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Preeclampsia: A review of diagnosis and management methods

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ABSTRACT

This study shows proper analysis on preeclampsia as a disease and the factors surrounding its occurrence,detection,and management in specific details. Preeclampsia is a pregnancy specific disease, characterised by elevated blood pressure and proteinuria with the clinical manifestation known to likely occur, during the 20th week of gestation and relapse post delivery. Only when a placenta is present does preeclampsia occur; possibly even without a foetus. This pregnancy-related ailment, which has become of global concern, is stated to be on the rise worldwide, with developing countries proving to be more susceptible to the disease. The incidence of preeclampsia globally ranges between 2% to 10% of pregnancies, studies have shown that 1.8%-16.17% of preeclampsia is recorded, basically in the Global South, while the Western countries record just 0.4% according to the World Health Organisation (WHO). Preeclampsia is caused by maternal and placental vascular disorder, and is resolved after delivery, over a varying amount of time. Major risk factors discussed include chronic hypertension, kidney dysfunction, obesity, and multiple gestation. These factors have been proven to make a pregnant woman susceptible to preeclampsia. The use of biomarkers and molecular markers such as Pregnancy-Associated Plasma Protein-A (PAPP-A), MicroRNAs, Beta-2 Microglobulin (B2M), Placental Growth Factor (PlGF) and aldosterone have been understudy for their potential to detect PE at the onset. The success of this study would help in the preventive and curative approach of managing preeclampsia and decrease the rate of foetal mortality during treatment of PE.

Keywords: Preeclampsia; Proteinuria; Hypertension; Gestation; HELLP syndrome

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INTRODUCTION

Preeclampsia, a pregnancy-specific disease defined by the occurrence of hypertension and significant proteinuria in a previously healthy woman on or after the 20th week of gestation, occurs in about 2–8% of pregnancies [1,2]. It is the most common medical complication of pregnancy whose incidence has continued to increase worldwide, and it is associated with significant maternal morbidity and mortality, accounting for about 50,000 deaths worldwide annually [3,4].

PE is usually characterised by elevated blood pressure and proteinuria, with the clinical manifestation usually occurring during the 20th week of gestation or late in pregnancy and regressing post-delivery [5]. It is grouped into two main types: Early-onset PE (occurring before 34 weeks of gestation) and late-onset PE (occurring after 34 weeks of gestation) [6,7]. Although the presenting features of early and late-onset PE may overlap, early-onset PE is associated with increased odds of complications, particularly preterm birth, foetal growth restriction and maternal morbidity compared to late onset PE.

It takes place only in the presence of placenta even without the foetus (hydatidiform mole), and typically improves postpartum [8,9]. Ischemic conditions and hypoperfusion strongly indicate a dysfunctional placenta. Preeclampsia is known to have originated from disordered vascular development of the placenta which further widely spreads anti-angiogenic factors into the maternal circulation and causes a systemic endothelial cell dysfunction and microangiopathy [10,11]. Upon kidneys, these endothelial damages result in glomerular endotheliosis and proteinuria in which the endothelial cells of the glomerulus swell and endothelial fenestrations are lost [12,13].

Distribution and incidence of preeclampsia

Pre-eclamptic incidents are on the rise worldwide, and the condition's prevalence is greater in developing countries as compared to the developed world [14]. The World Health Organisation [15] estimates that preeclampsia affects anywhere between 2% and 10% of pregnancies globally. About 1.8-16.7% of the incidents are reported in developing countries, while in developed countries, the rate is 0.4% [16]. Pakistan is a developing country and it accounts for high levels of pre-eclamptic incidents (as high

as 5%) in pregnant women [17].

In a research, which was basically conducted to evaluate the frequency of occurrence of preeclampsia, including the concomitant consequences, as well as how they affect mother as well as foetus mortality rates. In Pakistan, both mother and child mortality rates are high as a result of hypertensive disorders during pregnancy. Preeclampsia incidence in poor nations is estimated to be between 1.8 and 16.7%. In the current study, it was much lower than the peak value (3%) and also much lower than that found in another study conducted in Pakistan, in the Sukkur district, where it was 5% [18].

