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The Efficacy of the Spinal Anesthesia during Emergency Cesarean Section for Severe Preeclampsia and Eclampsia Patients

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Abstract **Original Research Article**

Background: In Bangladesh, severe preeclamptic toxemia and eclampsia are life-threatening conditions in pregnancy that are the leading cause of perinatal maternal and neonatal mortality and morbidity**.** ***Objective:*** in this study our main aim is to evaluate the efficacy of the Spinal Anesthesia during Emergency Cesarean Section for Severe Preeclampsia and Eclampsia Patients. ***Method:*** This cross sectional study was carried out at tertiary medical hospital from January 2021 to January 2022. Total 200 cases of severe PET (n=110) and eclampsia (n=100) patients were selected by subarachnoid block for emergency LUCS. Each patient was given magsulph as prophylactic or maintenance dose and judiciously preloaded by crystalloid fluid. ***Results:*** Most of the patients belong to 31-40 years age group, 52% and 95.8% cases were multigravida. In severe PET group, intraoperative hypotension was observed in 32% cases and postoperative period hypotension was observed in 8% cases. Whereas preeclampsia group, intraoperative hypotension was observed in 31% cases and postoperative period hypotension was observed in 9% cases. In addition,maternal morbidity where acute renal failure seen in 5%, syndrome 7%, DIC 7%, abruptio placentae 12%, pulmonary edema 4%, septicemia 13%, PPH 10% and postpartum eclampsia 15%.In severe PET group, 21% cases transferred to eclampsia ward, followed by 9% shifted to ICU, 1% case was expired. Whereas, in preeclampsia group 20% cases transferred to eclampsia ward, followed by 8% shifted to ICU, 2% case was expired. In eclamptic group 7% cases were transferred to NCU, whereas 8% had PET. Neonatal mortality was observed in 3% cases. p value was found 0.000 which is very highly significant. ***Conclusion:*** With close monitoring of perioperative events, spinal anesthesia may be used as a safe alternative technique to GA or epidural in severe preeclampsia and eclampsia, even in cases of altered consciousness or restlessness in the presence of an expert and skilled anesthesiologist, reducing perioperative maternal and neonatal morbidity and mortality.

Keywords: Severe Preeclampsia (PET) Eclampsia, spinal anesthesia.

INTRODUCTION

In our country, severe preeclamptic toxemia and eclampsia are life-threatening conditions in pregnancy that are the leading cause of perinatal maternal and neonatal mortality and morbidity due to poverty, illiteracy, lack of education, lack of transport facility, availability of well-equipped antenatal clinic, HDU, ICU facility, and delay in hospital admission; for these reasons, it is a great challenge for anesthesiologists and obstetricians to manage [1-4].

Though there are many debates about the best approach for LUCS in severe PET and eclampsia patients, SAB is superior to GA [5, 6]. Even though there is a risk of spinal-induced hypotension, SAB is preferred simply to avoid the hazards of GA such as laryngoscopic-induced hypertension during intubation and extubation, difficult intubation, failed intubation, esophageal intubation, pulmonary aspiration, risk of cerebral hemorrhage, drug interaction between magsulph and non-depolarizing muscle relaxant (NDMR), delayed recovery or reversal hazards, drug-related issues [7-9] in this study our main aim is to evaluate the efficacy of the Spinal Anesthesia during Emergency Cesarean Section for Severe Preeclampsia and Eclampsia Patients.

OBJECTIVE

To assess the efficacy of Spinal Anesthesia during Emergency Cesarean Section for Severe Preeclampsia and Eclampsia Patients

METHODOLOGY

This cross sectional study was carried out at tertiary medical hospital from January 2021 to January 2022. Total 200 cases of severe PET (n=110) and eclampsia (n=100) patients were selected by subarachnoid block for emergency LUCS. Each patient was given magsulph as prophylactic or maintenance dose and judiciously preloaded by crystalloid fluid. Thiopental sodium 50−100 mg was given to those who had convulsion during SAB. About 2−2.5 mL (10−12.5 mg) 0.5% bupivacaine heavy was used by 25−27 G spinocaine in L3−4 or L4−5 space. After the establishment of the desired block, LUCS was performed. Meticulous monitoring was done and all events were recorded and problems were effectively managed.

Data were analyzed using SPSS version 23.0. The result was reported as frequency and percentage. Perioperative morbidity and mortality was observed and noted. All patients were monitored until discharged.

