Methods of prevention of preeclampsia

Essay
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DEDICATION

To the spirit of my great father, my Wonderful Mother, my Husband, my Son Anas and My Daughter Arwa and My Son Ahmed

٥-٢ باللغة الأجنبية

(Key Words**):**

Preeclampsia remains a frequent and potentially dangerous complication of pregnancy. It affects between 0.4% and 2.8% of all pregnancies in developed countries and many more in developing countries, leading to as many as 8 370 000 cases worldwide per year.There currently are no well-established measures for preventing preeclampsia. Numerous clinical reports and randomized trails described the use of various methods to prevent or to reduce the incidence and severity of preeclampsia.

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ALT	Alanine aminotransferase
AST	Aspartate aminotransferase
BP	Blood pressure
CT	Computed tomography
EDRF	Endothelium derived relaxing factor
ET-1	Endothelin-1
HELLP	Hemolysis, elevated liver enzymes and low platelet count
LDH	Lactate dehydrogenase
NO	Nitric oxide
oNoo	Preoxynitrite
PA	Plasminogen activators
PAI	Plasminogen activator inhibitor
PGI_2	Prostacyclin
PLGF	Placental growth factor
sFLt 1	Soluble fms-like tyrosine kinase 1
tHcy	Total homocystein
tPA	Tissue type
TxA_2	Thromboxane A_2
uPA	Urokinase type
VEGF	Vascular endothelial growth factor

INTRODUCTION

Hypertensive disorders complicating pregnancy are common and form one of the deadly triad, along with hemorrhage and infection, that results in much of the maternal morbidity and mortality related to pregnancy ***(Cunningham et al., 2001).***

According to the National Center for Health Statistics, gestational hypertension was identified in 150.000 women, or 3-7 percent of pregnancies. ***(Martin et al., 2002)***

There are reports that almost 16 percent of 3201 pregnancy related deaths in United States from 1991 to 1997 were from complications of pregnancy –related hypertension ***(Berg et al., 2003).***

Preeclampsia is a pregnancy-specific, multisystem disorder that is characterized by the development of hypertension and proteinuria after 20 weeks of gestation ***(Sibai et al., 1998)*** .

Despite an intensive research effort to elucidate the cause of preeclampsia, there is currently no well-validated prophylactic treatment, nor is there any effective method of identifying women at risk for preeclampsia. Therefore, currently, the utility of predicting risk for the disease lies in being able to reduce that risk.

Prediction of risk will identify patients for more careful monitoring but may also identify a population that is highly suited for research into the etiology of preeclampsia and for potential treatment and prevention of disease ***(Higgins and DeSwiet, 2001)***.

Severe preeclampsia presents many unique challenges to the obstetric care provider. Because severe preeclampsia may manifest as multi-system disease, several unique therapies have been direct at the multi-system treatment of severe preeclampsia ***(Cunningham et al., 2001).***

TERMINOLOGY AND CLASSIFICATION

The term gestational hypertension is used now to describe any form of new-onset pregnancy-related hypertension. It was adopated by the working group of the National High Blood Pressure Education Program (2000), which proposed a classification system based on clinical simplicity to guide management. The classification is shown in Table 1. There are five types of hypertensive disease:

1- Gestational hypertension (formerly pregnancy-induced hypertension that included transient hypertension).

2- Preeclampsia.

3- Eclamsia.

4- Preeclampsia superimposed on chronic hypertension.

5- Chronic hypertension.

Table (1): Diagnosis of Hypertensive Disorders Complicating Pregnancy

Gestational hypertension:

BP > 140/90 mm Hg for first time during pregnancy No proteinuria
BP returns to norma < 12 weeks' postpartum
Final diagnosis made only postpartum
May have other signs or symptoms of preeclampsia, for example, epigastric discomfort or thrombocytopenia

Preeclampsia

Minimum criteria

BP > 140/90 mm Hg after 20 weeks' gestation
Proteinuria > 300 mg/24 hours or > 1+ dipstick

Increased certainty of preeclampsia

BP > 160/110 mg Hg
Proteinuria 2.0 g/24 hours or > 2+ disptick
Serum creatinine > 1.2 mg/dL unless known to be previously elevated
Platelets < 100,000/mm^3
Microangiopathic hemolysis (increased LDH)
Elevated ALT or AST
Persistent headache or other cerebral or visual disturbance
Persistent epigastric pain

Eclampsia

Seizures that cannot be attributed to other causes in a woman with preeclampsia

Superimposed Preeclampsia (on chronic hypertension)

New-onset proteinuria > 300 mg/24 hours in hypertensive women but no proteinuria before 20 weeks' gestation
A sudden increase in proteinuria or blood pressure platelet count < 100,000/mm^3 in women with hypertension and proteinuria before 20 weeks' gestation

Chronic Hypertension

BP > 140/90 mm Hg before pregnancy or diagnosed before 20 weeks' gestation not attributable to gestational trophoblastic disease

Or

Hypertension first diagnosed after 20 weeks' gestation and persistent after 12 weeks' postpartum

ALT = alanine aminotransferase; AST = aspartate aminotrans ferase; BP = blood pressure; LDH = lactate dehydrogenase. Adapted from National High Blood Pressure Education Prograr Working Group Report on High Blood Pressure in Pregnanc (2000).

Definitions:

Preeclampsia is defined as, a syndrome consisting of hypertension and proteinuria that may also be associated with myriad other signs and symptoms, such as edema, visual disturbances, headache and epigastric pain ***(Working Group of National High Blood Pressure Education Program, 2000).***

Hypertension is defined as a systolic blood pressure level of 140 mmHg or higher or a diastolic blood pressure level of 90 mm Hg or higher that occurs after 20 weeks of gestation in a woman with previously normal blood pressure on at least two occasions six hours apart ***(Working group of the National High Blood Pressure Education Program, 2000).***

Proteinuria is defined as the presence of 0.3 gm or more of protein in 24-hour urine specimen. This finding usually correlates with a finding of 1^{+} or greater but should be confirmed using a random urine dipstick evaluation and a 24-hour or timed collection ***(Working group of the National High Blood Pressure Education Program, 2000)***.

Eclampsia is defined as the occurrence of seizures in a

woman with preeclampsia that cannot be attributed to other causes ***(Working group of the National High Blood Pressure Education Program, 2000).***

INCIDENCE AND RISK FACTORS OF PREECLAMPSIA

Although the reported incidence of hypertensive complication during pregnancy varies widely due in part to difference in patient populations and diagnostic criteria, it appears that 2% - 10% of unselected gravidas will develop preeclampsia ***(Zhang et al., 1997)***. Preeclampsia develops in 5% of first pregnancies and in 1% of multigravid women ***(Davey and Mac Gillivary, 1988)***. The incidance is markedly influenced by parity; it is related to race and ethnicity- and thus to genetic predisposition, and environmental factors.

Familial and Genetic factor:

Preeclampsia is more likely to develop in women whose mothers had preeclampsia than in women whose mothers did not. The daughters-in-law who had preeclampsia are also some what more likely to have preeclampsia than other women ***(Chesley, 1980)***.

According to data on approximately 1.7 million births, a woman who becomes pregnant by a man who has already had a child with a different woman who had preeclampsia during that pregnancy has a risk of preeclampsia that is nearly twice as high as