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ORIGINAL ARTICLE

The Feto-Maternal Outcomes and Incidence of Early-and Late-Onset Preeclampsia

AYESHA NAEEM[1], SADIQ JAN[2], MUHAMMAD ALI[3], HAFSA MUBASHIR[4], SADIA HANIF[5], SUGHRA ABBASI[6]
[1]Assistant Professor of Gynaecology, Khawaja Muhammad Safdar Medical College, Allama Iqbal Memorial Teaching Hospital Sialkot
[2]Department of Gynecology, Islamic International Medical College, Rawalpindi
[3]Shalamar Medical and Dental College, Lahore
[4]Assistant Professor of Gynaecology, Sialkot Medical College, Sialkot
[5]Assistant Professor, Gynae & Obs, Poonch Medical College/ CMH Rawalakot Azad Kashmir
[6]Associate Professor, Karachi Institute of Medical Sciences, CMH
Corresponding author: Ayesha Naeem, Email: naeem1683@gmail.com

ABSTRACT

Hypertensive disorders in gestation are categorized as hypertension in pregnancy, chronic hypertension, eclampsia and pre-eclampsia. The World Health Organization states: "There are 529,000 maternal deaths annually worldwide due to pre-eclampsia and eclampsia. This study will help in determining pregnancy outcomes in early vs late-onset pr-eclampsia.

Aim: To access the pregnancy outcomes of early and late onset pre-eclampsia.

Study Design: A retrospective, descriptive and cross-sectional study

Place and Duration: In the Obstetrics and Gynecology department of Allama Iqbal Memorial Teaching Hospital Sialkot and Islamic International Medical College, Rawalpindi for one-year duration form January 2021 to December 2021.

Methods: A total 130 were admitted to the gynae ward with pre-diagnosis of pre-eclampsia were included. The cut-off value of the early and late onset PE was thirty-four weeks. Pre-eclampsia analysed < 34 weeks was labeled as early-onset pre-eclampsia and if diagnosed after 34 weeks will be labeled as late-onset pre-eclampsia. Obstetric and perinatal outcomes were assessed with version 21 of the Social Sciences Statistical Package.

Results: A total 130 were admitted to the gynae ward with pre-diagnosis of pre-eclampsia were included. The severe pre-eclampsia was observed in 48(36.9%) pregnant women and 82 women (63.1%) had no symptoms of severe pre-eclampsia. In 38 (29.2%) cases; early-onset pre-eclampsia was detected and late-onset PE in 92 (70.7%) cases. The rate of severe PE in early-onset PE has been documented in 22 (57.8%) of 38 cases, and severe PE has been reported in late-onset PE in 29 (31.5%) of 92 cases. Adverse maternal outcomes occurred in 20 cases, including 7 cases of placenta abruptio and 3 cases of eclampsia with seizure disorders.

Conclusions: The results indicate that in addition to intensive fetal monitoring in women with early-onset pre-eclampsia, attention should be paid to neurological, cardiopulmonary, and haematological parameters.

Keywords: late onset, early onset; pregnancy outcome and preeclampsia.

INTRODUCTION

Hypertensive pregnancy disorder (HDP) confounds approximately 2.74% of all gestations globally[1-2]. In Pakistan, it varies from 2.1% to 3.5%[3]. It is the main cause of perinatal and maternal mortality and morbidity. It is the chief reasons of maternal mortality in Pakistan, accounting for 17% of maternal deaths[4-5]. Pre-eclampsia (PE) can be categorized into early-onset and late-onset pre-eclampsia conferring to its onset time[6]. If pre-eclampsia occurs before thirty-four weeks gestation; it will definite as Early-onset PE and at or afterwards the thirty-four weeks gestation will be called as late-onset PE. Though the criteria of diagnosis and presentation characteristics might be the similar in both conditions, the worse outcomes may be seen in early-onset disease[7-8]. It was observed that the perinatal and maternal risk factors and outcomes were different. Currently, it is not recommended to classify PE as mild to severe on the basis of clinical and laboratory parameters, as it may be confusing because of less experience and because Pre-eclampsia is an emerging disease and can transform from one form to other[9-10]. The new system of classification for Pre-eclampsia as late or early-onset disease is more analytical of adversative outcomes during pregnancy. Therefore, this study was directed to access the pregnancy outcomes of early and late onset pre-eclampsia.

