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EDITORIAL

Eclampsia – still a nightmare in developing countries

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At the advent of progress of modern medicine, eclampsia is no more familiar term amongst the obstetrician of developed countries. But the scenario is exactly opposite in the developing world like South African countries and South Asian countries including India. Studies shows that in Eastern Indian states like West Bengal, Assam etc eclampsia is one of the leading causes of maternal deaths. There are 50,000 maternal deaths in the world every year due to eclampsia; which acclaims for 43.35% of total maternal deaths; with a case fatality rate of 4.960 % [1]. Incidence of eclampsia in the Eastern India is estimated to be 2.62 % with case fatality rate of 8.06 % [2].

Eclampsia is a complication of pre-eclampsia which itself is an obstetric complication (hypertensive disorder of pregnancy). Pre-eclampsia complicates 2-5 % pregnancies which may lead to eclampsia. There is estimated 5,00,000 fetal deaths annually globally. As compared to white women, incidence of pre-eclampsia was significantly more amongst the Afro-Caribbean and South Asian racial origin women [3].

Factors affecting eclampsia

It has been observed that certain factors are important for the development of eclampsia and its complications. These are -

Age: Younger age group e.g. 19-24 years; mostly teenage pregnancy is more vulnerable.

Parity: Primigravida are more prone to develop this complication.

Socio-economic status: Lower socio-economic group is more vulnerable.

Literacy: Illiterate and low literates are more vulnerable.

Unbooked cases who have never visited or attended any health care center are more likely to develop complication.

Causes of death in eclampsia: Out of all causes of death in eclampsia, common causes of death in Eastern India are pulmonary oedema. Other causes are cerebrovascular accident (CVA), renal failure, HELLP syndrome, disseminated intravascular coagulation (DIC) etc.

Pre-eclampsia (PE) leads to eclampsia. The following events are observed:

1. Placental hypoxia and oxidative stress.
2. Excess release of antiangiogenic and proinflammatory factors.
3. Systemic endothelial dysfunction and vasoconstriction.

These pathological changes in the maternal system leads to all manifestations and in untreated cases turned to the fatal complications.

Prediction of eclampsia/ PE:

Novel markers in PE are playing critical role in prediction and early diagnosis, viz;

1. Visfatin (NAMPT)
2. Uric acid
3. Allopurinol

Pregnancy specific micro RNAs: Software and AI using different data with addition of serum PIGF and for PAPP – A (Pregnancy associated plasma protein - A) level can predict the risk of PE.

Mirvie's blood test – Uses unique RNA signatures finds the risk for PE.

NIPT – Cell free DNA is tested, which may detect the risk level even in the 1st trimester.

Treatment of PE

Aspirin: The International Federation of Gynaecology and Obstetrics (FIGO) advises a daily dosage of 150 mg for high-risk patients starting between 11 and 14 weeks of gestation.

Magnesium sulphate: ACOG strongly recommends its use in the treatment of severe PE to prevent eclampsia. Studies established that its administration notably reduces the risk of cerebral palsy and other neurological impairments in neonates born prematurely. As per current guidelines for seizure prophylaxis in PE, Magnesium sulphate is is used as 4 – 6 gms IV loading dose over 20-30 mins, followed by continuous maintenance infusion of 1-2 gm/hr. Of course extended maternal administration beyond 5-7 days may lead to neonatal complications like osteopenia and bone fractures.

CoQ 10 supplementation: Prophylactic administration of 100 mg of CoQ 10 daily form 20 weeks gestation in high-risk group significantly lowers the risk of developing PE.

Experimental treatment of interest: There is no definite cure to PE. Several potential research approaches have emerged which may lead to improved management and outcomes. Some of them are as follows: [4]

1. Restoration of angiogenic balance.
2. Nitric oxide donors.
3. Modulation of carbon monoxide levels.
4. H2S (Hydrogen sulfide) donors.
5. Statins –Pravastatin has been associated with improved pregnancy outcomes in animal models.
6. Endothelin receptor antagonist – these are being explored.
7. Artificial intelligence (AI) and software-based screening. These are being developed for early detection and screening of PE.

Some drugs already used for other diseases are in the experimental state for use in PE, viz, PPI, metformin, sulfasalazine, sulfalcone, resveratrol, melatonin, sildenafil citrate etc.

Innovative targeted delivery system – eg. Nano particle delivery system to deliver directly to placenta and endothelium are currently being studied in animal models [5].

Life style modification in prevention of PE: Exercise (viz. Aerobic) for 30 minutes 2-7 times per week throughout pregnancy has shown a significant lower risk of gestational hypertensive disorders. Besides this, working hours, shifting duty and stress level for working ladies is also considered important for development of PE and its complications.

Diet in prevention of PE and eclampsia: Supplementation of calcium, vitamin D is found to be useful.

Mediterranean diets includes whole, minimally processed plant-based foods like fruits, vegetables, whole grains, legumes, nuts and seeds. It also includes olive oil, fish, sea foods, poultry, eggs, dairy products and herbs.

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