Predictive value of The Uterine artery Doppler in pregnancies at high risk for preeclampsia

Thesis

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﴿يَرْفَعِ اللَّهُ الَّذِينَ آمَنُوا مِنكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ دَرَجَاتٍ وَاللَّهُ بِمَا تَعْمَلُونَ خَبِيرٌ﴾

المجادلة (الايه الحادية عشر)

﴿ شَهِدَ اللَّهُ أَنَّهُ لاَ إِلَهَ إِلاَّ هُوَ وَالْمَلائِكَةُ وَأُوْلُواْ الْعِلْمِ قَائِمًا بِالْقِسْطِ لاَ إِلَهَ إِلاَّ هُوَ الْعَزِيزُ الْحَكِيمُ﴾

ال عمران (الايه الثامنه عشر)

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ABSTRACT

The study was conducted to evaluate the role of uterine artery Doppler at first and second trimesters in prediction of preeclampsia by uterine artery Doppler to 150 patients and following them-up till delivery

Key Words:

Uterine artery Doppler – Preeclampsia-High risk

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LIST OF ABBREVIATIONS

ACOG	The American College of Obstetricians and Gynecologists
AUC	Area under the curve
BMI	Body mass index
D	End diastolic frequency shift
DM	Diabetes melliutes
FPR	False positive rate
GA	Gestational age
HTN	Hypertension
IUGR	Intrauterine Growth restriction
LDH	Lactated dehydrogenase
mUtA-PI	Mean uterine artery pulsatility index
MoM	Multiple of the median
n	Number
PAI	Plasminogen activator inhibitors
PI	Pulsatility index
PE	Preeclampsia
PlGF	Plasminogen activator inhibitor
RI	Resistance index
ROC	Receiver-operating characteristics
S	Systole
SD	Standard deviation
SLE	Systemic lupus erythematosus
SGOT	Serum glutamic oxaloacetic transaminase
Th	T-helper cell
TNF	Tumor necrosis factor
TTP	Thrombocytopenic purpura
US	United status
β-HCG	β human chorionic gonadotropin

Pre-eclampsia (PE) affects about 2-8% of pregnancies. Early Pre-eclampsia forms, resulting in delivery before 34 weeks of gestation, account for less than 25% of all cases of Pre-eclampsia,thus complicating only about 0.5-2% of pregnancies. However, these cases accumulate most of the worst outcomes **(sibai et al , 2005).**

About 5-10% of all pregnant women have risk factors for developing Pre-eclampsia like prior pre-eclampsia and/or intrauterine growth restriction (PE/IUGR), chronic hypertension, diabetes mellitus, chronic renal disease, certain autoimmune diseases and thrombophilias, high body mass index (BMI) and multiple pregnancy, that increase the incidence of early pre-eclampsia to 3-5%**(Catov et al , 2007) .** Therefore, about a third of the cases of early PE occur in women with thesehigh-risk factors.

However, most of these high-risk patients, which usually undergo intensified surveillance during their pregnancies, do not ever develop pre-eclampsia. Hence, the application of a screening test for pre-eclampsia in a population with a priori high-risk factors for developing pre-eclampsia may be of particular interest in order to achieve a more accurate stratification of risk**(Poon et al , 2009)**

Recently, various screening tests have been published, some of them even reporting a sensitivity and specificity >90% for the detection of early pre-eclampsia **(Harrington , 2011)**.However ,the vast majority of them has been described in general populations and has not been validated in high-risk groups.

Among these tests, one of the most promising and simple approach results from the evaluation of the sequential changes of the uterine arteries resistance between the first and the second trimester of pregnancy**(Gomezo et al , 2006 ; Plasencia et al ,2008).**

Aim of The Work

To evaluate the role of uterine artery Doppler (11-14 weeks) and (19-22 weeks) in the prediction of the development of preeclampsia (early or late) in pregnancies with prior risk factor for the development of preeclampsia(eg:previous history of preeclampsia,IUGR,diabetes,renal disease,thrombophilias,chronic hypertension,autoimmune diseases).

REVIEW OF LITERATURE

CHARTER (1)

PREECLAMPSIA

Preeclampsia a pregnancy-specific syndrome that occurs after mid-gestation, is defined by the de novo appearance of hypertension (systolic blood pressure of ≥140mmHg or diastolic blood pressure of ≥90 mmHg), accompanied by new-onset proteinuria, defined as ≥300mg per 24 hours or persistent 30mg/dl (1+dipstick) in random urine samples ***(Sibai et al., 2005)***.

As proteinuria may be a late manifestation of preeclampsia, the National High Blood Pressure Education Program (NHBPE) advises clinicians to be suspicious when de novo high blood pressure is accompanied by headache, abdominal pain (epigastric or upper quadrant), or abnormal laboratory tests, specifically low platelet count, abnormal liver enzymes or abnormal renal functions and that it is prudent to treat such patient as if they have preeclampsia ***(LaMarca et al., 2008)***.

Likewise, patients who have gestational hypertension without proteinuria but with other evidence of new end-organ involvement should be managed as if they have preeclampsia ***(Sibai et al., 2005)***.

The severity of preeclampsia is assessed by the frequency and intensity of the following abnormalities which include: diastolic blood pressure ≥ 110 mmHg, persistent proteinuria ≥ 2+, severe persistent headache; visual disturbances; upper abdominal pain, oliguria ≤ 400 ml, convulsion (eclampsia), laboratory abnormalities (abnormal serum creatinine, marked liver enzyme elevation and thrombocytopenia), fetal growth restriction and pulmonary oedema. The differentiation between mild and severe preeclampsia can be misleading because apparently mild disease may progress rapidly to severe disease ***(Cunningham et al., 2005)***.

Although hypertension is a requisite to diagnosing preeclampsia, blood pressure alone is not always a dependable indicator of its severity. However, a rapid increase in blood pressure followed by convulsions is usually preceded by an unrelenting severe headache or visual disturbances. For this reason, these symptoms are considered ominous ***(Cunningham et al., 2005).***

Epidemiological association with preeclampsia

The epidemiology of preeclampsia is complicated by differences in definitions, inaccuracy of different diagnostic criteria and poor record keeping make it virtually impossible to compare the frequency of preeclampsia in different populations from routinely collected data ***(Roberts & Gammill , 2005)***.

However, it has been reported that preeclampsia affects 2-3% of all pregnant women and has significant implications for both fetus and mother ***(Siddiqui et al., 2008).***

Maternal mortality has been reduced in the United States (US), but in countries where prenatal care is not adequate, preeclampsia/eclampsia accounts for 40% to 80% of maternal deaths, an estimated 50 000 per year. Many of these deaths may be preventable with prenatal care and evidence-based prophylactic seizure therapy ***(Roberts and Gammill, 2005).***

It is clear that death rates from the disorder are more common in developing countries. Death from preeclampsia is largely preventable. Thus, increased death rates are primarily a marker of quality of care rather than disease frequency ***(Siddiqui et al., 2008)***.