METHODS

This study was retrospective, descriptive and cross-sectional study with an assessment of medical records held in the Obstetrics and Gynecology department of Allama Iqbal Memorial Teaching Hospital Sialkot and Islamic International Medical College, Rawalpindi for one-year duration form January 2021 to December 2021. The study included patients with pre-eclampsia who reported to the Gynecology and Obstetrics department. The Local Ethics Committee approved the study. Blood pressure ≥ 140 mmHg and / or diastolic blood pressure (DBP) ≥90 mmHg recorded at least 2 times with minimum 4 hours difference was labeled as hypertension. Pregnant women with high blood pressure on admission to the emergency department were hospitalized for obstetric supervision with a pre-diagnosis of pre-eclampsia. Pre-eclampsia is definite as ≥140 mmHg of SBP and ≥90 mmHg of DBP afterwards twenty weeks of pregnancy in pregnant women with previous normal blood pressure, newly diagnosed proteinuria, or any serious feature of pre-eclampsia such as "thrombocytopenia, renal failure (serum creatinine levels > 1.1 mg / dl) "," abnormal liver function (increase in liver enzymes to twice the normal level, associated with pain in the upper abdomen or right upper quadrant), Pulmonary edema, new-onset or visual disturbance according to ACOG 2013 parameters. Proteinuria was defined as urinary protein strip test ≥1 (+). All PH cases were alienated into 2 groups dependent on the severity of clinical symptoms; Severe PE and pre-eclampsia without severe features. All PE had other classification that could be termed early and late-onset pre-eclampsia dependent on the disease onset. Severe pre-eclampsia was definite as ≥160 mmHg of SBP or ≥110 mmHg of DBP with the other severe pre-eclampsia features as mentioned above. Pre-eclampsia analysed < 34 weeks was labeled as early-onset pre-eclampsia and if diagnosed after 34 weeks will be labeled as late-onset pre-eclampsia. The information on maternal age, number of deliveries, serum creatinine, platelet counts, laboratory parameters such as aspartate transaminase (AST), alanine aminotransferase (ALT), urine protein on admission, clinical symptoms and demographic characteristics patients with pre-eclampsia were obtained from the medical records. Information on previous chronic diseases such as chronic hypertension, kidney disease and diabetes were also collected and recorded. In addition, adverse maternal outcomes were defined as disseminated coagulopathy, placenta abruption, eclampsia, blood transfusion required for obstetric haemorrhage, length of hospital stay, and maternal mortality. Antihypertensive drugs such as methyldopa, nifedipine, metoprolol tablets, or drug combinations

were prescribed when hypertension occurred on discharge. The drug combination consisted of methyldopa and nifedipine tablets or methyldopa and metoprolol tablets. Conferring to the last menstruation period date; Gestational age was determined (LMP) and verified by first trimester US. Low Apgar scores were defined as less than 7 points predicted at 5 minutes of life. Apgar results were recorded after 5 minutes. Neonatal mortality was defined as death that occurred in the neonatal period, ie, from live birth to the 28th day of gestation, at or after 22 weeks of gestation. Fetal outcomes such as birth Apgar scores, NICU requirements, birth weight and neonatal death were obtained and recorded. The presence of any evidence of adverse maternal or fetal outcome was considered a poor obstetric outcome. Data was analyzed using SPSS 22.0 software.

RESULTS

A total 130 were admitted to the gynae ward with pre-diagnosis of pre-eclampsia were included. The severe pre-eclampsia was observed in 48(36.9%) pregnant women and 82 women (63.1%) had no symptoms of severe pre-eclampsia. In 38 (29.2%) cases; early-onset pre-eclampsia was detected and late-onset PE in 92 (70.7%) cases. The rate of severe PE in early-onset PE has been documented in 22 (57.8%) of 38 cases, and severe PE has been reported in late-onset PE in 29 (31.5%) of 92 cases.

