



COMPARATIVE STUDY OF INTRATHECAL DEXMEDETOMIDINE VERSUS FENTANYL AS AN ADJUVANT TO 0.5% BUPIVACAINE IN SENSORY AND MOTOR BLOCK RECOVERY OF SPINAL ANAESTHESIA

S. Praveen¹, M. Sai vikas¹, Dr. B. Swathi¹, Haritha Pasupulati*², Dr. Maniram Kranthi Kumar N³

¹Bharat School of Pharmacy, Mangalpally, Ibrahimpatnam, Hyderabad -501510.

²Bharat Institute of Technology, Mangalpally, Ibrahimpatnam, Hyderabad -501510.

³DNB Anesthesia, Durgabai Deshmukh Hospital and Research centre, Hyderabad.

*Corresponding author E-mail: harithapasupulati@gmail.com

ARTICLE INFO

Key Words

Intrathecal, Hyperbaric, lower limb surgeries, ASA grade 1 and grade 2.

ABSTRACT

Aim: The aim of the study is to compare the recovery of motor and sensory blockade between intrathecal Dexmedetomidine and Intrathecal Fentanyl as adjuvant to 0.5% hyperbaric bupivacaine in spinal anaesthesia. **Materials and methods :** A prospective randomized -double blind study was conducted on patients who comes under ASA grade 1 and grade 2, age groups between 20 to 60 years undergoing elective lower limb surgeries in Department of anaesthesiology, Durgabai Deshmukh Hospital, a 250 bedded multispeciality hospital from July 2018 – march 2019. **Results:** Among the total number of patients (60), patients were randomly allocated into two groups (each group of 30) based on Age, BP and other health care conditions. Group- A are administered with Dexmedetomidine + bupivacaine, Group- b are administered with Fentanyl + bupivacaine. Both groups are administered for, Motor, Sensory and haemodynamic changes. It was observed that the activity of Dexmedetomidine + Bupivacaine acted on patient for longer duration of time compared to that of Fentanyl + Bupivacaine. **Conclusion :** In this study we have evaluated the efficacies of Dexmedetomidine + bupivacaine and we have evaluated the effecacies of Dexmedetomidine + bupivacaine (vs) Fentanyl + bupivacaine and we have concluded that the time of both sensory and motor activity is more for the drug combination – Dexmedetomidine + bupivacaine.

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INTRODUCTION

Spinal anaesthesia was the first major regional technique introduced into broad clinical practice. Spinal anesthesia is the most regularly used technique for lower abdominal surgeries. However, postoperative pain control is a major problem because spinal anaesthesia using only local anaesthesia using only local anaesthetics is associated with relatively short duration of action, and thus early analgesic intervention is needed in the postoperative period.^[1,2] A number of adjuvants, such as clonidine and midazolam and others have been studied to prolong the effect of spinal

anaesthesia.^[3] The addition of fentanyl to hyperbaric bupivacaine improves the quality of intraoperative and early postoperative subarachnoid block. The addition of opioids to local anaesthetic solution have disadvantages, such as pruritis and respiratory depression.^[4-6] Dexmedetomidine a highly selective α_2 - agonist, is under evaluation as a neuraxial adjuvant as it provides stable hemodynamic conditions, good quality of intraoperative and extended postoperative analgesia with minimal side effects Dexmedetomidine has been approved by Food and drug administration as a

short-term sedative for mechanically ventilated intensive care unit patients.^[4-6]

RESULTS: Comparison of Two Groups

Treatment	No of Patients
Bupivacaine+Fentanyl (GROUP-A)	24
Bupivacaine+Dexmedetomidine (GROUP-B)	21

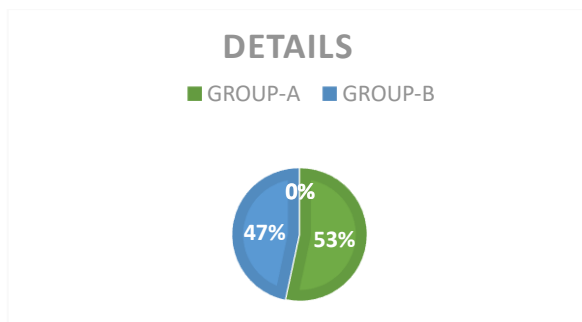


Fig-1.1

The pie chart (Fig.1.1) shows the totals number of subjects participated in each study.

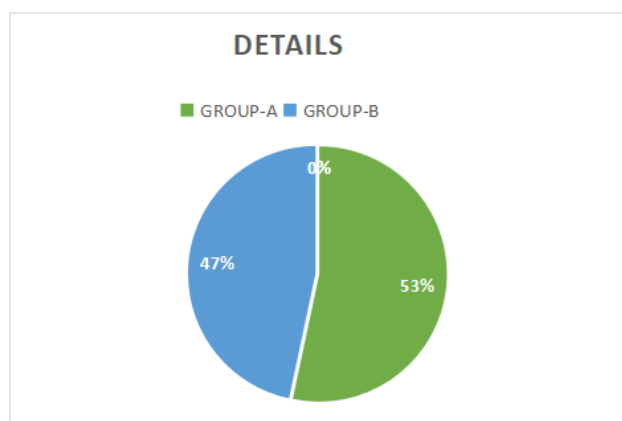


Fig-1.2

The pie-diagram-(Fig1.2) shows the total number of patients in Group-A and Group-B.

