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Original Article

Hyperbaric 0.5% Bupivacain used in subarachnoid block which spread of anesthesia to cephalic at the different site of injection specially L 2-3, L 3-4, L 4-5 inter vertebral space

AK Azad[1], SMA Taher[1], Jamil Raihan[1], M Abu Zahid[1], Mahbubur Rahman[1], M Intekhab Alam[2]

Abstract

75 (18-45 years) caesarean section were done in RMCH from 2015 July to 2015 December, who received Hyperbaric 0.5% Bupivacain 2.5 ml at the site of L 2-3, L3-4 and L 4-5 inter vertebral spaces. All patients used 25 gauze spinal Needles after 5 & 10 minutes analgesia effect at the level of T10 and T6 respectively. But analgesia effect at the level of T4 was found 15-20 minutes. SPO2 were not significantly different among the three groups, but small changes of HR and BP among them.

Key word: Subarachnoid block, Hyperbaric 0.5% Bupivacain, site of injection, spread of anesthesia.

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Introduction

Subarachnoid block has a great impact in obstetrics caesarean section is most commonly performed under spinal anesthesia Subarachnoid block allow a mother to remain awake and experience the birth of her child. Large study shown that under Subarachnoid block, caesarean sectionis associated with less maternal morbidity and mortality than general anesthesia. This may reduce in the incidence of pulmonary aspiration and failure intubation. Subarachnoid block also enhance peristalsis and suppression of the neuroendrocrine stress[1] response to surgery.

Main complication during Subarachnoid block is development of hypotension[2] which correlate with the level of sympathetic block that may be more cephaled[3] two or more than sensory block. Factor affecting the dermatomal spread of Subarachnoid block, baricity, dose of drug, position of patient, pregnancy, age[4], patients height, barbatoge have been studied. The importance of the site of injection still remained controversial.

The purpose of our study was compare the effects of 2.5 ml of Hyperbaric 0.5% Bupivacain at the site of L 2-3, L3-4, L 4-5 inter vertebral space in lower uterine caesarean section in sitting position. We hypothesis Subarachnoid block at L 2-3 inter vertebral space produce faster spread of anesthesia and analgesia.

Material and Methods

75 patients ASA physical status I & II Scheduled for elective caesarean section allocated into three groups. Each group contains 25 patients. Each patient were excluded from cardiovascular or neurological disease or any other contra indication for Subarachnoid block.

[1] Assistant professor (Anaesthesia), Rajshahi Medical College.
[2] Professor (Anaesthesia), Rajshahi Medical College.

Group I:- Lumber 2-3 inter vertebral space, **group-II:-** Lumber 3-4 inter vertebral space, **Group III :-** Lumber 4-5 inter vertebral space.

No premidicated before Subarachnoid block, on arrival in operation theatre, initial values of HR, BP, SPO2, were recorded 18 gauze IV cannula was inserted, 25 ml/kg Hartmann Solution was infused within half hour before Subarachnoid block. The appropriate lumber vertebra was counted from the most prominent one is that of C7 or height points of both iliac crest usually cross the body of L4 vertebra. After aseptic preparation Subarachnoid block was induced in all patients with a 25 gauze spinal needle in midline approach at sitting position, when a free flow of clear Cerebrospinal fluid was obtained 2.5 ml of Hyperbaric 0.5% Bupivacain was injected, immediately after Subarachnoid block the patients were gently turned to the supine position with tilt to the left with the wedge under right buttock, completion of injection was taken as zero time the level of analgesia was assessed in the auxiliary line by pinprick. T6 is the level of anesthesia which provide adequate to analgesia for caesarean section. Motor block of the lower limb was assessed by using the modified bromage scale 1-inability to flex the knee, scale 2-In ability to flax the ankle and scale 3-Denotes complete block scale 0- denotes no block (able to raise the extended lag).

HR, BP and Spo2 was measured just after block and at 5 minute, 15 minute, 30 minute and 60 minute. If systolic BP decreased more then 20 % from the pre anesthetic value iv ephidren was required. O2 therapy was given when needed. Any other side effects (nausea, vomiting Shivering, chest discomfort etc) were observed. The pain intensity was measured by using verbal rating score (VRS) as follows .

0 - for no pain

1- For mild pain, pain on movement

2 - for moderate pain , tolerable pain on rest

2- For severe pain , in tolerable pain on rest

Statistical anaylysis:- All data was complied and Statistical anaylysis by ANOVA and chisquare test with 95% confidence limit a value of P <.05 was considired significant.

Observation and result :-

There were no statistically significant differences among the three groups with regard to patients characteristics, age, hight ,weight or foetal out come- Table No – 01 .

The changes in HR following block among the three groups from pre operative value to 15 minutes were no significant however at 30 minutes and at 01 houre period the HR of group 01 was significantly higer compared to other two groups, although at two hours the HR was not found to vary significantly among the groups. Table No -03

The changes in systolic BP during the two houres period following block was found higher in group I in comparison to group II and group III. However at one hour and at two hours interval the data did not significance among the groups .

The change SPO2 during pre-operative value to 15 minutes was better in group I compared to group II and group III and after nearly equal to others groups.

The time required to spread of analgesia to T10 and T6 was found significantly faster in group I than group II and III. (Table -2)

In figure-I shows the dermatome level of spread of analgesia at different time intervals. The level attained at five minutes in group I was between T 6 and T5 while at the same time in group II and group III was berween T7 and T6. The level of analgesia reached at ten minutes in group I was between T5 and T4 while the group II and III was between T6 and T5. The group I and other group after ten minuits was reached between T4 and T5 and after twenty minuits at above T4 .