Table 1: The demographic profile of the patients is shown in Table 1

	mean (±Sd)	min-max
Age (year)	30.20 (5.95)	17-48
Gestational age at diagnosis (week)	36.21 (4.01)	23-42
Gestational age at delivery (week)	34.61 (4.12)	23-42
Maximal DBP at admission (mm/Hg)	101.51 (13.08)	82-154
Maximal SBP at admission (mm/Hg)	161.20 (22.42)	127-225

30 years was the patients mean age, of which 58.5% were primipara. Adverse maternal outcomes occurred in 20 cases, including 7 cases of placenta abruptio and 3 cases of eclampsia with seizure disorders. The need for a blood transfusion (n: 12) is the most common maternal undesirable outcome.

Table-2: shows the Patients gravida status and usage of antihypertensive drugs among them

	n	%
Primiparity	76	58.5
Multiparity	54	41.5
Previous history of preeclampsia	8	6.2
Prescribing antihypertensive drug at discharge	48	36.9
Methyl-dopa tablet	20	41.7
Nifedipine tablet	10	20.8
Metoprolol tablet	10	20.8
Drug combination	8	16.7

Table-3: shows the maternal and perinatal outcomes

	No	%
Maternal complications	20	15.4
Perinatal outcome	mean (±Sd)	min-max
Birthweight g	2364 (893)	508-4380
	n	%
IUGR	13	10
SGA	14	10.8
Admission to NICU	62	47.7
Low Apgar score	28	21.5
Death	15	11.5
Poor obstetric outcome	85	65.4

Hypotensive drugs were prescribed at discharge in 36.9% of patients (Table 2). The most common adverse fetal outcomes were ICU need, low Apgar score, and neonatal death. The mean birth weight was 2364 g, and SGA and IUGR were detected in 10.8% (n: 14) and 10% (n: 13) of new-borns, respectively. Regarding BP, there was no statistical difference between the late and early preeclampsia groups. Liver enzymes such as ALT, AST and proteinuria were higher significantly in the severe early-onset group with pre-eclampsia in comparison with the mild pre-eclampsia and late-onset group. 33 weeks was the mean gestational age at diagnosis in the group with severe pre-eclampsia and was suggestively lesser than in the non-severe pre-eclampsia group.

The hospital stay was longer in the group with early onset eclampsia in comparison to the group with late onset eclampsia.

Table 4: The study group data on maternal and neonatal clinical outcomes are presented in Table-IV

	Early-onset preeclampsia N:38	late-onset preeclampsia N:92	p-value	Severe preeclampsia N:51	Without severe features preeclampsia N:79	p-value
At diagnosis of Pre-Eclampsia						
SBP mm Hg (±SD)	160.37 (24.71)	155.12 (30.11)	0.7	164.04 (25.67)	151.70 (30.42)	0.02
DBP mm Hg (±SD)	130.18 (11.72)	129.78 (16.52)	0.89	106.87 (15.21)	98.5 (10.52)	0.06
ALT Level U/L (±SD)	39.48 (41.67)	21.28 (30.69)	0.004	41.71 (55.81)	17.12 (17.42)	0.02
AST U/L Level(±SD)	61.92 (91.80)	32.97 (41.22)	0.02	65.89 (96.90)	27.25 (20.29)	0.02
Proteinuria dipstick (±SD)	4 (3.01)	2.44 (1.89)	0.31	3.48 (2.48)	2.21 (1.82)	0.003
Gestational age week (±SD)	31.44 (2.57)	35.51 (1.32)	0.002	32.45 (4.85)	37.45 (3.24)	0.002
Time from diagnosis to delivery/day (±SD)	1.84 (4.78)	0.55 (1.20)	0.002	1.24 (3.8)	0.70 (1.30)	0.82
Time to discharge from delivery/day (±SD)	4.37 (1.91)	3.60 (1.65)	0.0002	4.10 (2.89)	3.60 (1.40)	0.008
Fetal outcome						
APGAR 5th min (±SD)	5.1 (2.4)	9.1 (2.1)	0.0002 0.0002 0.0003	7.2 (2.5)	8.7 (2.1)	0.0004
Birthweight g (±SD)	1434 (538.28)	2815 (710.67)	0.0001	1921 (820.31)	2645.30 (830.26)	0.002
Need NICU[5] n(%)	34 (89.5%)	30 (32.6%)		32 (62.7%)	35 (44.3%)	0.010
Death n(%)	15 (39.5%)	5 (5.4%)		10 (19.6%)	6 (7.6%)	0.02

