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Aggressive Versus Expectant Management of Preeclampsia with Severe Features Remote from Term (24–34 Weeks)

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Abstract

Background: Preeclampsia is a multiorgan, idiopathic illness that only occurs in human pregnancy and the puerperium. after 20 weeks of pregnancy, is indicated by a proteinuria threshold of 300 mg per 24 h or more, or by a 140/90 mmHg blood pressure cutoff. It accounts for 12–18% of all maternal deaths linked to pregnancy and is the second most common cause of maternal mortality in the United States.

Aim and objectives: To compare the outcomes for mothers and babies in cases of severe preeclampsia far from term between expectant (or conservative) and aggressive (or urgent) care.

Subjects and methods: Between January 2021 and June 2022, The Faculty of Medicine at Al-Azhar University's Obstetrics and Gynecology Hospital conducted this comparison study. 58 singleton pregnancies with severe preeclampsia at 24 and 34 weeks made up this comparative study.

Result: Despite there being no statistically significant difference between them, group B had better neonatal outcomes than group A. Group B had slightly worse maternal outcomes/complications than group A.

Conclusion: Compared to the expectant group, the aggressive group had better maternal and newborn outcomes, although there was no statistically significant difference.

Keywords: Aggressive, Expectant, Management, Preeclampsia, Severe features remote from term

1. Introduction

Preeclampsia is a multiorgan, idiopathic illness that only occurs in human pregnancy and the puerperium¹ after 20 weeks of pregnancy, is indicated by a proteinuria threshold of 300 mg per 24 h or more or a blood pressure threshold of 140/90 mmHg. It accounts for 12–18% of all maternal deaths related to pregnancy, making it the second most frequent cause of maternal death in the US (behind thromboembolic disorders). Due mostly to iatrogenic preterm, it is also linked to increased perinatal mortality and morbidity.² Preeclampsia causes complications in 6–8% of pregnancies, 5–10% of which are severe. 1.9% of pregnancies in a 2003 study at Al-Batool Teaching Hospital in Mosul,

Iraq, were complicated by severe preeclampsia. It is obvious that the foundation for preeclampsia's development is set early in pregnancy, despite the fact that its pathophysiology is poorly understood.³ Furthermore, case-control studies have shown that the brain or lung development of preeclamptic women's foetuses is not accelerated. The majority of maternal deaths occur after delivery. Pulmonary edema is now the leading factor in maternal death in severe preeclampsia.⁴

A hurried birth in a patient who is unstable is likely to increase rather than lower her risk. On the other side, a sick patient may be in risk if there is a wait. However, the mother's condition must be stable for the pregnancy to be prolonged without endangering the mother's life. A senior clinician

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should frequently evaluate the management plan and conduct ongoing situational assessments.⁵

The purpose of this study was to compare the outcomes for the mother and newborn in cases of severe preeclampsia far from term when anticipated (or conservative) versus aggressive (or urgent) therapy was used.

2. Patients and methods

This comparison study took place between January 2021 and June 2022 at the Obstetrics & Gynecology Hospital of Al-Azhar University's Faculty of Medicine. 58 singleton pregnancies with severe preeclampsia at 24 and 34 weeks were deemed appropriate for this comparison study. In Group (A) Patients with severe preeclampsia who were treated with expectant (or conservative) care and were not in labour were included. **Group (B):** Were included patients with severe preeclampsia remote from term that was treated with aggressive (or immediate termination).

2.1. Inclusion criteria

Pregnant ladies between 24 and 34 weeks gestational age: Preeclamptic pregnant people with pronounced characteristics: After 20 weeks of pregnancy, the patient must have SBP160 mmHg or DBP 110 mmHg on 2 occasions at least 6 h apart while they are resting in bed, thrombocytopenia: platelets <100,000 mm, pulmonary edema, impaired liver function: SGOT/SGPT double or triple normal level, Neuro: unexplained new-onset headache that does not go away with medication, persistent or visual disturbance, and progressive renal insufficiency, defined as serum creatinine levels that are higher than 1.1 mg/dl or twice those levels in the absence of renal disease.

2.2. Exclusion criteria

Pregnant women with gestational age (<24 weeks & >34 weeks), patient with history of eclampsia, patient with other medical problem (e.g DM or renal disease), patient with ROM, patient with accidental hemorrhage, patient with PTL, platelets count <100,000 mm or HELLP syndrome, multifetal gestation, fetal congenital malformations and fetal indication for TOP (e.g repetitive or late deceleration - AFI<5 cm).