Contrastingly, a study done in Dhaka, Bangladesh, revealed a 14% incidence with a lower incidence in rural areas (26.1%) compared to urban areas (73%). The present study revealed a 37.8% incidence in rural areas and 62.2% in urban areas [19]. 12.4% of the patients in a study done in Ethiopia had preeclampsia. In contrast to the current study, they only included people older than 35 years because they were more likely to have preeclampsia due to poor diet, lack of knowledge, and low socioeconomic position. However, in the present study, the predominant age group was ≤24 years, which is similar to the findings by Mou et al. and also comparable with the studies conducted by [20-24].

A total of 90 individuals with preeclampsia were closely monitored for maternal and perinatal outcomes. Further research was done on these individuals' socio-demographic traits, clinical characteristics, and maternal and neonatal outcomes. The majority of the participants (62.2%) were under 24 years old and came from urban areas. Those with low income (n=40, 44.45%) and moderate income (n=42, 46.75%) were more likely to have preeclampsia than those with high income (n=8, 8.89%). 33 (36.67%) of the women in this study had a history of preeclampsia in their families. Twenty (22.23%) patients had severe preeclampsia, 32 (35.56%) had mild preeclampsia, and 38 (42.22%) had preeclampsia in its typical state. Elevated levels of blood pressure, pulse, and proteinuria were the main clinical characteristics among the individuals. A total of 46 (51.1%) study group presented with blood pressure readings around the range that was equivalent to 140/90 mmHg, compared to thrity-eight other women in the study, who had readings higher than that; this amounted to 42.3%. Six (6.7%) patients had severe hypertension. A total of 30 respondents (33.3%) had irregular pulse rates ranging from 91 to 98; 22 patients (24.5%) had had abdominal surgery in the past, which increased their risk of giving delivery too soon. Thirteen (14.5%) of the women had a history of renal disease, which is a risk factor for preeclampsia, while seven (7.8%) of the women had previously had an abortion. Based on 24 hours urine testing, the majority of the patients had protein levels in their urine that were higher than 0.3–3 g/L [25].

In this investigation, there was no maternal mortality noted. There have been reports on maternal outcomes including delivery method and clinical issues such pulmonary and renal illnesses that result in ICU admissions. When compared to vaginal births (n=33, 36.7%), caesarean deliveries were observed to occur in the majority of women (n=57, 63.4%). After giving birth, 56 patients (62.2%) totally healed without experiencing any negative side effects; 17 patients (18.9%) had low Hb levels, and seven (7.8%) had kidney infections. Six (6.6%) patients were reported to have pulmonary edema. Four patients (4.4%) had significant symptoms and were consequently admitted to the ICU for more thorough monitoring.

Educational level, occupation, and economic standards affect the rise of preeclampsia cases. A study held at the Gandhi Memorial Hospital in Ethiopia concluded that preeclampsia was associated with sociodemographic characteristics such as gestational weeks, age, and economic status. In the present study, 52.3% of patients were housewives by occupation, and this was lower (%) than the finding in the study at the El-Shatby Maternity University Hospital in Alexandria where 57.8% of women were housewives [26]. A much higher figure was observed by Mou. The risk of preeclampsia is also significantly influenced by family history. Preeclampsia ran in the families of 36.67% of the women in the current study. The obstetrical characteristics (diabetes mellitus) of the respondents were similar to the study conducted by Belay and Wudad.

It has been noted that preeclampsia risk factors are related to maternal and foetal outcomes. Premature birth and delivery methods are also impacted by elevated systolic and diastolic readings. According to several studies, severe neonatal and maternal problems might range from no to many maternal and newborn deaths. These challenges are connected to the onset and severity of the illness. A study conducted in 2022 by Wassie and Anmut on eclampsia outcomes reported three maternal deaths. This result was almost comparable to that in the study conducted in Enugu, Nigeria, which reported zero maternal deaths and less comparable with those studies where 8% and 10% of maternal deaths were reported.

