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RESEARCH ARTICLE

Efficacy of subarachnoid block for caesarian section using hyperbaric bupivacaine with fentanyl

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ABSTRACT

Objectives: The study was undertaken to observe the effect of intrathecally administered fentanyl with bupivacaine on onset and duration of sensory and motor block, quality of anaesthesia and requirement of analgesia during early postoperative period. **Method**: In this study 45 women of group 1 received hyperbaric bupivacaine 10 mg and 45 women of group 2 received bupivacaine 10mg with fentanyl 12.5 mg. Onset of sensory and motor block, height of block, sensory regression, requirement of analgesic and any complication were recorded. **Result**: The onset time for analgesia was significantly shorter in group 2 than in group1 (1.9±0.56 vs 2.46± 0.79). The mean time for sensory regression to L1 is shorter in group1 compared to group 2. The mean time for two segments sensory regression was significantly prolonged in group2 compared to group 1. Time for complete sensory recovery when rescue analgesia was required in postoperative period was significantly prolonged in group 2 compared to group 1 (259.4±35.3 vs 165.0±23.8). There were no significant differences between the two groups with regard to incidence of nausea and vomiting, shivering and pruritus. **Conclusion**: Addition of fentanyl to hyperbaric bupivacaine augments sensory block without affecting motor block.

Keywords: Intrathecal, bupivacaine, fentanyl, caesarian section.

Spinal anaesthesia is commonly employed for caesarean delivery. The intrathecal injection of fentanyl is found to augment the analgesia produced by local analgesic without causing respiratory depression [1]. Intrathecal bupivacaine alone may be insufficient to provide complete relieve from visceral pain despite high sensory block. Furthermore, large doses of intrathecal bupivacaine were associated with sever hypotension and delayed recovery of motor block [2]. Our study was undertaken to study the effect of intrathecally administered fentanyl 12.5 µgm with bupivacaine 10 mg on onset and duration of sensory and motor block, quality of anaesthesia and requirement of analgesia during early postoperative period.

Methods

This prospective double blind randomized study included 90 patients of Anaesthesiology (ASA) grade 1 & 2, undergoing elective caesarian section, after obtaining permission from ethical committee. Patients

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with acidosis, diabetes mellitus, gastro-intestinal disease, antepartum hemorrhage, severe hypertension and disorder of coagulation profile were excluded from the study. Patients were divided into two groups. An intravenous line was secured with 18G cannula and preloading was done with 500ml of Ringer Lactate over 15 minutes. Ondansetron 10 mg and ranitidine 150 mg were administered intravenously. Standard monitoring was applied and base line parameters were recorded. Dural puncture was done with 25G quincke spinal needle in left lateral position of patient on horizontal table. Patients received either 10 mg bupivacaine or 10 mg bupivacaine with 12.5 mg fentanyl. Patients were turned to supine position after intrathecal injection and a wedge was kept under right gluteal region. Oxygen is administered at 3l/min though face mask. Hypotension was treated with rapid infusion of intravenous fluid and incremental doses of mephentermine. Bradycardia, heart rate less than 60/min, was treated with 0.6 mg atropine intravenously.

All patients were assessed for: 1) The time of onset of sensory analgesia at T10 segment by pin prick method, 2) The maximum level of sensory blockade achieved, 3) The time taken for sensory regression - two segment regression and regression to L1, 4) Degree of motor blockade in Bromage score, 5) Duration of effective analgesia when patient demand rescue analgesia, 6) Cardiovascular status and 6) Any complication like nausea, vomiting, shivering and pruritus.

All data were collected in structured proforma. The statistical analysis was done with the help of Graph Pad Instat 3 software.

Results

There were no statistically significant differences between the two groups with regard to demographic variables (table 1). The onset time of sensory analgesia was rapid in group 2 c ompared to group 1. The time for sensory regression of two segment, sensory regression to L1 and time for complete sensory recovery were significantly prolonged in group 2(table 2). Pruritus was found in 6.7% of patients of group 2.