2.3. Sample size justification

Calculations of sample size, statistical calculator based on 95% confidence interval, and power of the study (80% with error of 5%) were performed using

the MedCalc® version 12.3.0.0 programme 'Ostend, Belgium', An earlier investigation by Sarsam et al.⁶ revealed that the RDS in the No. aggressively managed group (58.97%) was higher than the No. Expectantly managed group (22.86%), with *P* value (*P* < 0.001). Therefore, it may be assumed that this study's sample size calculation, which was based on this supposition, yielded a minimum sample size of 26 instances, which was sufficient to detect this difference. assuming a 10% dropout rate. Thus, 58 ladies will be included in the sample size according to computation (29 per group).

2.4. Methods

Each patient brought to the hospital underwent a thorough evaluation based on their History include (age-parity-date of LMP-present history-past history-family history).

Examination include: General examination: Two blood pressure reading at least 4 h apart, chest & Heart examination and edema was tested. Abdominal examination: edema-liver-spleen-loin, neurological &retinal examination.

2.5. Investigations

To determine the patient's total protein levels, a complete blood count, urea nitrogen analysis, creatinine, uric acid, transaminases, lactate dehydrogenases, albumin, and urine protein urea analysis are all performed.

2.6. Central nervous system

Both magnetic resonance imaging and computed tomography, as mentioned earlier, were used for the assessment. The warning signs included specific neurological conditions, recurrent seizures after delivery, unconsciousness, and odd behavioural anomalies. The American College of Obstetricians and Gynecologists' recommendations were followed for determining whether there was severe preeclampsia (2019).⁷

The patient should have two distinct readings of DBP 110 mmHg or SBP 160 mmHg after 20 weeks of pregnancy, separated by at least 6 h renal insufficiency that worsens over time: >1.1 mg/dl of serum creatinine and thrombocytopenia: platelets 100,000 mm; pulmonary edoema; impaired liver function: SGOT/SGPT twice or triple normal level. Neuro: inexplicable new-onset headache that won't go away despite treatment, double serum creatinine in the absence of renal disease, or chronic or visual disruption. All of the patients received

expectant management counselling. Due to patient or attending physician refusal of expectant management, 29 patients were delivered right away. The remaining 29 patients were handled cautiously; they were followed up with and closely watched for 48 h.

Guide line for conservative treatment consist of All patient observed in the labor room for 48 h, magnesium sulfate for seizure prophylaxis for selected features: Loading dose (4–6 gm/200 ml saline over 10–20min) and Maintain dose (1–2 gm/hour for 24–48 h), anti-hypertensive drugs given to control blood pressure: e.g- Labetalol (100 mg twice daily up to 1.2 to 2.4 gm) and steroids are given to improve fetal outcome: 6 mg/12 h for 48 h.

Maternal monitoring for: BP every 4–6 h, urine albumin every 6 h, CBC every 24 h, renal function test & liver function test daily, 24 h urine protein daily, dailey weight, mentoring for Magnesium sulfate toxicity due to narrow safety margin(4–7 meq/L), The following must checked before each dose: Knee jerk still present, RR not<16/min, urine>30 ml/hour. Anti-dote for Magnesium sulfate is Ca gluconate given (10 ml slowly infusion), Retinal changes and intravenous fluids and urinary output was monitored daily.

***fetal monitoring for:** Dailey fetal movement, FHR daily, ultrasonography (US) daily, Doppler US daily and CTG daily.

Guidelines for aggressive treatment consist of: All patients was observed in labor room, magnesium sulfate regimen selected for seizure prophylaxis: Loading dose (4–6 gm/200 ml saline over 10–20 min); then continues infusion (1–2 gm/hour for 24–48 h) postpartum and antihypertensive drugs for blood pressure control postpartum e.g labetalol 100 mg twice daily up to 1.2 gm to 2.4 gm.

