Clinical effects of patient waiting in sitting position for one minute after spinal anesthesia in cesarean section

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Aim

- Spinal anesthesia** (SA) may increase risk for **hypotension** (hT) in cesarean section (C/S).
- Several techniques; *volume expansion, positioning, elastic bandage, prophylactic vasopressors, divided doses of LA* have been used; however, there is no single technique that eliminates risk for hT.
- We aimed to investigate effects of “**sitting position for one minute after SA**” on development of hT and its hemodynamic effects and block characteristics in C/S.

Methods

- After approval of ethics committee and patients’ consent,
- 225 ASA I-II patients (aged 18-45 years);
 - Group 1 (n=75)**; supine position after waiting in sitting position for 1 minute following **12.5 mg** heavy bupivacaine (HB);
 - Group 2 (n=75)**, supine position after **10 mg** HB;
 - Group 3 (n=75)**, supine position after **12.5 mg** HB.
- SA; 26 G Quincke needle at L₃₋₄ with sitting position.
- ✓ Onset of sensory block (SB),
- ✓ Time to T₆,
- ✓ Maximum level of SB,
- ✓ Duration of SB and motor block and,
- ✓ Heart rate and MAP were recorded.
- Ephedrine HCl (10 mg; IV) was given in case of hT.
- ✓ Total amount of ephedrine, time to need for ephedrine, nausea and pain scores were recorded.

Results

- The hT incidence was lower in **Group 1** (52.8%) than those in groups 2 (58.6%) and 3 (72.2%) with a significant difference between groups 1 and 3 (p<0.05), (**Table 1**).
- Time to first ephedrine was longer in **Group 1** (7.5±5.1 min) than Group 3 (5.6±5.0 min) while total amount of ephedrine was lower in **Group 1** (17.8±9.5) than Group 3 (25.5±14.1) (p<0.016) (**Table 2,3**).
- Time to T6 SB was significantly shorter in **Group 3** (4.1±1.4 min) than groups 2 (4.9±1.8 min) and 1(5.0±1.6 min)
- Maximum SB level was higher in group 3 (T3.5±1.1) than groups 2 (T4.1±1.1) and 1 (T4±0.9) (p<0.016) (**Table4**).
- Duration of SB was shorter in group 2 (250±53.9 min and 8.5±20.9 min) than groups 1 (307.4±55.9 and 101.6±22.6 min) and 3 (290.5±53.2 min and 101.5±20 min; p<0.16).
- There was no difference in nausea but pain scores were higher in group 2 compared to group 3 (p<0.05) (**Table 5**).
- Need for additional analgesic was significantly higher in group 2 compared to group 3 while need for antiemetic was significantly higher in group 3 than group 2 (p<0.05).

Conclusion

Patient waiting for 1min at sitting position after 12.5 mg HB could be advantageous regarding development of hT when compared to conventional methods in elective C/S with similar effectiveness compared to low-dose heavy bupivacaine.

Table 1: Demographic values

	Group 1 (n=72)	Group 2 (n=70)	Group 3 (n=72)	Total (n=214)	P
	Mean±SD	Mean±SD	Mean±SD	Mean±SD	
Age (years)	30.2±5.8	29.4±5.8	29.6±5.0	29.7±5.5	0.663 ^a
Weight (kg)	81.9±12.2	77.2±10.5	80.8±12.9	79.9±12.0	0.062 ^a
Height (cm)	160.3±3.2	159.9±3.6	159.9±3.2	160±3.3	0.603 ^a
BMI (kg/m ²)	31.8±4.5	30.2±3.9	31.6±4.8	31.2±4.5	0.117 ^a
C/S	1.9±0.8	2.0±0.9	2.1±0.8	-	0.369 ^a
	n (%)	n (%)	n (%)		
Hypotension	38 (52.8)	41 (58.6)	52 (72.2)		0.045 ^{a,c}

^(a)One-Way ANOVA * p<0,05, ^(b)Kruskal-Wallis p<0,05, ^(c)Fisher's Exact * p<0,05

Table 2: Time to need for Ephedrine

Group	n	Mean	Medyan	SD	Min.	Max.	P ^a
1	38	7.5	7.0	5.1	3	30	<0.05*
2	41	7.5	3.0	8.7	1	40	
3	52	5.6	5.0	4.8	1	30	
Time to need for Ephedrine (minute)							Grup
							1-2
							1-3
							2-3

^(a)Mann-Whitney U ** p<0,016^aKruskal-Wallis * p<0,05

Table 3: Total amount of Ephedrine

Group	n	Mean	Medyan	SD	Min.	Max.	P ^a
1	38	17.8	15.0	9.5	10	40	0.019*
2	41	23.1	20.0	11.8	10	50	
3	53	25.5	20.0	14.1	10	60	
Total amount of Ephedrine							Group
							1-2
							1-3
							2-3

^(a)Kruskal-Wallis *p<0,05, ^(b)Mann-Whitney U ** p<0,016

Table 4: Maximum sensory block level

Group	n	Mean	Medyan	SD	Min.	Max.	P ^a
1	72	4.0	4.0	0.9	2	6	<0.05*
2	70	4.1	4.0	1.1	2	6	
3	72	3.5	4.0	1.1	2	6	
Maximum sensory block level							Grup
							1-2
							1-3
							2-3

^(a)Kruskal-Wallis * p <0,05, ^(b)Mann-Whitney U ** p<0.016

Table 5: Pain scores

Intraoperative Pain	Group 1 n(%)	Group 2 n(%)	Group 3 n(%)	P ^a
	15 (20.8)	22 (31.4)	10 (13.8)	0.041*
Intraoperative Pain				Group
				1-2
				1-3

^(a)Fisher's Exact * p<0,05 ^(b)Ki-Kare *p<0,05

References:

- Acta Anaesthesiol Scand. 2002;46(4):441-6
- Indian J Anaesth. 2017; 61(1):55-60