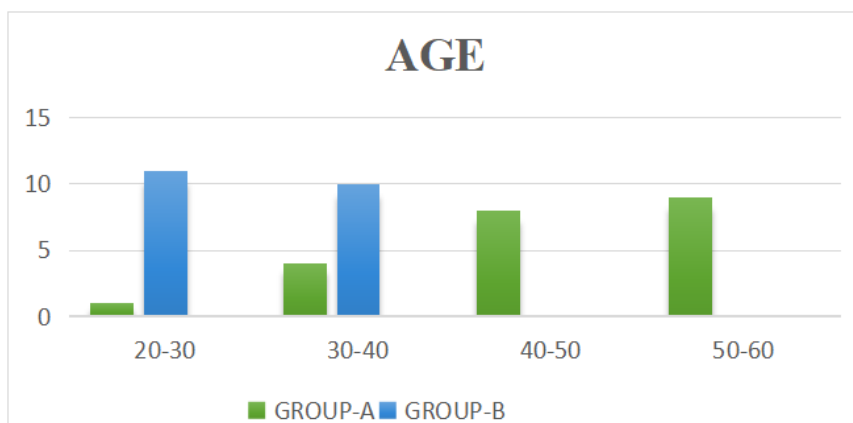


Fig-1.3

The bar-chart (Fig1.3) shows the patients (Group-A and Group-B) of age between 20-60 who participated in the study.

ASA	GROPU-A	GROUP-B
ASA-1	8	18
ASA-2	16	3

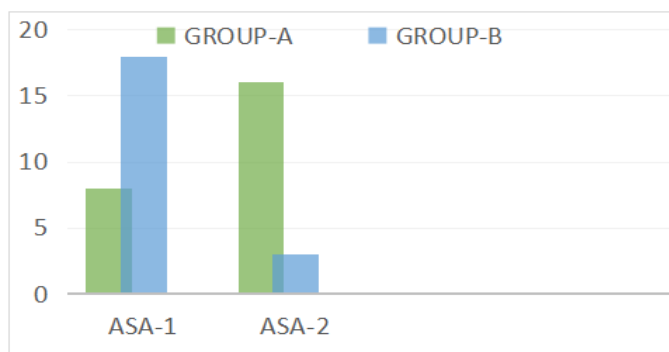


Fig-1.4

The Histogram(Fig-1.4) depicts the patients categorised under ASA-1 and ASA-2

Comparison of Recovery of Motor Activity

MOTOR	GROUP-A	GROUP-B
<1 Hour	0	0
1-2 Hours	8	0
2-3 Hours	12	3
3-4 Hours	4	18

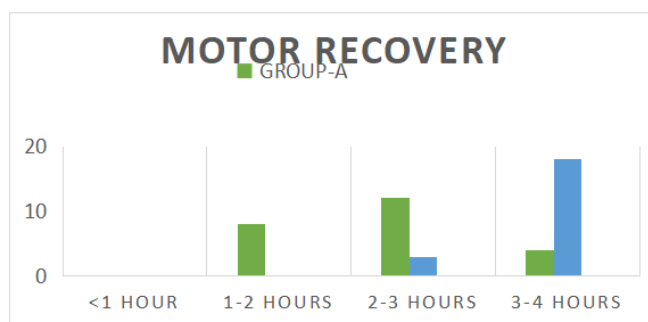


Fig1.5

This chart(Fig-1.5) shows the time taken for motor recovery comparison of the two groups.

Comparison of Recovery of sensory

SENSORY	GROUP-A	GROUP-B
<1 Hour	0	0
1-2 Hours	8	0
2-3 Hours	13	6
3-4 Hours	3	15

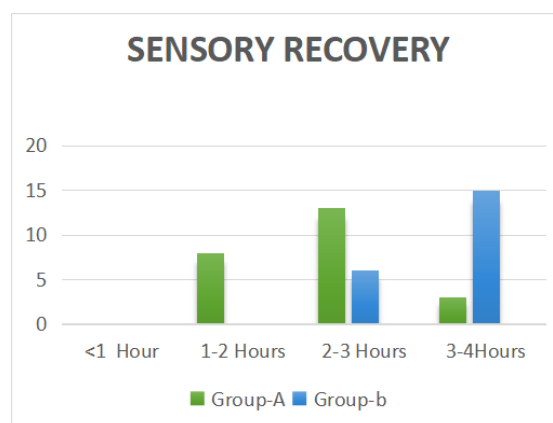


Fig-1.6

The chart (Fig-1.6) depicts the time taken for the sensory recovery comparison of two groups.

