



COMPARISON OF INTRATHECAL 0.5% ISOBARIC LVOBUPIVACAINE PLUS DEXMEDETOMIDINE WITH 0.5% ISOBARIC LVOBUPIVACAINE PLUS FENTANYL IN PATIENTS UNDERGOING INFRAUMBILICAL SURGERY

Anaesthesiology

**Dr. Jinesha
Chauhan**

**Dr. Dushyant
Vaidya***

*Corresponding Author

Dr. Dipika P Patel

ABSTRACT

The present study was designed to compare 0.5% isobaric levobupivacaine (15mg) with fentanyl(25 ug) and intrathecal 0.5% isobaric levobupivacaine (15mg) with Dexmedetomidine (2.5ug) in infraumbilical surgeries.(50 patients in each group.) Study was conducted in 100 patients of ASA grade I and II, aged 18-65yrs, scheduled for infraumbilical surgeries.

- To compare the onset of sensory and motor block
- To compare the duration of sensory and motor block
- To assess the duration of post op analgesia
- To compare hemodynamic changes
- To observe side effect

The use of adjuvants with local anaesthetics provides prolonged and superior quality of anaesthesia and postoperative analgesia with relatively small dose of individual drugs.

KEYWORDS

Spinal Anaesthesia, Fentanyl, Dexmedetomidine,

INTRODUCTION

Nowadays Spinal anaesthesia is the technique of choice for lower abdominal surgeries. It is safe, effective, easy to perform and inexpensive. Its main limitations are its short duration of action and do not provide prolonged postoperative analgesia when it is performed only with Local anesthetics. Adding adjuvant drugs to intrathecal local anaesthetics improves quality and duration of sensory blockade, and prolongs post-operative analgesia. It is also possible to reduce the dose of Local Anaesthetics, as well as total amount of systemic postoperative analgesics.

OBJECTIVE:

Primary:To compare the efficacy, post operative analgesia Onset and duration of sensory block,maximum sensory block,Onset and duration of motorblock,maximum motor block,time to regress sensory and motor block.Secondary:To compare hemodynamic changes, leve l sedation and side effects.

MATERIAL AND METHOD:

It was a prospective study where 100 selected patients who were posted for infraumbilical surgeries were randomly assigned into two groups according to inclusion criteria 50 patients assigned to each GROUP. GROUPD-0.5% Isobaric Levobupivacaine 15Mg+2.5mcg Dexmedetomidine Intrathecally GROUP F- 0.5% Isobaric Levobupivacaine 15Mg+ 25mcg Fentanyl Intrathecally Total volume of drug used in both groups is 3.5ml.

CONCLUSION:

2.5µg dexmedetomidine is effective as an adjuvant to Levobupivacaine in prolonged duration of sensory and motor blockade, good hemodynamic stability with decreased incidence of side effect but onset of sensory and motor block occur earlier in the fentanyl group So as compared to 25 mcg Fentanyl, 2.5 µg of dexmedetomidine seems to be an attractive alternative as Intrathecal adjuvant with isobaric Levobupivacaine in infraumbilical surgeries.

OBSERVATION AND RESULTS

Table1: Demographic Data

	GROUP F (n=50) Mean±SD	GROUP D (n=50) Mean±SD	P Value
AGE (Years)	36.64± 16.9	43.16± 18.46	0.069
HEIGHT (cm)	157.38± 3.59	155.72± 2.74	0.010
WEIGHT (kg)	57.86± 5.6	57.94± 5.61	0.94

All patients in both groups were comparable with respect to their age, weight, height and there is no statistical difference between them (p

value >0.05)

Table2: Duration Of Surgery

	GROUP F Mean±SD	GROUP D Mean±SD	P VALUE
DURATION (IN MINS)	165.38± 19.7	170.22± 6.04	0.100

The Duration of surgery is comparable in both the groups and there is no statistical difference between them (p value >0.05)

Table3: Heart Rate

TIME	GROUP F Mean±SD	GROUP D Mean±SD	P VALUE
0MINS	95.08± 4.68	94.70± 7.38	0.7591
5MINS	90.52± 3.99	89.4± 6.93	0.3244
10MINS	80.46± 3.86	78± 7.35	0.038
20MINS	75.3± 3.6	73.16± 5.06	0.014
30MINS	76.06± 5.24	73.36± 5.03	0.010

Comparison of Mean Heart Rate among Group F and Group D after Spinal anaesthesia, The mean heart rate between GROUP F and GROUP D is compared at 0mins, 5 mins, 10 mins, 20 mins and 30 mins, there is no statistical difference between them (p value >0.05)

Table4: Mean Arterial pressure

Comparison of Mean Arterial pressure among GROUP F and GROUP D after spinal anaesthesia

TIME	GROUP F Mean±SD	GROUP D Mean±SD	P VALUE
0MINS	92.6± 7.3	95.9± 4.33	0.006
5MINS	89.38± 5.2	87.58± 4.4	0.065
10MINS	86.52± 5.15	89.3± 5.15	0.008
20MINS	85.6± 4.1	87.7± 9.72	0.174
30MINS	86.46± 4.68	88.16± 5.06	0.084

The mean MAP between GROUP F and GROUP D is comparable at 0mins, 5mins, 10 mins, 20mins and 30 mins and there is no statistical difference between them (p value >0.05)

Table5: respiratory Changes

Comparison of Mean Respiratory Rate among GROUP F and GROUP D after Spinal Anaesthesia