DISCUSSION

In our study, 38 (29.2%) cases were of early-onset PE and 92 (70.7%) cases of late-onset PE among all births. Similar findings were reported in patients with PE with early onset between 32-34.6% and late onset between 65.3-67.7% by Gohar S et al and Shankar P et al[11-12]. Early-onset PE has been observed to have a slightly lower incidence in various studies. As a result, compared to early and late-onset PE is a more prevalent[13]. Females with early-onset PE had an advanced age in comparison to late-onset PE. Many pregnant females experience early-onset PE much frequently than late-onset PE, according to Gomathy et al[14]. Late and early onset PE in multigravida were prevalent in other study. Different study results could be the due to different research environment. For early and late-onset PE, respectively, the mean age of pregnancy in our study was 30 weeks and 38 weeks. The gestational age at early onset PE, according to numerous other researches is 30 weeks[15-16]. In other trials like ours, the gestational

age at the start of the late-onset illness was 36 to 37 weeks[17]. Early-onset disease was found to be more prevalent in terms of the involvement of internal organs and systems, particularly the proteinuria and renal system[18]. These findings are comparable with those of other studies. In another study, proteinuria was more typical in late onset PE. This could be as a result of the fact that not all organ systems were involved and evaluated, as in our analysis, which solely considered proteinuria as a diagnostic criterion[19-20]. In contrast to prior studies, the hematological system and liver involvement were nearly identical in both groups. This is due to the fact that the most recent 2018 ISSHP guidelines condense the importance of hepatic and hematological indicators in the diagnosis of PE[21]. Thus, the women diagnosed with PE in this study, minor abnormalities in liver enzymes or platelets observed in both groups. The liver enzymes levels or platelets in the both groups were not further evaluated[22]. Both groups exhibited the neurological involvement and eclampsia at same levels as in the other researches. Eclampsia with advanced nervous system involvement have been studied in numerous studies[23]. The use of MgSO4 was comparable between the two groups in our study, in comparison to the findings of earlier studies[24]. Like prior studies, our analysis found that early-onset patients take more antihypertensive medications than late-onset patients do. Due to the higher prevalence of severe PE in the early stages of the disease in our investigation, MgSO4 was also used. In other studies, severe PE was much prevalent in early PE in comparison to late-onset PE[25].

In our study, early-onset PE had worse perinatal outcomes than late-onset PE. In the early onset PE, the mean birth weight was less. In our study, perinatal death, Apgar scores of less than 7 per minute and 5 minutes, low birth weight were substantially more common in the early-onset PE as compared to late-onset PE. Similar to this, numerous analyses have found that early-onset PE had worse perinatal outcomes than late-onset PE. Throughout the course of the study, there were variations in the numbers of patients in the two groups. The analysis may become a little biased as a result. Stronger recommendations will arise from a larger study with more research sites and a broader patient population.

CONCLUSION

In summary, early-onset pre-eclampsia differs from late-onset pre-eclampsia mainly in terms of adverse maternal and feto-placental conditions and serious complications. The observed higher FGR indices and vascular flow disturbances indicate a significant role of the impairment of placenta in the etiopathogenesis of the early form of pre-eclampsia. The results indicate that in addition to intensive fetal monitoring in women with early-onset pre-eclampsia, attention should be paid to neurological, cardiopulmonary, and haematological parameters.

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