Indiction for termination of pregnancy: Maternal indiction: Despite taking the maximal anti-hypertensive dose for 24 h, uncontrolled blood pressure of >160/110. With epigastric discomfort or tenderness, abruptio placenta, platelet count less than 100,000 mm, renal impairment, pulmonary edoema, SGOT/SGPT readings greater than twice the upper limit of normal, recurrent severe headaches, or anomalies of the vision. There are several signs of foetal abnormalities, including repetitive or variable deceleration, an AFI of 5 cm, the absence or reversal of diastolic flow in the umbilical artery, and an EFW of the 5th centile.

2.7. Outcome measures

Maternal outcomes: Eclampsia, HELLP syndrome, Abnormal liver function, Abnormal renal function,

Ascites, Thrombocytopenia, Abruption placenta and pulmonary edema.

Neonatal outcomes: Stillbirth, IUGR, NICU admission, RDS, IVH, neonatal sepsis and fetal death.

2.8. Ethical considerations

The study protocol was submitted for approval by the Obstructs and Gynecology Department's Ethical Committee of the Faculty of Medicine at AL Azhar University. Following the disclosure of the investigation's goals and procedures to each participant in the study, they each provided informed verbal and written consent.

2.9. Statistical analysis

Using SPSS 22.0 for Windows, all data were gathered, statistics were calculated and analysed (SPSS Inc., Chicago, IL, USA). The Shapiro Walk test was employed to determine whether the data distribution was normal. Frequencies and relative percentages were employed to depict qualitative data. To compare the qualitative variables, the chi-square test (2) and Fisher exact were applied., as illustrated. The mean and SD (standard deviation), respectively, were employed to express quantitative data for parametric and non-parametric data. The Independent T test and the Mann-Whitney test were used to determine the difference between quantitative variables in two groups for parametric and non-parametric variables, respectively. The two-tailed significance test was performed for each statistical comparison. $P > 0.05$ means no difference at all, level of P value 0.05 denotes a significant difference, and P 0.001 denotes a highly significant difference.

3. Results

Table 1.

There is no significant difference between the two studied groups regarding age, BMI, and parity (Table 2).

This table shows that most of patients underwent CS but without statistically significant difference between the two groups (Table 3).

There is no significant difference between the two studied groups regarding neonatal characteristics (Table 4).

This table shows that maternal outcome/complications were slightly higher in group B compared to group A but without statistically significant difference (Table 5).

Table 1. Demographic data of the two studied groups.

	Group A (N = 29)	Group B (N = 29)	t	P
Age (years)				
Mean ± SD	28.45 ± 3.24	29.17 ± 3.66	0.793	0.431
<30 years	24 (82.8%)	22 (75.9%)	0.420	0.517
>30 years	5 (17.1%)	7 (24.1%)		
BMI (kg/m ²)				
Mean ± SD	26.82 ± 1.69	27.32 ± 1.43	1.22	0.229
<25 kg/m ²	2 (6.9%)	2 (6.9%)	0.297	0.862
25–30 kg/m ²	14 (48.3%)	12 (41.4%)		
>30 kg/m ²	13 (44.8%)	15 (51.7%)		
Parity				
Primi	18 (62.1%)	20 (69%)	0.305	0.581
Multi	11 (37.9%)	9 (31%)		

This table shows that neonatal complications were higher in group B compared to group A but without statistically significant difference.

4. Discussion

Hypertensive diseases are the most commonly seen medical complications in pregnancy and have incidence between 5 and 10%. The actual incidence of preeclampsia is not known but is approximately 5–8%.⁸

Between January 2021 and June 2022, This comparison study was carried out by the Obstetrics and Gynecology Hospital of Al-Azhar University's Faculty of Medicine. In this comparative study, 58 suitable singleton pregnancies at 24 and 34 weeks that were complicated by severe preeclampsia were examined: Group (A): Consisting of 29 patients with severe preeclampsia far from term, expectant (or conservative) therapy was used. Group (B): intensive treatment was given to 29 individuals with severe preeclampsia who were not in labour (or immediate termination). Age, BMI, and parity do not significantly differ between the two study groups. Our findings corroborated those of Sibai et al. study.⁹ This included cases of severe preeclampsia in patients who were past term (28–34 weeks) and actively managed with glucocorticoid medication, with delivery occurring within 48 h. We kept track of every woman who delivered birth within 96 h after admission. Group II: Patients from the same group who received antenatal care, glucocorticoid

Table 2. Mode of delivery distribution between the two studied groups.