TIME	GROUP F Mean±SD	GROUP D Mean±SD	P VALUE
0MINS	13.34± 1.081	12.96± 1.029	0.0749
5MINS	13.6± 1.01	13.72± 1.051	0.5618
10MINS	13.7± 1.03	13.58± 1.070	0.636
20MINS	13.6± 1.07	13.52± 1.074	0.708
30MINS	13.62± 1.02	13.54± 1.092	0.7058

The Mean Respiratory Rate between GROUP F and GROUP D is comparable at 0mins, 5 mins, 10 mins, 20 mins and 30 mins and there is no statistical difference between them (p value > 0.05)

Table6: Onset Of Sensory Block And Duration Of Analgesia

	GROUP F Mean±SD	GROUP D Mean±SD	P VALUE
ONSET OF SENSORY BLOCK (Highest level T6) (In Minutes)	3.756± 1.15	8.03± 2.85	<0.001
DURATION OF ANALGESIA (In Minutes)	409.18± 15.6	577.6± 28.39	<0.001

The onset of sensory block in Group F is 3.756 ± 1.15 minutes and in GROUP D is 8.03±2.85 minutes. Thus, onset of sensory block in GROUP F is faster as compared to Group D and the difference was statistically significant (p < 0.001).

The mean Duration of analgesia in GROUP F is 409.18±15.6 minutes and mean duration of analgesia in GROUP D is 577.6±28.39 minutes. Thus the Duration of analgesia in GROUP D is longer than GROUP F and the difference is statistically significant (p < 0.001)

Table7: Two Segment Regression (T6 to T8)

MOTOR BLOCK	GROUP F Mean±SD	GROUP D Mean±SD	P value
ONSET (In minutes)	4.67± 1.25	8.76±3.05	<0.0001
DURATION (In minutes)	183.4±11.8	264.3±51.24	<0.0001

The two segment regression in GROUP F is 70.02±4.65 minutes and in GROUP D is 87.7±11.6 minutes. Thus, the two segment regression is longer in GROUP D than GROUP F and the difference is statistically significant (p < 0.0001).

Table8: Onset & duration of motor block

	GROUP F Mean±SD	GROUP D Mean±SD	P VALUE
VAS at 0 hour	0.5±0.505	0.18±0.38	0.0006
VAS at 2 hours	1.1±0.364	0.92±0.34	0.0122
VAS at 4 hours	2.4±0.53	1.82±0.52	0.0001
VAS at 6 hours	3±0	2.44±0.70	0.0001

Motor blockade was assessed by modified Bromage scale. The onset of motor block was (4.67±1.25) minutes in Group F and (8.76±3.05) minutes in Group D.

Thus, the onset of motor block in Group F was faster as compared to Group D and the difference was statistically significant (p < 0.0001).

The mean time for regression of motor block to Bromage-0 was (183.4±11.8) minutes in Group F and (264.3±51.2) minutes in Group D. Thus, the duration of motor block was prolonged in group D as compared to group F and the difference was statistically significant (p < 0.0001)

Table9: Vasscore

	GROUP F Mean±SD	GROUP D Mean±SD	P VALUE
VAS at 0 hour	0.5±0.505	0.18±0.38	0.0006
VAS at 2 hours	1.1±0.364	0.92±0.34	0.0122
VAS at 4 hours	2.4±0.53	1.82±0.52	0.0001
VAS at 6 hours	3±0	2.44±0.70	0.0001

The VAS Score of GROUP D is lower than GROUP F at 0, 2, 4 and 6 hours and the difference between the two groups is statistically significant in all time groups (p < 0.05). Thus, duration of analgesia of Dexmedetomidine group is longer than Fentanyl group.

VAS of GROUP D at 8 hours is 2.68±0.70, 10 hours is 4.12±1.05.

DISCUSSION

The effective pain relief is of paramount importance to the anaesthesiologist treating patients undergoing surgery.

The routine use of regional anaesthesia for infra umbilical surgeries is associated with a short duration of analgesia postoperatively.

Although many drugs like morphine, nalbuphine, clonidine, Vasoconstrictors like epinephrine and phenylephrine have been used

as an adjuvant to local anaesthetics, high incidence of side effects (respiratory depression, sedation, cardiovascular instability, nausea-vomiting, pruritis, and urinary retention) and relative ineffectiveness resulted in reluctance to administer these drugs.

In this study we compared the 2.5 mcg dose of dexmedetomidine with 25 mcg dose of fentanyl administered to the Isobaric Levobupivacaine.

There were very few studies that compared both the doses simultaneously with Isobaric Levobupivacaine; we have compared and discussed our results with various other studies using similar adjuvants in different doses but in combination with various local anaesthetic as well in various surgeries. The values of the demographic variables were comparable between the groups.

CONCLUSION

On the basis of made, observations the following conclusions can be drawn: Onset of sensory blockade was significantly faster in fentanyl group as compared to dexmedetomidine group. Mean duration of analgesia was significantly longer in dexmedetomidine group as compared to fentanyl group. Mean duration of sensory and motor block was significantly longer in dexmedetomidine group as compared to fentanyl group. Dexmedetomidine is effective as adjuvant to Levobupivacaine in prolonged duration of sensory and motor blockade, good hemodynamic stability with decreased incidence of side effect but onset of sensory and motor block occur earlier in the fentanyl group. So as compared to 25 mcg Fentanyl, 2.5 µg of dexmedetomidine seems to be an attractive alternative as Intrathecal adjuvant with isobaric Levobupivacaine in infraumbilical surgeries.

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