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Brief Research Communication

Spinal Anaesthesia with Small-Dose Bupivacaine and Fentanyl in Elderly Patients undergoing TURP: Adverse Events and Patient Satisfaction

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Abstract

This interventional study shows the effects of small doses of bupivacaine used in spinal anaesthesia (SA) among elderly patients undergoing transurethral resection of prostate (TURP). Forty elderly men aged 60 years and above undergoing TURP were randomized into comparable two groups to receive bupivacaine 7.5 mg with fentanyl 25 ug (group I) and bupivacaine 5.0 mg with fentanyl 25 ug (group II). None of the patients required supplemental analgesia during the surgery. Adverse events occurrence were less among group II. On the second post operative day 95% of the patients in group II and 85% in group I rated the anaesthesia as very good as estimated by verbal response scale. We found that 5.0 mg of bupivacaine with 25 ug of fentanyl provides satisfactory anaesthesia for TURP in the elderly.

Key-words: Spinal anaesthesia, TURP, elderly, bupivacaine, fentanyl

Introduction

Spinal anaesthesia (SA) is preferred technique for Trans urethral resection of the prostate (TURP), a procedure largely undertaken in the elderly population. SA provides adequate anaesthesia for the patient and good relaxation of the pelvic floor to conduct surgery. When compared to general anaesthesia, SA is less likely to mask the signs and symptoms of the TURP syndrome and bladder perforation which are the major complications associated with TURP.[1] There is a decreased segmental dose requirement for local anaesthetics injected to the intrathecal space as there is impairment in the clearance of drug in these spaces.[2] Intrathecal fentanyl acts synergistically to enhance the effect of bupivacaine without sympathetic outflow. Also, short acting SA may help prevent complications associated with prolonged immobilization of the elderly. Literature on the use of low dose bupivacaine with fentanyl in Indian elderly patients undergoing TURP is sparse. This study was designed to see the effects of small doses of bupivacaine 5.0 mg and 7.5 mg both with 25 µg of fentanyl, in elderly patients undergoing TURP. The degree of sensory anaesthesia and motor block, the haemodynamic differences, the occurrence of complications and the quality of anaesthesia were compared in these two groups. This report presents the occurrence of adverse events and the quality of anaesthesia reported by the patients.

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Material and Methods

Forty patients aged 60 years or older scheduled for elective TURP under SA were evaluated in a prospective, randomized and double-blinded study. Institutional clearance for the study was obtained. The study was conducted in a government medical college hospital at Bangalore. Group sizes were determined by power analysis based on the standard deviation of data from a previously published report (3), $p < 0.05$, and the assumption of 90% power to detect a 30 minute difference in mean time to complete sensory recovery. The patients were of ASA grade I or II. Patients with deformities of the vertebral column, infections at the site of lumbar puncture, neurologic diseases and psychiatric disturbances were excluded from the study. Patients were randomly assigned to group I who received bupivacaine 7.5 mg with 25 µg of fentanyl and to group II who received bupivacaine 5.0 mg with fentanyl 25 µg. All the solutions were prepared using hyperbaric bupivacaine 0.5% solution in dextrose and fentanyl 50 ug/ml in a final volume of two ml. The patient, anaesthesiologist and the operating surgeon were blinded to the

combinations of drugs used.

All patients were premedicated with 5.0 mg of oral diazepam, one and a half hour before surgery. Standard monitoring included pulse oximetry, continuous electrocardiogram and automated blood pressure measurement. SA was administered at L2-3 spinous inter space in the midline through a 25-guage disposable, Quinke-Babcock spinal needle with the patient in lateral decubitus position and the needle aperture directed cephalad. Injections were made over 10 to 15 seconds and the patient returned to supine position immediately. Blood pressure (BP) was recorded every three minutes until the end of the operation and then every ten minutes until the patient was moved to the recovery room. Hypotension was considered when systolic BP was < 90 mm of Hg or < 70% of the pre-anaesthetic value and bradycardia when heart rate was < 50 beats per minute or decreased more than 20% of the initial value. Other adverse effects including pruritis, nausea and vomiting were recorded. Inadequate anaesthesia (complaint of pain) was to be treated with IV midazolam using 10 ug per kg body weight. The level of sensory blockade was assessed by pinprick testing and motor block was assessed using the modified Bromage scale. Adverse events were recorded in the post-operative period for 72 hours and included pruritis, nausea, vomiting, headache, backache and transient neurological symptoms (TNS). Headache was classified as post-dural puncture headache (PDPH) if it was aggravated by erect or sitting posture, relieved by lying flat, mainly occipital or frontal and increased by coughing or straining. TNS were defined as pain and/or dysesthesia in the back, buttocks and legs or pain radiating to the extremities after initial recovery from SA and resolved within 72 hours. On the first post-operative day, patient's satisfaction with anaesthesia was estimated with verbal response scale (VRS) of 0 = very poor, 25 = poor, 50 = satisfactory, 75 = good and 100 = very good.