	Group A (N = 29) N (%)	Group B (N = 29) N (%)	χ^2	P
Vaginal delivery	4 (13.8%)	1 (3.4%)	1.98	0.372
Emergency CS	11 (37.9%)	12 (41.4%)		
Elective CS	14 (48.3%)	16 (55.2%)		

Table 3. Neonatal characteristics between the two studied groups.

	Group A (N = 29)	Group B (N = 29)	t	P
GA (weeks)				
Mean ± SD	31.42 ± 2.68	30.85 ± 2.74	0.801	0.427
Birth weight (kg)				
Mean ± SD	1.52 ± 0.364	1.64 ± 0.435	1.14	0.259
Apgar at 1 min				
Mean ± SD	5.83 ± 1.65	6.11 ± 1.46	0.684	0.497
Apgar at 5 min				
Mean ± SD	7.96 ± 1.43	7.83 ± 1.21	0.374	0.710

treatment, close monitoring of the mother and foetus, and delivery only when there were obvious maternal and foetal symptoms that persisted for more than 96 h. Age, BMI, and parity between the two study groups were not significantly different.

Similarly, in the study of Ertekin *et al.*,¹⁰ 70 pregnant women between the ages of 27 and 34 who had severe preeclampsia participated in the trial. While 37 patients were treated aggressively, 33 patients received expectant care (Group 1). (Group 2). There was no obvious difference between the two research groups in terms of parity or BMI.

Preeclampsia is an idiopathic, multiorgan disorder that only affects pregnant women and children up to puberty. characterised by proteinuria >300 mg/24 h or >1 dipstick after 20 weeks of pregnancy and blood pressure >140/90 mmHg. It accounts for 12%–18% of all maternal deaths related to pregnancy, making it the second most frequent cause of maternal death in the US. Preterm birth that is iatrogenic is primarily associated with higher perinatal mortality and morbidity.¹

The current investigation demonstrated that there is no discernible change in SBP and DBP between the two analysed groups. The two study groups did not significantly differ in terms of the standard laboratory parameters. The current investigation revealed that while there was no statistically significant difference between the two groups, the majority of patients underwent CS. According to our findings, Sarsam *et al.* study.⁶ stated that the aggressive management group underwent caesarean sections or vaginal deliveries for obstetrical and foetal reasons. 12 (30.76%) and 27 (69.23%) of the women who gave birth did so vaginally. 12 (34.28%) and 23 (65.71%) of the expectant management group's patients delivered vaginally, respectively. Between the two groups, there was no statistically significant difference. There is no discernible variation in newborn features between the two analysed groups in the study at hand. Sibai *et al.*'s study,⁹ which contradicts our findings, found that the mean birth weight in the aggressive group

Table 4. Maternal outcome distribution between the two studied groups.

	Group A	Group B		
	(N = 29)	(N = 29)		
	N (%)	N (%)		
Eclampsia	1 (3.4%)	4 (13.8%)	1.97	0.161
HELLP syndrome	2 (6.9%)	3 (10.3%)	0.219	0.640
Abnormal liver function	4 (13.8%)	7 (24.1%)	1.01	0.317
Abnormal renal function	3 (10.3%)	6 (20.7%)	1.18	0.278
Ascites	5 (17.2)	10 (34.5%)	2.25	0.134
Thrombocytopenia	2 (6.9%)	5 (17.2%)	1.46	0.227
Abruption placenta	2 (6.9%)	4 (13.8%)	0.744	0.389
Pulmonary edema	1 (3.4%)	1 (3.4%)	–	1

was 1.33 kg, compared to 1.61 kg in the expectant group. There was a statistically significant difference between the two study groups with a *P* value of 0.001. The disparities between their study and ours may be due to different inclusion criteria and sample sizes. Quintero-Ortiz et al. meta-analysis's suggests that the occurrence of Apgar scores 7 at 5 min may be lower in 11 babies getting expectant care (RR: 0.48; 95% CI). In two RCTs, it was discovered that 125 infants overall had average birthweights that were higher (I2 = 26%; CI: 0.23 to 0.99; mean difference [MD]: 254.7 g; 95% confidence interval). Expectant care may, on average, have no impact on the prevalence of caesarean sections (MD: 7.4 days; 95%CI: 6.0 to 8.9; 2 RCTs; 294 women; I2 = 42%), raise the risk of neonates who are short for gestational age (RR: 2.68; 95%CI: 1.67 to 4.30; 389 newborns; I2 = 0%), etc. and lengthen pregnancies by one week. (RR: 1%). We observed that although there was no statistically significant difference between groups A and B, group B had slightly worse maternal outcomes and issues. Our results agreed with a study by Sibai et al.,⁹ which discovered that 17% of issues in the expectant group and 11% in the aggressive group had major complications. Despite a slightly higher occurrence of challenges, anesthesiologists and ICU staff successfully manage these situations, illustrating institutional monitoring of expectant care. Statistics indicated that it had no bearing.

