ORIGINAL RESEARCH PAPER

Anaesthesiology

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EFFECT OF ADDING DEXMEDETOMIDINE vs FENTANYL TO INTRATHECAL BUPIVACAINE ON SPINAL BLOCK CHARACTERISTICS IN GYNECOLOGICAL PROCEDURES: DOUBLE BLINDED CONTROL STUDY

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ABSTRACT

The study was designed to evaluate the efficacy and adverse effects of 5µg Dexmedetomidine versus 25µg of Fentanyl when added to 0.5% Hyperbaric Bupivacaine administered intrathecally in patients undergoing elective abdominal hysterectomy surgeries.

INTRODUCTION

The study was designed to evaluate the efficacy and adverse effects of 5µg Dexmedetomidine versus 25µg of Fentanyl when added to 0.5% Hyperbaric Bupivacaine administered intrathecally in patients undergoing elective abdominal hysterectomy surgeries.

AIM OF THE STUDY

To compare the effect of adding Dexmedetomidine versus Fentanyl to 0.5% Hyperbaric Bupivacaine administered intrathecally for abdominal hysterectomy surgeries.

- To evaluate the onset and duration of sensory and motor block.
- To assess intra operative haemodynamics
- To monitor postoperative analgesia.

MATERIALS AND METHODS

This study was done after Government General Hospital Ethical committee approval and a written informed consent obtained from all the patients included in this study.

Study Design

This study was done in a prospective double blinded randomized manner. Each group consisted of thirty patients.

Group D

Patients in this group received 3.0 ml of 0.5% hyperbaric bupivacaine + 5µg [0.5 cc] of preservative free Dexmedetomidine to a total volume of 3.5 ml
intrathecally.

Group F

Patients in this group received 3.0ml of 0.5% hyperbaric bupivacaine + 25µg [0.5 cc] of Fentanyl to a total volume of 3.5ml intrathecally. The final volume of injected solution was 3.5ml in both groups.

9.1 SELECTION OF CASES:

Inclusion criteria:

- Age:30yrs to 50yrs
- ASA physical status Iand 11
- BMI:<30kg/m2
- Surgery:elective surgery
- Normal liver and renal function test,coagulation profile
- Who have given valid informed consent
- Airway: MMS (Modified Mallampatti score) 1 OR 2

Exclusion criteria:

- Not satisfying inclusion criteria.
- Lack of written informed consent.
- Hypersensitivity to the study drug.
- Renal or Hepatic dysfunction
- Bleeding diathesis
- Uncontrolled labile Hypertension & Diabetes mellitus.
- Patient refusal.
- Infection at injection site.
- Patient with anticipated difficult airway.
- Patient with abnormal spinal anatomy.

Technique

Pre operative base line systolic and diastolic BP, PR, SP02 and RR were recorded. The anesthesiologist who were unaware of the drug combination performed the SAB and made observations in all the patients involved in the study. A midline lumbar puncture was performed using a 25G Quincke needle in Right lateral position. Then patient was placed in supine position. The time of intrathecal injection was considered as 0 and following parameter were observed.

Sensory Block

Sensory block was assessed by loss of sensation to cold by cold alcohol swab along the mid clavicular line bilaterally, immediately after intrathecal injection and continued every 15sec till loss of cold sensation at T10 level till it reaches peak [T6 level]. The level of sensory block was noted at the end of the surgery and there after assessment was carried out at 15 mts interval till return of cold sensation at s1 dermatome, duration of sensory block was taken as the time from subarachanoid
injection to return of cold sensation to s1.

Motor block

Motor block was assessed using modified BROMAGE Score
Bromage 0 – Patient is able to move the hip, knee and Ankle
Bromage 1 – Patient is unable to move the hip, but is able to move knee & ankle.

Bromage 2 – Patient is unable to move hip & knee but able to move ankle Bromage 3 – Patient is unable to move hip, knee and ankle.
Assessment of motor block was started immediately after the intrathecal injection. It was tested every 15 seconds till peak motor block Bromage score was reached. The regression time for sensory and motor block were recorded in post operative ward.

Vital Signs and side effects

The systolic and diastolic BP, RR, PR & Sp02 were recorded every 1mt for 5mts and thereafter every 5mts throughout the intra operative period..