The lack of maternal mortality in the study, in disparity with these two previous studies, may be explained by the timely diagnosis of the illness and prompt initiation of therapy in our cohort. This however corroborates the earlier reported Nigerian Study. Numerous maternal difficulties were noted during the research period, including kidney infection, pneumonia, and respiratory issues, with a fatality rate of zero, which is comparable to the study carried out in western Kenya. Preeclampsia-related difficulties during pregnancy led to an increase in the caesarean delivery instances in the present research (about 63.4% *vs.* 36.7%), which is comparable to the previous study's findings that a high percentage of pregnancies (more than two-thirds) resulted in caesarean sections. These authors also reported 9.4% of foetal deaths associated with severe complications, which is similar to our findings; we noted that 11.1% of neonatal deaths were due to respiratory tract syndrome,

low birth weight, and other related complications [27].

In a study conducted at the El-Shatby Maternity University Hospital in Alexandria, it was concluded that 4.4% of the babies had low birth weights, and this aligns with the findings of the present study in which 4.45% of the babies had low birth weights [28]. There are some limitations to the current investigation. First of all, because this was a hospital-based study with a small number of patients, the results cannot be broadly extrapolated to the entire community. Preeclampsia and hypertensive disorders incidence were assessed in two independent cohorts of populations, with the latter being assessed as a separate study and having a substantially lower incidence rate. Additionally, the observational design of the current study prevented it from revealing more information on the kind, amount, and scope of educational interventions that would improve understanding of preeclampsia or lessen undesirable clinical outcomes. To evaluate the potential maternal-neonatal advantages of improved dietary intake and home-monitoring therapies for pre- and post-delivery preeclampsia care, more study is also needed in this area.

Clinical diagnosis and risk factors

Preeclampsia is a pregnancy-related condition characterised by extensive endothelial dysfunction and vasospasm that typically develops after 20 weeks of gestation but can appear as late as 4-6 weeks after birth. It is clinically characterised by the presence of acute hypertension and proteinuria, regardless of severe symptoms [29].

It is brought on by maternal and placental vascular disorder, and is resolved after delivery, over a varying amount of time. The woman and child are nonetheless at elevated risk for significant morbidity or mortality given that over 90% of cases appear in the late preterm (≥ 34 to <37 weeks), term, or postpartum period and have positive maternal, foetal, and newborn survival. The remaining 10 percent of instances are preterm (<34 weeks), which is associated with a greater probability of complications for the mother, the foetus, or the newborn than preeclampsia at term and poses a further significant risk with fairly preterm, very preterm, or profoundly preterm birth [30].

The majority of patients have proteinuria for diagnostic purposes, however it is crucial to stress that if the new-onset hypertension is accompanied by particular signs or symptoms of severe end-organ failure, the diagnosis can still be made in a pregnant patient with hypertension but no proteinuria. Preeclampsia interspersed onto chronic high blood pressure is the term used to describe the condition when preeclampsia arises in a pregnant individual with underpinning significant elevated high blood pressure. More convincingly, it is described as hypertension which comes before gestation or becomes apparent a minimum of twice prior to the twentieth week of the course of pregnancy, or keeps happening for a period of time exceeding twelve weeks postpartum). It is distinguished by growing or developing hypertension that is resistant (especially initially) after the twentieth week of gestation or after delivering birth in a patient with chronic hypertension, the unexpected onset of proteinuria or an upsurge in proteinuria, and/or significant new end-organ failure.

Gestational hypertension is characterised by hypertension that appears after the twentieth week of pregnancy in a patient with a history of normal blood pressure but does not involve proteinuria or other telltale signs or symptoms of preeclampsia-related end-organ dysfunction. These patients could experience pre-eclamptic symptoms and indications in up to 50% of cases. Preeclampsia has become a medical diagnosis after the emergence of proteinuria. Patients who develop chronic hypertension or other severe disease-related symptoms, even in the absence of proteinuria, are treated similarly to preeclampsia patients with severe characteristics.

