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Original Article

FOETO-MATERNAL OUTCOME IN PRE-ECLAMPTIC PARTURIENT UNDERGOING CAESAREAN SECTION - INFLUENCE OF PRE-OPERATIVE CONTROL OF BLOOD PRESSURE

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ABSTRACT

The foeto-maternal out come in pre-eclamptic parturients under going caesarean section under SAB with or without pre-operative control of blood pressure were studied. A total of 60, 30 in each group primpara women with singleton pregnancy diagnosed as pre-eclampsia scheduled for caesarean section were included. In Group-A, patients were treated with Hydralazine 5mg increment dose at 20 min. intervals till the DBP at or below 90 mm Hg. In Group-B, patients did not receive any anti hypertensive therapy. The patients were pre-loaded in both groups with lactated Ringer's solution at 15ml/kg over 20-30 minutes. The SBP, DBP and heart rate were recorded before block, just after block, every two minutes for 1st 10 minutes and then every five minutes till on arrival of post operative ward. Neonatal assessment was done using APGAR score at 1 and 5 minutes.

There was no significant changes of SBP between the groups throughout the study period. But there was significant difference in intra-operative fluid requirement in two groups (478 ml vs. 635m1;; P=0.0001). The Ephedrine requirements were almost similar in two groups. There was no significant differences of APGAR scores in two groups. This study gave the understanding that pre-operative control of BP of mildly pre-eclamptic parturient is not mandatory for caesarean section under spinal anaesthesia.

INTRODUCTION

Pre-eclampsia is a hypertensive disorder in late pregnancy commences after 20th week of gestation and resolves shortly after delivery[1]. It occurs up to 10% of all pregnancies and is a major cause of maternal and foetal morbidity and mortality[2]. The triad of pre-eclampsia includes hypertension, proteinuria and oedema.

The definitive treatment of pre-eclampsia and eclampsia is delivery of foetus and placenta[1]. Severely pre-eclamptic parturient is associated with varying degrees of intra-vascular volume contraction. For one of the reason, the use of spinal anaesthesia in emergency situations, in which it might be of greatest benefit to pre-eclamptic women in avoiding the need for general anesthesia, may be limited by the time available to preloading the patient.

The use of subarachnoid block for cesarean delivery has been increasing in the developing countries like Bangladesh. It is cost-effective in comparison to epidural block. Nonetheless, epidural anesthesia is preferred for cesarean delivery as the severity and incidence of hypotension is less due to a slower onset of sympathetic blockade. Hood and Curry present the results of a retrospective chart review, comparing the effects of spinal and epidural anesthesia for cesarean delivery in severely pre-eclamptic women. On the other hand, when the caesarean section is indicated a large number of pre-eclamptic mother remain hypertensive inspite of on going antihypertensive treatment. Beside this, some patients also come without treatment which may require emergency caesarean section. Then the question arises wheather for preoperative control of blood pressure before subarachnoid block

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is necessary or not? The aim of the present study was to investigate the foetomaternal outcome with or without preoperative control of blood pressure in pre eclamptic parturients.

MATERIALS AND METHODS:

After informed written consent, a total of sixty, thirty in each group, primipara women with singleton pregnancy diagnosed as pre-eclampsia scheduled for elective caesarean section were included in the present study. Ethical clearance from Dhaka Medical College Hospital Authority was also obtained. 30 pre-eclamptic mother treated with anti-hypertensive therapy were included in Gr-A. Another 30 pre-eclamptic mother without anti-hypertensive treatment were included in Gr-B. The pre-eclamptic mother with coagulopathy, other obstetrics complications, weight of more than 70 kg were excluded from the study. After recruitment, the parturients of Group-A were treated with Hydralazine. The drug was given intravenously at incremental dose of 5mg, at twenty minutes interval till the diastolic blood pressure at or below 90mm of Hg. The parturients of Group-B did not receive any anti-hypertensive therapy.

On entry to the operating theatre, a monitor (Datex-Ohmeda S/5) was attached with the parturients for continuous monitoring of electrocardiogram, systolic, diastolic and mean arterial blood pressure and SpO_2. The patient was preloaded with Lactated Ringer's solution at 15ml/kg body weight over 20-30 minutes. With the parturient in left lateral position, sub-arachnoid block was performed using 25G Quincke-Babcock Lumber puncture needle at L2-3 or L3-4 interspace. 10-11mg of 0.5% hyperbaric bupivacaine was delivered into the sub-arachnoid space after free flow of cerebrospinal fluid through the needle. The needle was withdrawn and the parturient was immediately positioned supine with left lateral tilt.

The heart rate, blood pressure and SpO_2 were recorded before block, just after block, every two minutes for first ten minutes and then every five minutes till surgical procedure was completed and on arrival at the post-operative ward. Hypotension was defined as systolic blood pressure decreased below 100mm of Hg or more than 20% reduction from pre-block state and was treated with IV fluid and Ephedrine. Total amount of fluid and ephedrine were also noted. The patients received supplemental O_2 through nasal prong @ 2L/min during surgery. Neonatal assessment was done using APGAR score in one and five minutes by a neonatologist who was blinded about the study.

The results were compiled and analysed statistically using student's t and chi-square test as appropriate with the help of statistical programme Sigma Plot version 6. Values were considered as significant if $p < 0.05$ (CL-95%).

RESULTS:

The demographic data are displayed in Table-1. There is no significant difference in age (p=0.94), body weight (p=0.32), height (p=0.23) and duration of pregnancy (p=0.77) of the parturients.