RESULTS

In table-1 shows age distribution of the patients where most of the patients belong to 31-40 years age group, 52%. The following table is given below in detail:

Table 1: Age distribution of the patients

Age group	Percent (%)
21-30 years	48%
31-40years	52%
Total	**100%**

In table-2 shows demographic status of the patients where 28.3% just completed their graduation where as 55% was housewife. The following table is given below in detail:

Table 2: Demographic status of the patients

Educational status	Percent (%)
Primary	12.5%
Secondary	21.7%
SSC	25%
HSC	12.5%
Graduate	28.3%
Occupation	
Housewife	55%
Teacher	25%
Service holder	20%

In figure-1 shows parity distribution where primigravida were 4.2% and multigravida were 95.8% cases. The following figure is given below in detail:

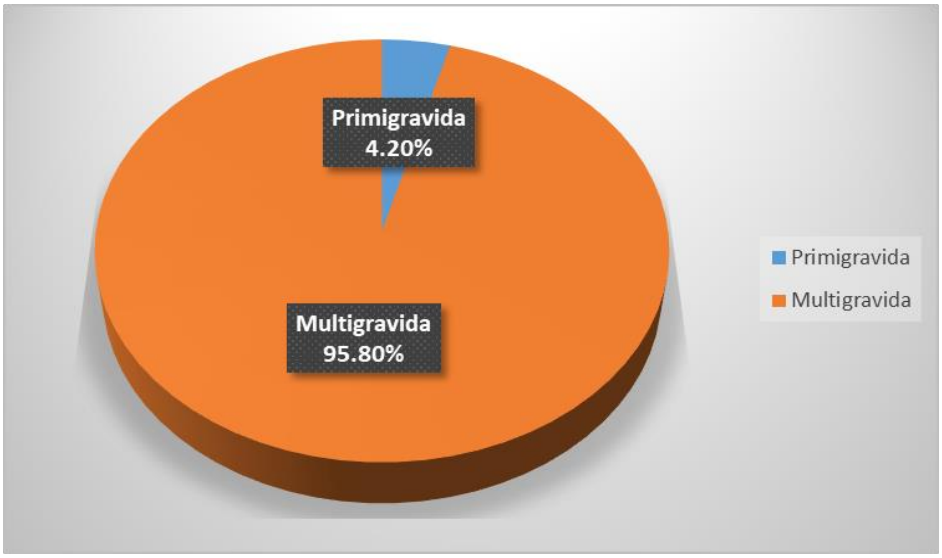

Figure 1: Parity distribution

In table-3 shows intra- and postoperative significant status where in severe PET group, intraoperative hypotension was observed in 32%cases and postoperative period hypotension was observed in 8% cases. Intraoperative hypertension was observed only in 4% patients and in postoperative period 12% cases were found. Intraoperative tachycardia was found in 7% cases and bradycardia was observed in 25% cases. Intraoperative shivering was observed in 25% cases, postoperative shivering was observed in 26% cases, intraoperative nausea and vomiting were observed in 12% cases and postoperative nausea and vomiting were observed in 9% cases. Whereas preeclampsia group, intraoperative hypotension was

observed in 31% cases and postoperative period hypotension was observed in 9% cases. Intraoperative hypertension was observed only in 6% patients and in postoperative period 11% cases were found. Intraoperative tachycardia was found in 9% cases and bradycardia was observed in 27% cases. Intraoperative shivering was observed in 22% cases, postoperative shivering was observed in 23% cases, intraoperative nausea and vomiting were observed in 13% cases and postoperative nausea and vomiting were observed in 10% cases. The following table is given below in detail:

Table 3: Intra- and postoperative significant status

Intra- and postoperative significant status	severe PET	Preeclampsia
Intraoperative hypotension	32%	31%
Post-operative hypotension	8%	9%
Intraoperative hypertension	4%	6%
Post-operative hypertension	12%	11%
Intraoperative bradycardia	25%	27%
Intraoperative tachycardia	7%	9%
Intraoperative nausea and vomiting	12%	13%
Postoperative nausea and vomiting	9%	10%
Intraoperative shivering	25%	22%
Postoperative shivering	26%	23%

*Multiple responseswere noted.

In figure-2 shows maternal morbidity where acute renal failure seen in 5%, syndrome 7%, DIC 7%, abruptio placentae 12%, pulmonary edema 4%, septicemia 13%, PPH 10% and postpartum eclampsia 15%. The following figure is given below in detail:

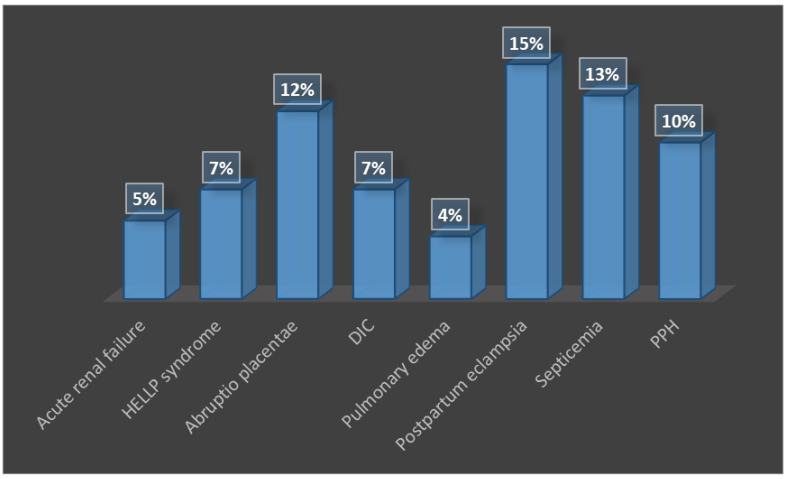

Figure 2: maternal morbidity
***Multiple responseswere noted.**

In table-4 shows maternal outcomeswhere in severe PET group, 21% cases transferred to eclampsia ward, followed by 9% shifted to ICU, 1% case was expired. Whereas, in preeclampsia group 20% cases transferred to eclampsia ward, followed by 8% shifted to ICU, 2% case was expired. The following table is given below in detail:

Table 4: Maternal outcomes

Maternal outcome	Severe PET,%	Preeclampsia,%
Transfer to Eclampsia ward	21%	20%
Transfer to ICU	9%	8%
Expired	1%	2%

In table-5 shows fetus outcome where Apgar score <7 at 5 minutes in severe PET was observed in 7% and eclampsia in 9%cases. In eclamptic group 7% cases were transferred to NCU, whereas 8% had PET. Neonatal mortality was observed in 3% cases. p value was found 0.000 which is very highly significant. The following table is given below in detail:

Table 5: Fetus outcome

Fetus outcome	Severe PET, %	Preeclampsia, %
Apgar score <7 at 5 minutes	7%	9%
Transfer NCU	7%	8%
Prenatal death	2%	1%

DISCUSSION

In our study, we found acute renal failure seen in 5%, syndrome 7%, DIC 7%, abruptio placentae 12%, pulmonary edema 4%, septicemia 13%, PPH 10% and postpartum eclampsia 15%. In one study found 39.1% HELLP syndrome, 3.6% acute renal failure, 8.1% abruptio placentae, 1.8% neurological deficit, 8.8 % intensive care unit referral [9]. Another study found 10% abruptio placentae, 11% HELLP syndrome, 6% DIC, 5% pulmonary edema, 4% acute renal failure, 4% cardiac arrest and 1% death [10].

The major side effects of spinal anesthesia are hypotension, decreased cardiac output resulting in placental hypoperfusion and poor perinatal outcomes as well as the risk of iatrogenic pulmonary edema due to bolus intravenous fluid administration during treating spinal-induced hypotension [11].

But thehypotensive side effects are usually less in eclamptic and severe preeclampsia patients than in normal pregnant or non-pregnant women, which may be due to having high level of catecholamines and persisting vasoconstriction effect as a consequence of imbalance between pro- and antiangiogenic growth factors followed by vascular epithelium damage [12].

However, in severe PET group, intraoperative hypotension was observed in 32% cases and postoperative period hypotension was observed in 8% cases. Intraoperative hypertension was observed only in 4% patients and in postoperative period 12% cases were found. Intraoperative tachycardia was found in 7% cases and bradycardia was observed in 25% cases. Intraoperative shivering was observed in 25% cases, postoperative shivering was observed in 26% cases, intraoperative nausea and vomiting were observed in 12% cases and postoperative nausea and vomiting were observed in 9% cases. Whereas preeclampsia group, intraoperative hypotension was observed in 31% cases and postoperative period hypotension was observed in 9% cases. Intraoperative hypertension was observed only in 6% patients and in postoperative period 11% cases were found. Intraoperative tachycardia was found in 9% cases and bradycardia was observed in 27% cases. Intraoperative shivering was observed in 22% cases, postoperative shivering was observed in 23% cases, intraoperative nausea and vomiting were observed in 13% cases and postoperative nausea and vomiting were observed in 10% cases.

Whereas, other study found hypotension in 47.1% cases after giving spinal anesthesia [13]. Several studies show that death rate is more following general anesthesia. In India, a study published in the Journal of Pregnancy in 2014 found higher mortality (25.9%) in general anesthesia group than spinal (1.4%) anesthesia [14].

In our study severe PET group, 21% cases transferred to eclampsia ward, followed by 9% shifted to ICU, 1% case was expired. Whereas, in preeclampsia group 20% cases transferred to eclampsia ward, followed by 8% shifted to ICU, 2% case was expired.

Whereas Apgar score <7 at 5 minutes in severe PET was observed in 7% and eclampsia in 9%cases. In eclamptic group 7% cases were transferred to NCU, whereas 8% had PET. Neonatal mortality was observed in 3% cases. P value was found 0.000 which is very highly significant. This was similar to other studies [12, 13].

CONCLUSION

With close monitoring of perioperative events, spinal anesthesia may be used as a safe alternative technique to GA or epidural in severe preeclampsia and eclampsia, even in cases of altered consciousness or restlessness in the presence of an expert and skilled anesthesiologist, reducing perioperative maternal and neonatal morbidity and mortality.

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