Statistical analysis

Comparison between treatment groups was done by student t-test and mann-whitney U-test where applicable. Qualitative comparison of the data was done by use of the chi-square test. A p value of < 0.05 was considered significant. Statistical calculations were performed using SPSS.

Results

The study groups were comparable with respect to age, body mass index (BMI) and duration of surgery (Tab 1). The median level of sensory blockade achieved was T7 vs T8 and the time to L2 regression was 171 vs 159 min in Groups I and II respectively. The mean onset of grade III motor block was 9.8 vs 12.3 min and was achieved in 100% vs 45% of the patients in Group I and II respectively.

There was no significant difference in the maximum difference in BP at 15 minutes after SA between the groups. Two patients in group I and one in group II had hypotensive episodes. When interviewed on the second post-operative day using VRS, 19 patients in group II and 17 in group I rated the anaesthesia as very good. Seven patients had pruritis. PDPH and TNS were not reported by any of the patients.

Table 1. Patient characteristics and duration of surgery

Patient characteristics	Group I (7.5 mg + 25 µg)	Group II (5.0 mg + 25 µg)
No.	20	20
Age (yr)	67.7 ± 5.1	67.3 ± 5.3
Weight (kg)	55.5 ± 8.2	54.0 ± 6.1
Height (cm)	158.1 ± 6.1	160.4 ± 4.6
BMI	22.2 ± 3.6	20.9 ± 1.7
Surgery time (min)	45.9 ± 16.4	43.2 ± 10.8
Bupivacaine (mg)	7.5	5.0
Fentanyl (µg)	25	25

Values are mean ± SD, BMI = body mass index, differences are not significant (p>0.05)

Table 2. Adverse effects and visual rating scale of the studied groups

Adverse effects	Group I N (%)	Group II N (%)
Hypotension	2(10)	1(5)
Bradycardia	2(10)	0
Pruritis	3(15)	4(20)
Vomiting	3(15)	1(5)
VRS – good	17(85)	19(95)

VRS = visual rating scale, differences are not significant (p>0.05)

Discussion

Our study suggests that SA with bupivacaine 5.0 mg and fentanyl 25 ug is as effective as

bupivacaine 7.5 mg with fentanyl 25 ug in producing an adequate sensory block and a shorter acting motor block for TURP surgery in elderly patients. The adverse events were fewer among the group II receiving 5.0 mg of bupivacaine and 90% of the patients rated the technique of anaesthesia as very good.

Pruritis was found in 17.5% of all patients. It was well tolerated and none of the patients needed treatment. Many studies done in the elderly where fentanyl was used intrathecally as an adjunct has reported pruritis. Diana FG et al, reported pruritis in 21% of the elderly undergoing knee or hip replacement surgery who had received 25 ug of fentanyl intrathecally while none in those who received plain bupivacaine.[4] Pruritis is a common complication when intrathecal opioids are used. Small dose bupivacaine-fentanyl SA has advantages over conventional dose bupivacaine in terms of lower hypotension rates. In our study the incidence of hypotension was 5% in group II compared to 10% among group I elderly patients though statistically not significant. Earlier studies have reported hypotension rates of 10-20% for similar drug combination and dosage in elderly patients undergoing urological surgeries. The overall satisfaction rate assessed by using VRS was 90%. In the study by Kuusniemi et al 97.5% of the patients who received small doses of bupivacaine with fentanyl for urologic surgeries rated the anaesthesia as good.[3] In conclusion, our study shows that small-dose bupivacaine (5 mg) with fentanyl (25 ug) for spinal blockade is adequate to produce reliable anaesthesia, has lesser adverse events and is satisfactory in elderly Indian patients undergoing TURP.

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