Factors that can increase a woman's risk of preeclampsia

Preexisting renal illness or persistent high blood pressure, as well as high blood pressure or preeclampsia in a previous pregnancy, can all increase a woman's chance of developing preeclampsia. Another significant risk factor is obesity. Preeclampsia in multiple pregnancies is also more common in overweight or obese women. Women over 40 are more vulnerable. Multiple gestation, or carrying more than one foetus, has also been linked to an increased risk of developing preeclampsia.

Reports show that preeclampsia incidences are more in people with African or African American ethnicity. Also, among women who have had preeclampsia before, non-white women are more likely than white women to develop preeclampsia again in a later pregnancy [31]. People with a positive family history of preeclampsia are at risk of the incident [32].

Preeclampsia is also more common among women who have histories of certain health conditions, such as migraines, diabetes, rheumatoid arthritis, lupus, scleroderma, urinary tract infections, gum disease, polycystic ovary syndrome [33], multiple sclerosis, gestational diabetes, and sickle cell disease. Pregnancies brought on by donor insemination, in vitro fertilization, or donated eggs are also more likely to be affected by preeclampsia.

Some autoimmune disorders, such as systemic lupus erythematosus and antiphospholipid syndrome, increase the risk for developing preeclampsia [34]. It is unclear why there is a connection between the two, but possible explanations include a number of mechanisms involving inflammation, microangiopathy, higher platelet turnover, and kidney dysfunction [35].

LITERATURE REVIEW

Detection of preeclampsia

Laboratory tests: For all patients with suspected preeclampsia, routine laboratory testing may include complete blood count with platelets, serum creatinine

concentration, liver chemical compositions (Aspartate Aminotransferase (AST), Alanine Aminotransferase (ALT)) and bilirubin and quantitative urinary protein level (protein to creatinine content ratio in a randomly selected urine sample or 24 hours urine collection of urine for cumulative protein).

Additional testing depends on results of initial laboratory tests and patient presentation patients with abnormal liver chemistries-Lactate Dehydrogenase (LDH) level, patients with difficulties, such as placental abruption, severe haemorrhage, a condition called thrombocytopenia, or chronic hepatic dysfunction clotting research (prothrombin period, partial thromboplastin period, fibrinogen); and patients with sudden upper abdominal or epigastric pain or those discovered to have chronic liver failure glucose, amylase, lipase, and ammonia levels can aid in differing identification. Patients with thrombocytopenia are also considered.

The utilisation of biomarkers and molecular markers

Preeclampsia identification is an active area of research, and various biomarkers and molecular markers have been studied for their possible role in early diagnosis. Some of the commonly studied biomarkers include:

Placental Growth Factor (PlGF): Reduced levels of PlGF in the blood have been associated with preeclampsia and may serve as a potential biomarker for early detection.

Solubles Fms-like tyrosine kinase-1 (sFlt-1): Elevated levels of sFlt-1, a solution-soluble receptor for a substance called vascular endothelial growth factor or VEGF, have been linked to preeclampsia. sFlt-1 acts as a decoy receptor, leading to decreased VEGF bioavailability, contributing to endothelial dysfunction.

Placental Protein 13 (PP-13 or LGALS13): PP-13 is involved in placental development, and alterations in its levels have been associated with preeclampsia.

Pregnancy-Associated Plasma Protein-A also known as PAPP-A: The protein PAPP-A is an enzyme involved in insulin-like growth factor regulation. Altered levels of PAPP-A have been observed in preeclampsia.

MicroRNAs also referred to as miRNAs: miRNAs are tiny non-coding molecules of RNA that control how genes are expressed. Specific miRNAs have shown potential as molecular markers for preeclampsia.