STATISTICAL ANALYSIS

TIME TAKEN FOR MOTOR RECOVERY

Category	Mean Time	SD
Group-A	2.42	0.48710216
Group-B	3.36	0.76741207

Table : Comparison of Motor Mean time Recovery

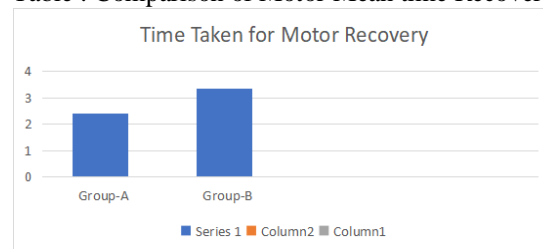


Fig-1.7

The bar diagram-(Fig1.7) depicts the mean time of motor recovery of both groups.

TIME TAKEN FOR SENSORY RECOVERY

Sensory Mean Time Recovery

Category	Mean Time	SD
Group-A	2.33	0.47628967
Group-B	3.21	0.72038215

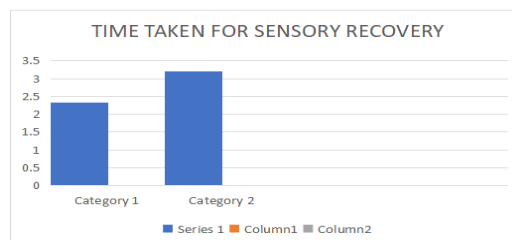


Fig-1.8

The bar diagram-(Fig1.8) depicts the mean time of sensory recovery of both groups.

SYSTOLIC BLOOD PRESSURE BEFORE AND AFTER DRUG ADMINISTRATION – GROUP-A

H₀-There is no significant difference in the systolic pressure before and after drug administration.

H₁-These is a significant difference in the systolic pressure before and after drug administration.

Paired –t-test:

TEST	df	P value	t statistic	One sided or two sided	Statistical Significance
Paired t-test	29	0.0077	4.880	Two tailed	Yes

DIASTOLIC BLOOD PRESSURE BEFORE AND AFTER DRUG ADMINISTRATION – GROUP-A

H₀-There is no significant difference in the diastolic pressure before and after drug administration.

H₁-These is a significant difference in the diastolic pressure before and after drug administration.

Paired –t-test:

TEST	df	P value	t statistic	One sided or two sided	Statistical Significance
Paired t-test	29	0.3449	0.9603	Two tailed	NO

SYSTOLIC BLOOD PRESSURE BEFORE AND AFTER DRUG ADMINISTRATION – GROUP-B

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H₀-There is no significant difference in the systolic pressure before and after drug administration.

H₁-These is a significant difference in the systolic pressure before and after drug administration.

Paired –t-test:

TEST	df	P value	t statistic	One sided or two sided	Statistical Significance
Paired t-test	29	0.2157	0.7507	Two tailed	NO

DIASTOLIC BLOOD PRESSURE BEFORE AND AFTER DRUG ADMINISTRATION – GROUP-B

H₀-There is no significant difference in the diastolic pressure before and after drug administration. H₁-These is a significant difference in the diastolic pressure before and after drug administration.

Paired –t-test:

TEST	df	P value	t statistic	One sided or two sided	Statistical Significance
Paired t-test	29	0.3449	0.9603	Two tailed	NO

MATERIAL AND METHODS:

For this study, consent of institutional ethics committee, Durgabai Deshmukh Hospital was taken. This prospective observational study was conducted for 6 months in department of Anaesthesiology, Durgabai Deshmukh Hospital a 250 bedded multispeciality hospital. A study was conducted to evaluate patients who are undergoing elective lower limbs surgeries, between age 20 to 60 years and comes under ASA grade 1 and grade 2. Visual analogue scale was used to analyze motor and sensory recovery. Haemodynamic changes were measured by blood monitoring monitor.

DISCUSSION:

In the current clinical study we have performed a prospective randomized double blinded study regarding the efficacies of the Dexmedetomidine and fentanyl when given along with bupivacaine in sensory and motor block recovery in spinal anaesthesia. This study was conducted at Durgabai Deshmukh Hospital under expertise doctor guidance. Extensive

study of 6 months has been done on 45 subjects and results have been interpreted. Regular observation of each patient was done in which the vitals, sensory and motor recovery time was noted regularly. Recorded data of each patient was entered into our data collection form which is designed to meet our study requirements. Results have been depicted in the form of Histograms, Pie-charts based on the objectives of the study.

CONCLUSION:

On observation of the final data from the records, it was concluded that Dexmedetomidine+0.5%Bupivacaine gave better results when compared with that of fentanyl+ 0.5% Bupivacaine.

ETHICS AND CONSENT:

The entire study was conducted according to the AHA/ASA guidelines. All the relevant and necessary data was collected from the patient records, laboratory reports, and prescription and by interviewing the patients.

Conflicts of interest: None

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