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Obstetric outcome in antenatal women with Early onset Preeclampsia and Late onset Preeclampsia.

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1. INTRODUCTION

Preeclampsia is defined as a systemic syndrome characterized by the new onset of raised blood pressure >140/90mmHg & either proteinuria or end-organ dysfunction after 20 weeks of gestation in a previously normotensive, non-proteinuric women. It involves multiple organ systems & many pregnancy complication. It complicates 2-10% of pregnancies.[1] In recent years, there is a new disease classification based on onset timing consisting of early-onset preeclampsia (EOPE) occurring before 34 weeks of gestation & late-onset preeclampsia (LOPE) occurring at or after 34 weeks of gestation.[1]

Preeclampsia is the second-leading cause of direct maternal death & is directly responsible for 70,000 maternal deaths annually at global level. In low & middle-income countries, 10-15% of direct maternal mortalities are associated with preeclmapsia. Both Early Onset & Late Onset Preeclampsia have considerable adverse impacts on maternal & fetal health.[2] This study aims to compare the obstetric outcome between these 2 types of preeclampsia.

The cascade of events leading to hypertensive disease of pregnancy is characterised by abnormalities that result in systemic vascular endothelial damage with resultant vasospasm, transudation of plasma, & ischemic & thrombotic sequelae.[3]

Pathophysiology of preeclampsia

1. Placental implantation with abnormal trophoblastic invasion of uterine vessels.
2. Immunological maladaptive tolerance between maternal, paternal (placental), & fetal tissues.
3. Maternal maladaptation to cardiovascular or inflammatory changes of normal pregnancy.
4. Genetic factors including inherited predisposing genes & epigenetic influences.

Early onset preeclampsia is due to Abnormal trophoblastic invasion of uterine vessels, Immunological maladaptive tolerance between maternal, paternal (placental), and fetal tissues, Maternal mal-adaptation to cardiovascular or inflammatory changes of normal pregnancy, Genetic factors including inherited predisposing genes and epigenetic influences. While late onset preeclampsia is due to increased body mass index (BMI), increased gestational weight gain, metabolic syndrome, maternal age and cardiovascular system involvement.[3]

Risk factors for preeclampsia include Nulliparity, Age>35years, Prior still birth, Chronic kidney disease, Artificial reproductive techniques, BMI>30, Multifetal conception, Prior abruption, Diabetes, Prior Preeclampsia, Chronic Hypertension, Antiphospholipid antibody, Systemic Lupus Erythematosus (SLE).[3]

Some studies show that Early Onset Preeclampsia (EOPE) had more adverse obstetric outcome as compared to Late Onset Preeclampsia (LOPE).[4-12]

Some show that Late Onset Preeclampsia (LOPE) had more adverse obstetric outcome than Early Onset Preeclampsia (EOPE).[13-15]

While some showed that there was no statistical difference in obstetric outcome among Early Onset Preeclampsia & Late Onset Preeclampsia.[16,17]

In recent times, there is an increase in the age of marriage, increase in obesity & increase in cases of infertility, as a result more women are opting for artificial reproductive techniques for conception, due to which conception with multiple pregnancy is on an increase.

Overall changing trends of women's lifestyle as that of decades ago. There may be pre-existing hypertension in such women with rise in Early onset preeclampsia as well as late onset preeclampsia. So, this study was conducted to know the obstetric outcome in Early Onset & versus Late Onset Preeclampsia

2. REVIEW OF LITERATURE

Hale Teka et al. (2023), Ethiopia- published clinical presentation, maternal-fetal & neonatal outcomes of early – onset vs late-onset pre-eclampsia syndrome in a teaching hospital: a retrospective cohort study, N=1095, concluded that women with early-onset disease are at increased levels of unfavourable maternal outcomes.[4]

Kazuma Onishi et al. (2023),Japan -published comparison of adverse maternal outcomes between early- & late onset superimposed pre-eclampsia, N=311, concluded that women with EOPE had higher odds of adverse maternal outcomes compared with those with LOPE.[5]

Pooja Wadhwani et al. (2019), Chandigarh, INDIApublished a study to compare maternal & perinatal outcome in early vs late onset pre-eclampsia, N=300, concluded that women with EOPE had more adverse outcomes than those with LOPE, but the difference was not statiscally significant.[6]

Birhanu Jikamo et al. (2022), Ethiopia- published incidence of adverse perinatal outcomes & risk factors among women with pre-eclampsia, a prospective open cohort study N=536, concluded that more adverse perinatal outcomes were observed among women with severe features,admitted to the hospital at <34weeks.[2]

Junu Shreshtha etal, (2021) Pokhra, Nepal, published pregnancy outcome in early vs late onset preeclampsia, N=42, concluded that maternal & perinatal outcomes were poor in early onset as compared to late onset pre eclampsia.[11]