The onset of motor block was found to be sinificantly different among three groups. The onset of motor block was faster in group I compared to group II and group III indicating the higher the inter space chosen the faster will be the motore block (Table no-4).

Table I
Characteristics of the study population

	Group I	Group II	Group III
Number	25	25	25
Age (year)	27.38 ± 1.4	28.57 ±1.5	27.26 ± 1.7
Height (cm)	150.6 ±1.2	151.52±1.3	151.34±1.4
Gestation (Week)	39.9±1.3	38.8±1.9	40.1±1.1
APGAR score at one minute Two minute	8.2±.9 9.1±.4	8.6±1.5 9.2±.6	8.3±1.1 9.3±.7
Duration of surgery (minute)	50±5	48±5	60±5

Table 2
Comparison of time required to spread of analgesia (minutes)

Level of analgesia	Group I (N-25)	Group II (N-25)	Group III (N-25)
T10	1.5±.09	3.1±.08	3.5±.01
T6	3.27±.9	5.9 ±2.08	6.2±1.48
T4 (Maximum)	9.04± 2.1	10.7±3.01	10.97±5.02

Table 3
Comparison of HR, SBP, SPO2 Group I n-25

	Pre operative	5min	15min	30min	1 hr
HR (minuets)	70.2±.5	70.1±.2	70.2±.1	100.1±.5	120.3±.4
SBP (mmHg)	120.3±.6	120.2±.4	120.1±.4	90.2±.3	110.5±.2(use ephidrin)
SPO2(%)	98.8±.4	97.9±.9	98.2±.3	96.1±.2	96.2±.7

Group II n-25

	Pre-operative	5min	15min	30min	1 hr
HR (minuets)	80.1±.3	80.1±.1	80.1±2	90.1±.2	110
SBP (mmHg)	110.2±.4	110.2±2	110.2±.3	90.2±.3	90
SPO2(%)	97.3±.5	97.5±.3	97.3±.4	96.3±.4	96

Page No -4

Group III n-25

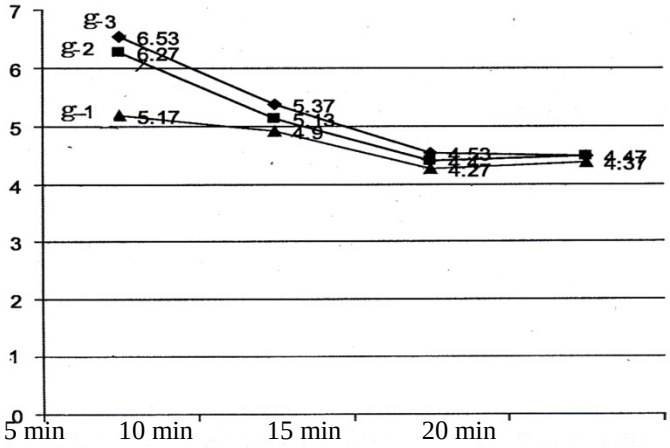
	Pre-operative	5min	15min	30min	1 hr
HR (minuets)	100.1±.2	100.2±.3	100.2±.3	120.3±.2	130.2±.3
SBP (mmHg)	130.2±.3	130.3±.4	130.3±.4	100.2±.3	100.1±.3(use ephidrin)
SPO2(%)	98.3±.4	97.6±.3	98.3±.4	96.2±.1	96.2±.2

Table 4

Comparison of Motor block (Minuets)

	Group I	Group II	Group II
On set of Motor block, Scale -1	1.6 ±.7	1.5±.78	2.39±.52
Maximum degree of motor block Scale -3	2.88±1.9	2.5±0.2	2.48±.36
Time require to attained maximum height of block	12.3±2.18	11.94±2.03	11.49±1.8

Fig -1



Comparison of the level of Analgesia at different times

Discussion

At the site of L2-3intervertibral space cephaled spread of 0.5% hyperbaric bupivacain was faster on SAB in five and ten minuets at the level T10 and T6 respectively.

Maximum level of analgesia at T4 similar to the three groups at average 20 minuets, It appeared from this study that all three sites of lumber intervertibral space chosen for SAB was a little inportance in relation to the height of block. After 5minuit of administration of 2.5ml of 5% hyperbaric bupivacain, the level of block T5 obtained at intervertibral space L2-3, T6 obtained at intervertibral space L3-4 and T7 obtained at intervertibral space L4-5. Increase the volume administered into SAB specially in hyperbaric solution result in higher[5] spread and longer duration of block.

Various discomforts were recorded in five patients in group, I four patients in group II and five patients in group III. Patients in three groups complain of discomfort during operation all occured after delivery, were associated with roughly moping or suture of the uterus or

abdominal wall and was relieved after few minutes.

SPO2 was not significantly different among three groups. O2 Saturation was statistically significnat at five minutes after block but the mean value of O2 Saturation at 5 minuite were 97.9% in group I, 97.5% in group II and 97.6% in group III. They were almost equal and normal. SPO2 was not significantly different up to 2 hours

Conclusion: The choice of different sites of lumber intervertebral spaces influence the rate of onset of analgesia but not the dermatomal level of analgesia achieved.

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All correspondence to
Dr. Md. Abul Kalam Azad
Assistant professor (Anaesthesia),
Rajshahi Medical College.