

Project No : 3966/2009

**SCREENING FOR PREECLAMPSIA AND FETAL GROWTH RESTRICTION BY
UTERINE ARTERY DOPPLER AND PAPP-A AT 11-14 WEEKS GESTATION**

Principal worker
Col Yoginder Singh

Unit
AFMC, PUNE

OBJECTIVES

1. To identify the women at the risk of developing Preeclampsia and fetal growth restriction.
2. To identify the complications of Preeclampsia and fetal growth restriction, namely, Abruptio Placentae, Preterm delivery and Intra uterine death.
3. To correlate Uterine Artery Doppler and PAPP-A at 11-14 with adverse pregnancy outcome.

METHODOLOGY

This prospective study was conducted at a tertiary care hospital from Aug 2009 to Sep 2011. The study population consisted of 300 women reporting to OPD for the routine antenatal care at 11-14 weeks of gestation. Inclusion criteria included singleton pregnancies at 11-14 weeks of gestation. Exclusion criteria included patients with chronic hypertension, renal disease, cardiac disease, previous history of pre-eclampsia and thrombophilia. Multi-fetal gestation was also excluded from the study. When the above criteria were met, study group was subjected to uterine artery Doppler and PAPP-A estimation was done during the first trimester which was approved by the ethical committee. Written and informed consent was obtained from the participants.

RESULTS

The findings of this study demonstrated the feasibility of assessing the uteroplacental circulation by transabdominal ultrasound at 11-14 weeks of gestation. Using colorflow mapping it was possible to visualize both uterine arteries and obtain satisfactory waveforms in about 96% of the patients examined. An early diastolic notch in the waveform was observed in 75% of pregnancies. The prevalence of preeclampsia was 5%. Among the 300 studied, there were 15 patients with abnormal uterine artery Doppler study when 95th percentile was taken as a cut off. Out of these 15 patients, 6 patients developed Preeclampsia with Sensitivity of 40%, Specificity of 96.8%, and PPV of 40% and NPV of 96.8%.

CONCLUSION

Uterine artery Doppler at 11-14 weeks of gestation identifies a group of women who may develop Preeclampsia and FGR. It may not be good screening test for predicting Preeclampsia and FGR as the sensitivities were low (40% and 25%). But the positive likelihood ratio for developing hypertensive disorder was 16 and for FGR, it was 8. The sensitivity for these complications requiring delivery before 34 weeks was 100% (75% for hypertensive disorder & 25% for FGR). This shows that women with normal uterine Doppler at 11-14 weeks constitute a group that have a low risk of developing obstetric complications related to uteroplacental insufficiency, whereas women with abnormal uterine artery Doppler have an increased risk of subsequent development of such complication, in particular those requiring delivery before term.