Beta-2 Microglobulin (B2M): B2M is a potential biomarker for preeclampsia. Beta-2 Microglobulin (B2M) is a small protein that has a part in the immune system's functioning and is present on the surface of various cells. It has been studied in the context of preeclampsia as a potential biomarker, especially in relation to renal dysfunction and glomerular injury. Some studies have revealed elevated concentrations of B2M in the urine of pregnant women with preeclampsia. The increase in B2M levels could indicate kidney involvement and glomerular dysfunction, which are common features of preeclampsia-related complications. However, B2M is not particular to preeclampsia and can be raised in other kidney-related diseases.

Research on the utility of B2M as a biomarker for preeclampsia is ongoing, and its clinical application may require further validation. As with other potential biomarkers, it's essential to interpret B2M levels in the context of the overall clinical presentation and in conjunction with other established diagnostic criteria for preeclampsia.

Aldosterone: It is a hormone that regulates blood pressure, has been investigated in the context of preeclampsia due to its role in sodium and fluid balance. Some studies suggest that aldosterone may have a function in the pathophysiology of preeclampsia. Aldosterone is a hormone generated by the adrenal glands that regulates electrolyte balance in the body, particularly by promoting sodium compounds retention and potassium discharge in the kidneys. While aldosterone is primarily known for its involvement in controlling blood pressure and fluid balance, its association with preeclampsia has also been investigated.

Some studies have explored the link between aldosterone and preeclampsia, suggesting that altered aldosterone levels may contribute to the pathophysiology of the condition. Elevated aldosterone levels during pregnancy could potentially lead to increased sodium and water retention, which might contribute to hypertension (high blood pressure) and edema (fluid retention) common symptoms of preeclampsia.

However, the role of aldosterone as a specific biomarker for preeclampsia remains a topic of ongoing research, and its clinical application for preeclampsia detection is not yet well-established. Preeclampsia is a complex condition that is caused by a number of variables, and it is diagnosed based on a combination of clinical signs, symptoms, and various biomarkers.

As with other potential biomarkers, the use of aldosterone in preeclampsia assessment would require further validation and consideration of other clinical parameters. Pregnant women suspected of having preeclampsia should always be evaluated by healthcare professionals who can conduct comprehensive assessments to ensure accurate diagnosis and appropriate management.

B-type Natriuretic Peptide (BNP): Brain Natriuretic Peptide (BNP) is a cardiac biomarker that is produced by the heart in reaction to increasing pressure as well as volume overload. It has been studied in relation to cardiac dysfunction in preeclampsia and its potential as a diagnostic marker. BNP is a hormone primarily produced by the heart in reaction to stretching of the heart muscle walls, typically due to increased pressure or volume overload. BNP commonly serves as a biomarker for diagnosing as well as monitoring cardiac arrest. However, its role in preeclampsia detection has also been explored.

Some studies have been conducted to evaluate the adoption of BNP as one potential biomarker for predicting preeclampsia, particularly for identifying women at risk of developing the condition. It has been suggested that increased BNP concentrations while pregnant may be associated with impaired cardiac function and could be a marker for preeclampsia risk.

While research shows promising results, the utility of BNP as a standalone diagnostic tool for preeclampsia is not well-established. It is essential to consider other established markers and clinical parameters in conjunction with BNP levels for a more accurate assessment.

As with any biomarker, the application of BNP in clinical practice for preeclampsia detection requires further validation and standardisation. Pregnant women with suspected preeclampsia should be evaluated by healthcare professionals who can assess multiple factors to provide an accurate diagnosis and appropriate management.

DISCUSSION

Current management methods of preeclampsia

Preventive approach: Preeclampsia's causes are still extensively debated and unclear. Consequently, it is challenging to develop a strategy for effective primary prevention at this stage. Research in the past decade has identified some major risk factors for preeclampsia, and identification and modification of these factors might result in a decrease in its frequency [36].