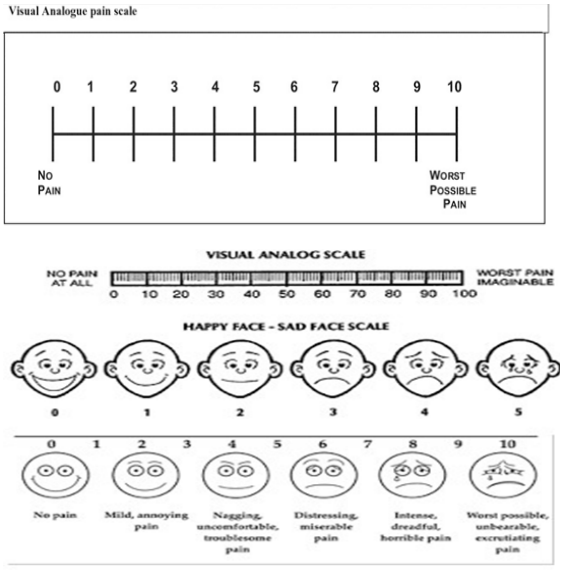
Assessment of pain and duration of analgesia
Pain was assessed by visual analog score

0-No pain.
1-mild pain.
2-Moderate pain.

3-Severe pain.

Assessment in post operative ward:

The patient was shifted to the post operative ward after completion of surgery. The vitals signs were recorded till the regression of both motor Block [Bromage 0] & the sensory block [s1] pain was assessed every 15 minutes. When the patient reaches the pain score 2 or 3Inj. Diclofenac 75mg Im was given. Duration of effective analgesia was defined as the time interval between onset of SAB and the time to reach pain score-2 or 3



10.0 STATISTICS

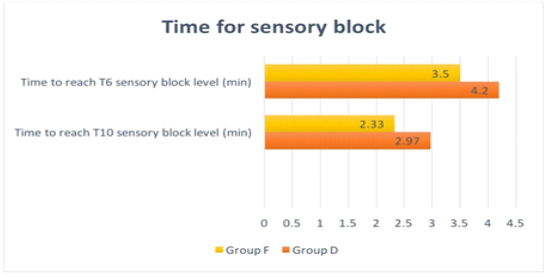


Figure 1

The mean time required to reach T10 level sensory block was 2.97 minutes in the D group and 2.33 in the F group. The mean difference was 0.633 with 95% confidence interval from 0.383 to 0.884, the difference was statistically significant. The mean time taken to reach T6 level sensory block was 4.2 minutes in the D group and 3.5 minutes in the F group. Patients in F group required 0.7 less minutes on an average to achieve T6 level sensory block with 95% C.I ranging from 0.465 to 1.035. The difference was statistically significant.

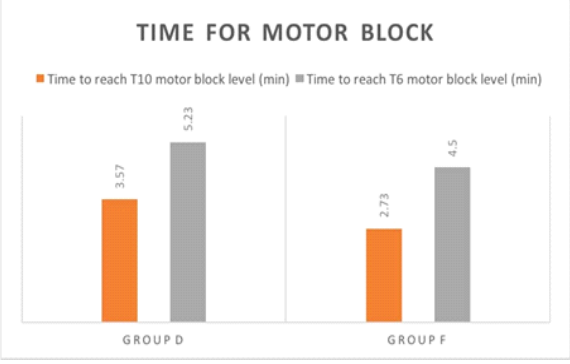
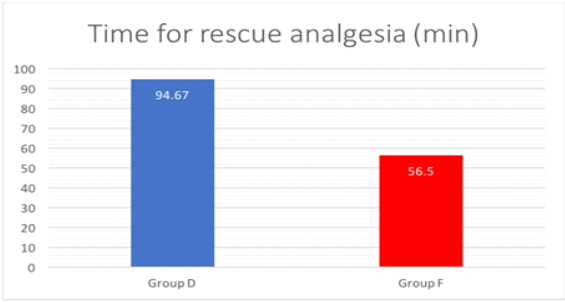
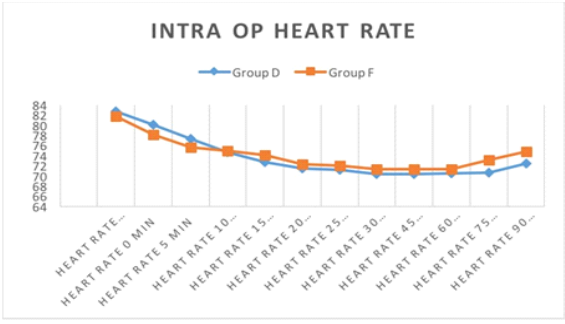


Figure 2

The mean time taken to reach T10 level motor block was 3.57 minutes in the D group and 2.73 minutes in the F group. Patients in F group required 0.833 less minutes on an average to achieve T10 level motor block with 95% C.I ranging from 0.552 to 1.115. The difference was statistically significant The mean time taken to reach T6 level motor block was 5.23 minutes in the D group and 4.5 minutes in the F group. Patients in F group required 0.169 less minutes on an average to achieve T6 level motor block with 95% C.I ranging from 0.395 to 1.072. The difference was statistically significant





The mean intra OP heart rate was compared across the two groups using independent samples t-test. There was no statistically significant difference in the mean heart rate

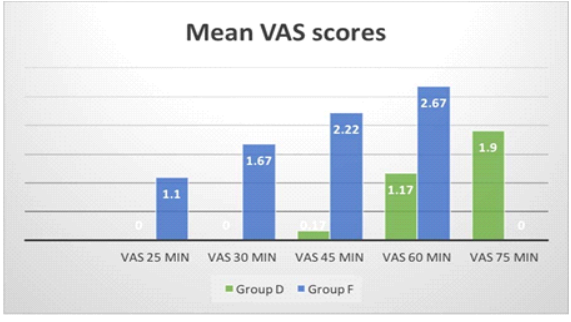


Figure 5

The Mean VAS score was 1.1 points lesser at 25 min in the D group with 95% C.I ranging from -1.212 to -0.988 . The difference was statistically significant.

