"FIRST TRIMESTER AND MIDTRIMESTER UTERINE ARTERY DOPPLER SONOGRAPHY IN PREDICTING PREECLAMPSIA AND IUGR"

ABSTRACT

AIMS AND OBJECTIVES OF THE STUDY

- To evaluate the usefulness of uterine artery doppler screening in first and mid trimester to predict the risk for preeclampsia and IUGR.
- To know the sensitivity and specificity of uterine artery Doppler indices(Pulsatility index and diastolic notching) in prediction of preeclampsia in pregnant women
- To know the outcome of pregnancy and its relation with the uterine artery Doppler indices.

MATERIALS AND METHODS

This was a prospective study involving 280 pregnant women. We excluded 30 cases because they had missing outcome data. In the remaining 250 pregnant women with gestational age 12 to 14 weeks and 20 to 26 weeks with correct LMP attending antenatal clinic at KGH Hospital, (tertiary health care centre) Triplicane & Institute of Obstetrics & Gynaecology, Egmore, Chennai, constituted the study population.

After taking the informed written consent from the pregnant women willing to participate in the study, a preliminary data was collected to include

Thorough history to know the patient demographics, gestational age and to know any high risk factors associated with the pregnancy.

BMI was calculated using the formula : weight (kg)/height (m^2).

Recording of blood pressure was done in sitting position after 10 minutes of rest the reading was repeated when above 140/90 mmHg after 4 hours.

Preeclampsia is defined as a blood pressure of at least 140/90 mmHg measured on two occasions each 4 hours apart, accompanied by proteinuria of atleast 300 mg per 24 hours, or at least 1+ on dipstick testing.

Severe preeclampsia is defined as having one or more of the following criteria:

- Blood pressure of at least 160/110 mm Hg measured on two occasions each 4 hours apart.
- Proteinuria of at least 5 g per 24 hr, or at least 3+ on dipstick testing, oliguria of less than 500ml per 24 hr.
- Cerebral or visual disturbances
- Epigastric or right upper quadrant pain
- Impaired liver function
- Thrombocytopenia
- Fetal growth restriction (defined as the condition in which the new-born has birth weight less than 10% for gestational age)

SUMMARY

- Preeclampsia is a pregnancy specific disorder of unknown aetiology accounting for 14% of maternal deaths worldwide. Incidence of this disorder is around 8-10%. Uterine artery Doppler screening meets all the requirements of a worthwhile screening program in prediction of preeclampsia. Uterine artery screening at 22 to 24 weeks gestation is superior to first trimester screening in prediction of preeclampsia and other adverse pregnancy outcomes. Despite these impressive results, few hospitals have established uterine artery screening programs in the second trimester as there is no effective preventive therapy when treatment is commenced after 24 weeks and also patients may develop adverse pregnancy outcome before 24 weeks gestation.
- A study was conducted in our hospital to know the predictive value of uterine artery Doppler to 14 weeks and 24 to 26 weeks gestation using diastolic notching and pulsatility index as the abnormal test results in both the high risk and low risk groups.
- The results showed that abnormal uterine artery Doppler had a good predictive value in predicting women who developed preeclampsia, more so in the high risk group and that

pulsatility index is a better Doppler index in the prediction of preeclampsia. This was in accordance to various other studies.

- Doppler ultrasound is anon-invasive and reliable method for prediction of preeclampsia and adverse pregnancy outcome, but currently there are no effective interventions to prevent adverse outcomes based on an abnormal result. Studies are needed to find out such an intervention. Until such time, routine uterine artery Doppler screening of women is not required. Only screening in high risk women will suffice as to be more cautious during the pregnancy.

CONCLUSION

- Preeclampsia accounts for 10% of perinatal mortality and 14% of maternal mortality and morbidity. Early recognition of women of preeclampsia will help in identifying high risk women who may benefit from early prophylaxis &enhanced surveillance.

- Abnormal uterine artery Doppler studies in the first and second trimester have been associated with subsequent adverse pregnancy outcomes including preeclampsia, fetal growth restriction, and perinatal mortality.

- Mid trimester uterine artery Doppler velocimetry can be used as a reliable screening test for prediction of preeclampsia especially in the high risk group and it helps to reduce maternal and fetal complications by elective delivery.

- Increased pulsatility index with notching in second trimester predicted overall preeclampsia in high risk and low risk patients, increased pulsatility index or bilateral notching predicted severe preeclampsia.   However the prediction is of not much use as there are no effective pharmacological treatment in preventing preeclampsia and other complications. As this is a small study, the usefulness of the uterine artery Doppler study has to be evaluated using a large cohort.

- Pre-eclampsia is significantly associated with IUGR in the low risk population.

- The mean PI cut-off which can differentiate patients who develop pre-eclampsia and IUGR was >1.6 in second trimester.

KEYWORDS :

Pre-eclampsia, Uterine Artery Doppler, Pulsatility Index, Notching, IUGR