Table 1: Demographic parameters in the two groups

Variables	Group 1	Group 2	P value
Age	24.75±4.49	24.10±4.43	0.49
Weight (kg)	62.6±2.6	61.9±2.5	0.196
Multiparas (No of women)	28	24	-
Duration of operation (min)	63.20 ± 9.95	62.56±7.93	0.736

P value < 0.05 Significant (Fisher's Exact Test)

Table 2: Characteristics of block

Duration (min)	Group 1	Group 2	P value
Time for onset of analgesia	2.46± 0.79	1.9± 0.56	0.0246
Time for highest level of analgesia	5.3 ± 1.92	3.9±1.63	0.230
Time for two segment sensory regression	99.78 ±17.69	129.11±31.26	0.0003
Time for sensory regression to L1	179.44±28.95	271.44±34.72	0.232
Duration of analgesia	165.0±23.8	259.4±35.3	0.01
Time of onset of grade III motor block	3.1±0.88	2.6±0,8	0.530
Total duration of grade III motor block	119.28±20.5	117 ±13.4	0.53

P value < 0.05 Significant (Fisher's Exact Test)

Discussion

The addition of fentanyl to bupivacaine hastens the onset time and prolong the duration of analgesia. Hunt et at observed faster onset of action on combination of fentanyl with bupivacaine [3]. The mean time of two segments regression was significantly prolonged in group 1 compared to group 2. The total duration of

Table 3: Complications in Group 1 and Group 2			
Complications	**Group 1**	**Group 2**	**P value**
Nausea & Vomiting	8	6	0.7
Shivering	9	3	0.11
Pruritus	0	3	0.2
Bradycardia	5	3	-
P value < 0.05 Significant (Fisher's Exact Test)			

effective analgesia without rescue analgesic in the early postoperative period was significantly prolonged in group 2. The result of our study was similar to that of studies of Uma Srivastaba et al and Belzarena Sergio [4,5]. Duration of motor block wasn't statistically different in the groups. Uma Srivastava et al and Belzarena Sergio also observed that adding fentanyl to bupivacaine didn't prolong motor block. There were no significant differences between the two groups with regard to incidence of nausea and vomiting, and shivering. Manullang et al observed decreased incidence of emesis with intrathecal fentanyl, and concluded that reduced incidence of emesis was because of attenuating visceral pain with fentanyl [6]. As all patients of our study received intravenous ondansetron, so difference of incidence of emesis is not significant in our study. Three patients of group 2 experienced mild nasal itching that did not required any treatment .In a study, Buvanendran A et al found that intrathecal bupivacaine attenuates pruritus from intrathecal fentanyl on all parts of body except the face [7].

Conclusion

The onset time of sensory block was rapid along with prolong duration of analgesia without affecting the motor block was observed in group of patients who received bupivacaine with fentanyl.

Conflict of interest: None. **Disclaimer:** Nil.

References

1.Choi DH, Ahn HJ, Kim MH. Bupivacaine sparing effect of fentanyl in spinal anesthesia for caesarian delivery. Regional Anesthesia Pain medicine. 2000; 25: 240-5.

2.Chung CJ, Bae SH, Choeky, Chin YJ. Spinal anaesthesia with 0.25% hyperbaric bupivacaine for caesarian section, effect of volume. Br J Anaesth. 1996; 77: 145-9

3.Catherine OH, Stephen JN, Angela MB, Martha AH, Jasmine VV, Datta S. Perioperative analgesia with subarachnoid fentanyl-bupivacaine for cesarean delivery. Anesthesiology. 1989, 71: 535-40.

4.Srivastava U, Kumar A, Gandhi NK, Saxena S, Datta D, Chandra P, et al. Hyperbaric or plain bupivacaine combined with fentanyl for spinal anaesthesia during caesarean delivery. Indian J Anaesthessia. 2004; 48: 44-6.

5.Belgarena S. Clinical effect of intrathecally administered fentanyl in patients undergoing cesarean section. Anesthesia Analgesia. 1992; 74: 53-7.

6.Manullang TR, Viscomi CM, Pace NL. Intrathecal fentanyl is superior to intravenous ondansetron for perioperative nausea during cesarean delivery with spinal anesthesia. Anesth Analg. 2000; 90: 1162-6.

7.Asokumar B, Newman LM, McCarthy RJ, Pharm P, et al. Intrathecal bupivacaine reduces pruritus and prolongs duration of fentanyl analgesia during labor: A prospective randomised controlled trail. Anesth Analg. 1998; 87: 1309-15.

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