 43 each. In group I, patients received 7.5 mg of 0.5% hyperbaric bupivacaine hydrochloride and group II patients received 3 µg of dexmedetomidine hydrochloride combined with 6 mg of 0.5% hyperbaric bupivacaine hydrochloride. Parameters such as regression time from peak sensory block level, VAS (Hours), Modified Bromage score at the end of surgery, the intra- and post-operative analgesic requirements and side effects in both the groups were recorded. The results were compiled and subjected for statistical analysis using Mann Whitney U test. P value less than 0.05 was set significant.

RESULTS

Age group 40-50 years comprised of 7 patients in group I and 3 in group II, 50-60 years had 13 in group I and 14 in group II, 60-70 years had 16 in group I and 17 in group II and 70-80 years had 7 in group I and 9 in group II. The difference was significant (P< 0.05) [Table 1].

Time to reach T10 sensory block was 12.5 in group I and 10.3 in group II. VAS score at 1 hours was 2.8 and 1.5, 2 hours was 3.0 and 2.7, 3 hours was 2.2 and 1.8 and 4 hours was 1.4 and 1.2. Modified Bromage score at the end of surgery 1 was seen in 3 in group I, 2 in 7 in group I and 13 in group II, 3 seen 33 in group I and 23 in group II. The difference was significant (P< 0.05) [Table 2].

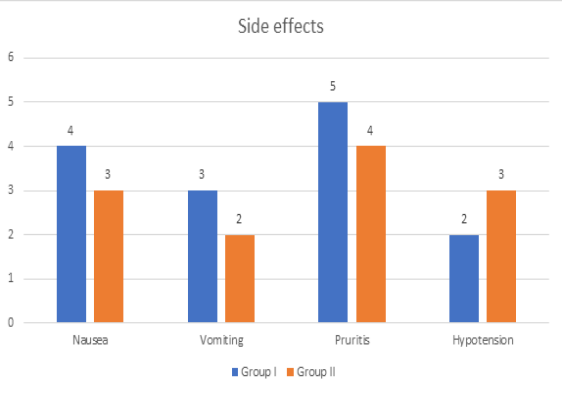

Figure 1: Side effects

Common side effects were nausea seen in 4 in group I and 3 in group II, vomiting 3 in group I and 2 in group II, pruritis 5 in group I and 4 in group II and hypotension 2 in group I and 3 in group II. The difference was non- significant (P> 0.05) [Figure 1].

Table 1: Patients distribution based on age group

Age groups	Group I	Group II	P value
40-50	7	3	0.02
50-60	13	14	0.95
60-70	16	17	0.91
70-80	7	9	0.83

Table 2: Comparison of parameters

Parameters	Variables	Group I	Group II	P value
Time to reach T10 sensory block (min)		12.5	10.3	0.02
VAS (Hours)	1	2.8	1.5	0.04
	2	3.0	2.7	0.05
	3	2.2	1.8	0.02
	4	1.4	1.2	0.92
Modified Bromage score at the end of surgery	0	0	0	0
	1	3	0	0.05
	2	7	13	0.02
	3	33	23	0.01

DISCUSSION

Benign prostatic hyperplasia (BPH) is a common chronic progressive disease resulting in the enlargement of the prostate gland and bladder outlet obstruction in aging men. With the aging of society and extension of life expectancy, more and more patients are diagnosed with massive BPH.[7] Transurethral resection of the prostate (TURP) has ever been known as the "gold standard" for BPH treatment. TURP still has certain restrictions such as bleeding, prostatic volume, transurethral resection syndrome (TURS), and so on.[8] Recently, transurethral bipolar plasmakinetic enucleation of the prostate (PKEP) has been introduced as the new method for massive BPH treatment. On the basis of TURP and suprapubic prostatectomy, PKEP was introduced to overcome the shortcomings of TURP.[9,10] The present study compared intrathecal dexmedetomidine with low-dose bupivacaine spinal

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anaesthesia versus a higher dose of bupivacaine in patients undergoing TURP.

Our results showed that age group 40-50 years comprised of 7 patients in group I and 3 in group II, 50-60 years had 13 in group I and 14 in group II, 60-70 years had 16 in group I and 17 in group II and 70-80 years had 7 in group I and 9 in group II. Carnevale et al,[11] compared clinical and urodynamic results of transurethral resection of the prostate (TURP) to original and PErFecTED prostate artery embolization (PAE) methods for benign prostatic hyperplasia. All groups were comparable for all pre-treatment parameters except bladder contractility and peak urine flow rate (Q max), both of which were significantly better in the TURP group, and IIEF score, which was significantly higher among PErFecTED PAE patients than TURP patients. All groups experienced significant improvement in IPSS, QoL, prostate volume, and Q max. TURP and PErFecTED PAE both resulted in significantly lower IPSS than oPAE but were not significantly different from one another. TURP resulted in significantly higher Q max and significantly smaller prostate volume than either original or PErFecTED PAE but required spinal anesthesia and hospitalization. 2 patients in the oPAE group with hypocontractile bladders experienced recurrence of symptoms and were treated with TURP. In the TURP group, urinary incontinence occurred in 4/15 patients (26.7 %), rupture of the prostatic capsule in 1/15 (6.7 %), retrograde ejaculation in all patients (100 %), and one patient was readmitted for temporary bladder irrigation due to hematuria.

Time to reach T10 sensory block was 12.5 in group I and 10.3 in group II. VAS score at 1 hours was 2.8 and 1.5, 2 hours was 3.0 and 2.7, 3 hours was 2.2 and 1.8 and 4 hours was 1.4 and 1.2. Modified Bromage score at the end of surgery 1 was seen in 3 in group I, 2 in 7 in group I and 13 in group II, 3 seen 33 in group I and 23 in group II. Common side effects were nausea seen in 4 in group I and 3 in group II, vomiting 3 in group I and 2 in group II, pruritis 5 in group I and 4 in group II and hypotension 2 in group I and 3 in group II. Chattopadhyay et al,[12] included sixty patients scheduled for TURP. They were allocated into two groups: Group I receiving only hyperbaric bupivacaine intrathecally and Group II receiving dexmedetomidine with low dose bupivacaine. The time to regression of two dermatomes from the peak sensory block level was the primary outcome of the study. With comparable baseline and demographic attributes, both groups had similar peak sensory block levels (T9). Patients in Group II had quicker onset with the time to reach T10 being faster (10.72 ± 3.50 vs. 12.72 ± 3.90 min, P = 0.041), longer duration of motor block (200 ± 18.23 vs. 190 ± 10.15 min, P = 0.011) and increased time to first analgesic requirement (300 ± 25.30 vs. 220 ± 15.12 min, P = 0.0001).

CONCLUSION

Addition of 3 µg of dexmedetomidine added to 6 mg bupivacaine produced a faster onset and longer duration of sensory and motor block as well as prolonged perioperative analgesia.

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