Prevention of preeclampsia may be primary, secondary, or tertiary [37]. In order to reduce the prevalence of the Conditions, primary prevention comprises preventing childbearing among women who are at greater risk for PE, adjusting habits, or boosting nutritional consumption across the board. Therefore, probably the majority of cases of PE are unpreventable [38]. Disrupting the disease's established pathophysiological pathways before it develops is the foundation of secondary prevention. Recent efforts have focused on the selection of high risk women and have proposed an effective intervention, as early as possible, in order to avoid the disease or its severe complications [39]. In order to prevent PE problems, therapy is necessary for tertiary prevention. For instance, magnesium sulphate is the medication of choice for lowering the incidence of eclampsia, but no less than 71 women are required to receive treatment in order to stop one case from occurring. Therefore, tertiary prevention can be difficult to achieve without exposing many to possibly unnecessary risks.

There are several studies, analyses, and protocols testing therapies for preventing preeclampsia that may be found in scientific literature. Current strategies for primary and secondary prevention focus on antenatal surveillance, modification of lifestyle, nutritional supplementation, and pharmacological therapy [40]. Despite the variety of possible prophylactic interventions described, studies have produced disappointing results [41]. When used across the community, primary therapies used in many research on PE prevention include bed rest, activity restrictions or regular exercise, dietary changes including reducing salt intake, plus antioxidants including vitamins C as well as E, garlic, alongside marine oil. Other studies are based on secondary prevention, when applied to high-risk population: Drugs such as diuretics, progesterone, nitric oxide, calcium supplementation, and aspirin.

From the second half of the twentieth century, the common treatment for eclampsia episodes has been MgSO4 (magnesium sulphate). The Magpie Trial (n=10,141), a significant international randomised placebo-controlled test of magnesium sulphate to avert eclampsia, established conclusive proof that there was an advantage for hindering eclampsia with magnesium sulphate within women for those whom there was medical doubt as to whether this medication should be given. A 58 percent reduced likelihood of eclampsia was seen in pregnant women who received magnesium sulphate (n=40) than those allocated placebo (n=96).

Generally, research in this field has focused on institutional-level interventions with magnesium sulphate (for eclampsia prevention and treatment) and parenteral antihypertensive therapy for severe hypertension [42]. Many women never enter an inpatient institution, either because they pass away at their residence on the way there, due to the fact that they already happen to be in a serious condition when they do. As a result, they often die from preeclampsia or suffer from its irreversible effects. Due to this, it is feared that if research is only allowed to focus on inpatient, facility-level therapies, maternal lives may be lost as a result of pre-eclampsia and eclampsia brought on by setbacks in triage, transit, and treatment, or also known as three delays.

Other therapies, including as food and lifestyle changes, nutritional supplements, alongside various therapies have been studied to determine their effects on pre-eclampsia. Supplementing with vitamin D may be beneficial, according to some studies, but there isn't enough solid proof from randomised controlled trials. High-dose intake of calcium while pregnant lowers the risk towards pre-eclampsia as well as preterm birth, particularly in women whose diets are insufficient in calcium (600 mg/day), according to a Cochrane comprehensive review. Women with regular dietary calcium intake shouldn't take calcium supplements, however pregnant women in areas with poor dietary calcium intake should take daily calcium supplements (1.5-2 g) instead. It is not advised to take supplements of vitamin C as well as vitamin E as they have no effect on avoiding pre-eclampsia.

Advanced maternal age, obesity, and no utilisation of prenatal care are the risk factors identified for preeclampsia [43]. Overweight and obese women have an increased risk for preeclampsia, while underweight women have an increased risk for preterm delivery [44]. There is some evidence that secondary prevention with calcium supplementation and aspirin administration during pregnancy are beneficial in women with low calcium intake, and at a very high risk of

developing severe early onset disease, respectively.

There is insufficient evidence that the risk of pre-eclampsia is reduced by supplementing vitamin B_2 or vitamins C and E [45]. A meta-analysis found associations between supplementation with vitamins C (1,000 mg) and E (400 IU) in women at risk of pre-eclampsia and some adverse effects: gestational hypertension and premature rupture of the membranes [46].

Systematic reviews found a trend towards a protective effect from leisure time or recreational physical activity during pregnancy in case-control studies [47].