Lemi Tolu et al. (2020), Urban Ethiopia- published maternal & perinatal outcome of preeclampsia without severe feature among pregnant women managed at a tertiary referral hospital, N=5400, concluded that EOPE was associated with increased risk of developing adverse maternal & neonatal outcomes compared to LOPE after 34 weeks.[8]

Kartik Venkatesh et al. (2020), USA- published a retrospective analysis, N=2217, concluded that EOPE was not associated with an increased risk of adverse maternal & neonatal outcomes as compared to LOPE.[17]

Ivana Chandra et al. (2018), Jiangsu, China- published preterm & term preeclampsia: differences in biochemical parameter & pregnancy outcomes, N=185, concluded that EOPE significantly correlated with higher incidences of perinatal morbidities than LOPE.[7]

Pournima Shankar et al, (2018), Tamil Nadu, INDIA- publsihed maternofetal outocmes in early vs late onset pre-eclampsia a comparative study, N=208 concluded that patients with early onset pereclampsia are shown to have significantly more adverse outcomes than those having late onset preeclmapsia.[12]

Karuna Das et al. (2018), INDIA- publsihed a study risk factors associated with early onset versus late onset preeclampsia & its fetomaternal outcomes, N= 200, concluded that there was no statistical difference in outcomes of early vs late onset preeclampsia.[15]

Silvia Lacobelli et al. (2017), Reunion island- published comparison of risk factors & perinatal outcomes in early onset & late onset pre-eclampsia a cohort based study, N=62,230, concluded that no difference was detected in perinatal outcomes between early- & late onset preeclamptic women.[16]

Minxue Shen et al. (2017), Finland, published comparison of risk factors & outcomes of gestational hypertension & preeclampsia, N=8085, concluded that women who developed pre-eclampsia late were at a higher risk.[14]

Sreedevi et al. (2017), INDIA- published a comparative study of maternal & perinatal outcome in early onset & late onset preeclampsia, N= 158, concluded that early onset is a more severe entity than late onset pre eclampsia.[10]

Umran Gulec et al. (2013),Turkey- published comparison of clinical & laboratory findings in early- & late-onset preeclampsia, N=157, concluded that EOP is a distinct & more severe clinical entity than LOP.[6]

Zi Yang et al. (2006), China- published study on different onset patterns & perinatal outcomes in severe preeclmapsia, N=173, concluded that clinical delimitation of EOPE is significantly associated with poor maternal & perinatal outcomes.[9]

3. DISCUSSION

Preeclampsia is characterized by the emergence of hypertension and either proteinuria or end-organ dysfunction occurring after 20 weeks of gestation in women who were previously normotensive.[17] This condition affects multiple organ systems and is exclusive to pregnancy. Preeclampsia complicates 2–10% of pregnancies[18] and is one of the leading causes of maternal mortality and severe maternal morbidity. Additionally, infants born to mothers with preeclampsia face a heightened risk of neonatal morbidity and mortality.[19-21] Therefore, it is crucial to detect and manage the disease early to mitigate its global impact.

In accordance with the updated terminology (ACOG 2014), preeclampsia that does not show signs of end-organ damage is referred to as preeclampsia without severe features. Conversely, the presence of end-organ damage is what distinguishes severe preeclampsia. Recently, a novel classification of the disease based on the timing of onset has emerged, which includes early-onset preeclampsia (EO-PE) that occurs before 34 weeks of gestation and late-onset preeclampsia (LO-PE) that occurs at or after 34 weeks of gestation.[22-24] The diagnostic criteria remain consistent for both EO-PE and LO-PE; indeed, this straightforward classification offers more favorable prognostic implications compared to the traditional mild versus severe terminology.[25]

Wadhwani P et al[1] examined the effects of early- and late-onset preeclampsia on maternal and perinatal outcomes as well as the known risk factors of preeclampsia. One hundred and fifty women with preeclampsia were consecutively enrolled in each group. Those who developed preeclampsia before 34 weeks of gestation were identified as having early-onset preeclampsia, while those who developed at 34 weeks or later were identified as having late-onset preeclampsia. Maternal and perinatal outcomes were compared between groups. Compared with the late-onset group, the early-onset group had higher rates of abruptio placentae (16% vs. 7.3%; *P*=0.019), but there was no intergroup difference in the composite maternal outcomes. A significantly higher number of women with early-onset preeclampsia developed severe features during the disease course, and most required treatment with antihypertensive drugs. Late-onset preeclampsia was more prevalent among primigravid mothers. Babies born to mothers with early-onset preeclampsia had a significantly higher rate of adverse outcomes. These study findings indicate that women with early-onset preeclampsia had more adverse outcome than those with late-onset preeclampsia, but the difference was not statistically significant. There were more babies with adverse perinatal outcomes in the early-than late-onset group.

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