Table-I

Demographic characteristics of parturient in two groups

Parameters	Group-A	Group-B	P value
	30	30	
Age in years	23.93±2.44	23.96±2.09	0.94
Body weight in kg	65.53±4.5	66.73±4.7	0.32
Height in cm	156.96±3.0	156.80±3.66	0.23
Duration of pregnancy in weeks	35.13±1.33	35.03±0.98	0.77

Values are expressed as mean ± SD. Data was analysed using unpaired student's t test. Values are expressed as significant if $p < 0.05$ (CL-95%).

Table-II

Total Intravenous fluid used in two groups

Fluid used in different time period	Group-A	Group-B	P value
Amount of fluid used as preload (ml)	945±51	965±53	0.06
Amount of fluid used during operation (ml)	478±41	635±60	**0.001**

Values are expressed as mean ± SD. Data was analysed using unpaired student's t test. Values are expressed as significant if p< 0.05 (CL-95%).

The fluid used during operation are shown in Table-II. There were no difference of fluid requirement during preloading but it was significantly higher during operation in Gr-B (478±41 vs 635±60; p =0.001).

Table-III

Number of parturient required Ephedrine to treat intra-operative hypotension.

Groups / amounts	5 mg IV as single attempt	10 mg IV in two attempt	More than 10 mg in multiple attempt
Group-A	3 (10%)	2 (6.66%)	-
Group-B	5 (16.66%)	1 (3.33%)	1 (3.33%)

Values are expressed as frequency; within parenthesis are percentages over column total. Data was analysed using chi-square test. Values are expressed as significant if p< 0.05 (CL-95%).

Amount of Ephedrine used to manage hypotensive episode was different between two groups. In Group-A, Ephedrine 5mg was needed in 3 patient (10%), 10mg in 2 cases (6.66%). But in Group-B, Ephedrine 5mg was needed in 5 cases (16.66%), 10mg needed in 1 case (3.33%) and more than 10mg in 1 patient (3.33%) Table-III.

Table-IV

Neonatal data

Parameters	Group-A	Group-B	P value
Body weight (kg)	2.9±0.47	2.65±0.15	**0.01**
APGAR at 1 min			
≤ 7	20 (66.66%)	17 (56.66%)	
>7	10 (33.33%)	13 (43.33%)	0.6
APGAR at 5 min			
<7	28 (93.33%)	23 (76.66%)	
>7	2 (6.66%)	7 (23.33%)	0.7

Values are expressed as mean±SD or frequency as applicable; within parenthesis are percentages over column total. Data was analysed using unpaired student's t test or chi-square test. Values are expressed as significant if p< 0.05 (CL-95%).

Neonatal condition at birth was measured by APGAR scores at 1 min and 5 min. In Gr-A, APGAR score 7 or more than 7 were found at 1 min. in 20 cases (66.66%), less than 7 in 10 cases (33.33%) but at 5 minute score were found in 28 (93.33%) cases and in 2 cases (6.66%) respectively. In Gr-B, APGAR score 7 or more than 7 were seen in 17 cases (56.66%), less than 7 in 13 cases (43.33%) but at 5 minute score were seen in 23 (76.66%) cases and in 7 cases (23.33%) respectively.

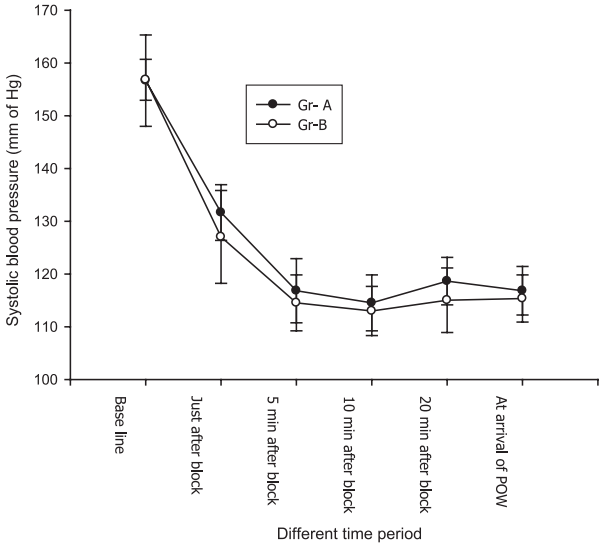

Fig-1: *Changes of systolic blood pressure in two studied groups*

There was a fall in systolic blood pressure in two groups. But there is no significant difference between the groups.

DISCUSSION

Spinal anaesthesia is cost effective technique for routine caesarean delivery than epidural block. Hood and Curry present a retrospective study, comparing effects of spinal and epidural block for caesarean delivery in severely pre-eclamptic

mother. They showed that the lowest recorded systolic arterial blood pressure in epidural group was 55mmHg and 58mmHg in spinal group. In the present study, spinal anaesthesia was performed in both the groups and only difference was control of blood pressure preoperatively in the operating room in one group. There was no significant changes of systolic blood pressure between the groups.

In the pre-eclamptic mother, the blood volume is decreased by upto 30%. Pre loading with crystalloid is a prophylactic measure of choice in the prevention of hypotension. In the present study, preloading of crystalloid fluid in two groups was almost equal (945ml vs 965ml, p= 0.06). But there were significant changes of intra-operative fluid infusion in two groups (478ml vs. 635ml; p= 0.0001). To treat hypotension, requirement of Inj. Ephidrine were almost similar in two groups. The results were consistent with the results of retrospective study done by Hood and Curry.

The neonatal outcomes were measured by Apgar score in one and five minutes. There were no significant changes of APGAR scores in one and five minutes in two groups.

CONCLUSION:

Under the condition of the present study it can be concluded that preoperative control of blood pressure of mildly pre-eclamptic parturient is not mandatory for caesarean section under spinal anaesthesia.

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