The Mean VAS score was 1.67 points lesser at 30 min in the D group with 95% C.I ranging from -1.908 to -1.425 . The difference was statistically significant.

The Mean VAS score was 2.056 points lesser at 45 min in the D group with 95% C.I ranging from -2.269 to -1.843 . The difference was statistically significant.

The Mean VAS score was 1.5 points lesser at 60 min in the D group with 95% C.I ranging from -1.743 to -1.257 . The difference was statistically significant.

The Mean VAS score was 1.1 points lesser at 75 min in the D group with 95% C.I ranging from -1.613 to -0.587 . The difference was statistically significant.

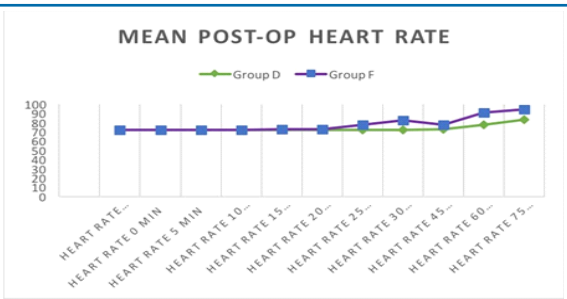


Figure 6

The Mean postop heart rate across both the groups are compared using independent samples t test.

Patients in the D group had a lesser heart rate on average at 15 min, 20 min, 25 min, 30 min, 45 min, 60 min and 75 min. The difference was statistically significant

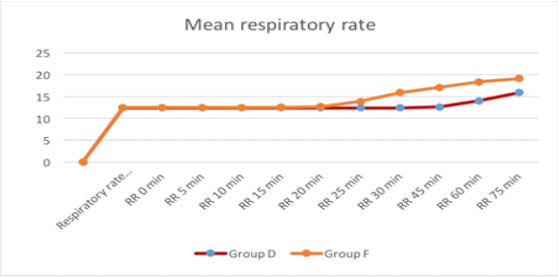


Figure 7

The Mean respiratory rate in the D group was lower than the F group from 20 min, 25 min, 30 min, 45 min, 60 min and 75 min. The difference was statistically significant.

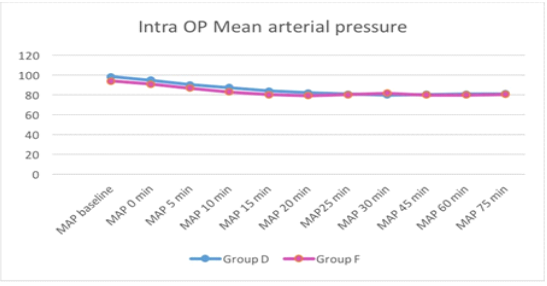


Figure 8

The mean intra operative Mean arterial pressure across both the group are compared using independent samples t test. Patients in the D group had a higher MAP on average at baseline, 0 min, 5 min, 10 min, 15 min, 20 min. The difference was statistically significant. There was no significant difference in the intraoperative MAP during 25 min, 30 min, 45 min, 60 min and 75 min

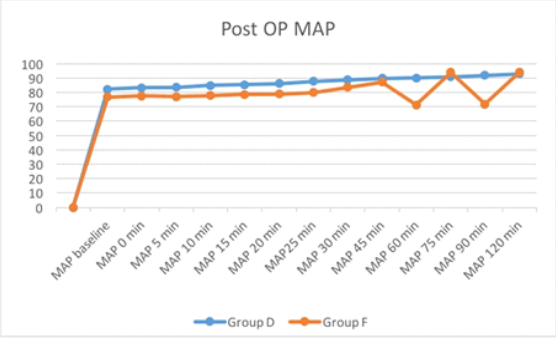


Figure 9

The mean postoperative MAP across both the groups are analysed using independent samples t test. Patients in the D group had a higher MAP on average post operatively till 90 minutes. The difference was statistically significant. The postop MAP at 120 did not differ significantly between both the groups

10.3 CONCLUSION

Intrathecal Dexmedetomidine supplementation of spinal block seems to be a good alternative to intrathecal fentanyl since it produces prolonged sensory block and motor block.

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