Curative approach

Delivery remains the ultimate treatment for preeclampsia. Although maternal and foetal risks must be weighed in determining the timing of delivery, clear indications for delivery exist [48]. When possible, vaginal delivery is preferable to avoid the added physiologic stressors of caesarean delivery [49]. If caesarean delivery must be used, regional anaesthesia is preferred because it carries less maternal risk. In the presence of coagulopathy, use of regional anaesthesia generally is contraindicated.

Pregnant mothers with preeclampsia and premature delivery can be monitored in an outpatient environment along with regular evaluations of maternal and foetal health. Pregnant women whose behaviour is disobedient, lack easy means of receiving medical treatment, or have significant or progressing cases of preeclampsia should be admitted to a hospital or health facility for urgent medical attention. According to the Committee on Obstetric Practise ACOG [50] women who have babies that are far from term ought to receive medical care in a tertiary healthcare facility or any facility where they can have access to an expert obstetrician or family doctor who has experience managing pregnancies with elevated risks.

During labor, the management goals are to prevent seizures and control hypertension ACOG Committee on Obstetric Practice, 2002. Magnesium sulphate is the medication of choice for the prevention of eclamptic seizures in women with severe preeclampsia and for the treatment of women with eclamptic seizures [51,52]. One commonly used regimen is a 6 g loading dose of magnesium sulphate followed by a continuous infusion at a rate of 2 g per hour [53]. Magnesium sulphate has been shown to be superior to phenytoin (Dilantin) and diazepam (Valium) for the treatment of eclamptic seizures. Although magnesium sulphate commonly is used in women with preeclampsia, studies to date have been inadequate to show that it prevents progression of the disorder [54,55].

Antihypertensive drug therapy is recommended for pregnant women with systolic blood pressures of 160 to 180 mmHg or higher [56,57] and diastolic blood pressures of 105 to 110 mmHg or higher.The treatment goal is to lower systolic pressure to 140 to 155 mmHg and diastolic pressure to 90 to 105 mmHg. To avoid hypotension, blood pressure should be lowered gradually.

Although evidence about the potential adverse effects of most antihypertensive drugs has been poorly quantified, use of many of these agents is contraindicated during pregnancy [58]. Hydralazine (Apresoline) and labetalol (Normodyne, Trandate) are the antihypertensive drugs most commonly used in women with severe preeclampsia. Nifedipine (Procardia) and sodium nitroprusside (Nitropress) are potential alternatives, but significant risks are associated with their use. Note that labetalol therapy should not be used in women with asthma or congestive heart failure. Use of angiotensin-converting enzyme inhibitors is contraindicated in pregnant women [59].

In women with preeclampsia, blood pressure usually normalises within a few hours after delivery but may remain elevated for two to four weeks [60]. As previously noted, a diagnosis of chronic hypertension is made if blood pressure remains elevated at 12 weeks postpartum.

Women with preeclampsia should be counselled about future pregnancies. In nulliparous women with preeclampsia before 30 weeks of gestation, the recurrence rate for the disorder may be as high as 40 percent in future pregnancies. Multiparous women have even higher rates of recurrence.

CONCLUSION

Preeclampsia is a multisystem disorder that typically affects 2%–5% of pregnant women. PE is one of the leading causes of maternal and perinatal morbidity and mortality respectively, especially when the condition is of early onset. According to the World Health Organization (WHO), significant levels of pre-eclamptic incidents were found to be in the developing countries with about 1.8%-16.7% while the developed nations had less incidents at the rate of 0.4%. The current known and mostly used method of treatment of preeclampsia usually leads to foetal mortality. However, better management and detection techniques are still under study in order to efficiently deal with the disease. Treatment and management of preeclampsia is an active area for researchers globally, especially on biomarkers with the potential of detecting preeclampsia from the onset. This would help prevent further complications caused by late detection of preeclampsia and possibly, reduce the rate of foetal mortality due to preeclampsia in general.

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