Table 5. Neonatal outcome distribution between the two studied groups.

	Group A	Group B	χ^2	<i>P</i>
	(N = 29)	(N = 29)		
	N (%)	N (%)		
Stillbirth	6 (20.7%)	5 (17.2%)	0.112	0.738
IUGR	5 (17.2%)	9 (31.1%)	1.51	0.220
NICU admission	11 (37.9%)	12 (41.4%)	0.072	0.788
RDS	13 (44.8%)	6 (20.7%)	3.84	0.050
IVH	1 (3.4%)	0 (–)	1.02	0.315
Neonatal sepsis	4 (13.8%)	3 (10.3%)	0.163	0.687
Fetal death	7 (24.1%)	4 (13.8%)	1.01	0.317

In a similar vein, Odendaal et al.,¹¹ found that there was no statistically significant difference between the two groups when it came to the major maternal problems that occurred: 18.4% in expectant women and 10.3% in aggressive women. According to Sarsam et al.,⁸ neither group experienced maternal mortality in terms of the outcome for the mother. Three (7.65%) individuals suffered hypertensive crises, four (10.26%) had liver problems, and seven (17.95%) patients continued to have fits after giving birth. One patient (2.56%) experienced renal failure, two (5.13%) had cardiac problems, and three (7.69%) of the patients in the group that was aggressively managed also developed pulmonary emphysema after giving birth. Two of the patients (5.13%) also had cardiac problems, three (7.5%) had DIC, and six (15.0%) had seizures (PPH). There was no statistically significant difference between the two groups. In a study by Rajani and Smitha,¹² the effects of expectant treatment on the fetomaternal outcome were assessed for early-onset severe pre-eclampsia between 24 and 34 weeks.

There was no maternal mortality. Similar findings were made by Quintero-Ortiz et al. in their analysis, which discovered that 11 newborns in expectant care may weigh more on average at birth (mean difference [MD]: 254.7 g; 95% 4 RCTs; 427 infants; CI: 98.5 to 410.9; I2 = 74%; RR: 0.48; 95% 125 newborns; 2 RCTs; I2 = 26%; CI: 0.23 to 0.99); also, they Pregnancy may be prolonged by a week on average with expectant care (MD: 7.4 days; 95%). Compared to the prevalence of caesarean procedures, neonates who are short for gestational age are more likely (RR: 6.08; 95% I2 = 42%; 2 RCTs; 294 women; CI: 6.0 to 8.9. 389 babies; 3 RCTs; I2 = 0%; CI: 1.67 to 4.30).

Churchill et al. observed¹³ that the interventionist management group's IVH frequency was higher even if the groups' Apgar ratings were similar. The conflicting findings may have been brought on by the study's use of IVH frequency as a composite endpoint (IVH and hypoxic-ischemic encephalopathy). Only one RCT's data, not three, were used in the review's analysis of the Apgar score. These systematic reviews did not consider birthweight as an outcome and only used data from two RCTs with no events to determine the maternal death rate. In the study by Sarsam et al.,⁶ the outcomes were compared between the two groups in terms of perinatal death, morbidity, and maternal morbidity. Foetal birth weight and length of stay in the NICU are examples of neonatal metrics covered here. Regarding RDS, there are noticeable differences between the two groups. Ten newborns (25.64%) in the intensively handled group passed away, eight (20.5%) from RDS, one (2.56%) from an irregular birth, and one (2.56%) from a cerebral hemorrhage.

4.1. Conclusion

According to our findings, the aggressive group had better maternal and neonatal outcomes than the expectant group, Despite the fact that the two groups did not differ statistically significantly.

Disclosure

The authors have no financial interest to declare in relation to the content of this article.

Authorship

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Conflicts of interest

The authors declared that there were NO conflicts of Interest.

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