Non invasive study of haemodynamic parameters in normotensive versus hypertensive pregnancies

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Background

• Maternal haemodynamics are compromised in pregnancy induced hypertensive disorders

• **Non invasive technologies** have become readily available for clinical use = desirable within the obstetric population

• A clearer understanding of normal cardiovascular adaptations might allow for early identification and prediction of pregnancy induced hypertensive disorders
Objectives

Evaluate the differences in cardiac function and haemodynamic parameters using point of care non invasive testing in non pregnant women and in women with normotensive and hypertensive (chronic hypertension, gestational hypertension, preeclampsia) pregnancies.
Method

• Haemodynamic data is gathered cross sectional

• Pregnancy outcomes prospectively

• Recruited normotensive and hypertensive pregnant women ≥ 20 weeks gestation with a singleton pregnancy

• A non pregnant control group
Method

• USCOM, continuous wave doppler via a user operated non imaging probe placed at the suprasternal notch

• Via entry of the patients weight, height and blood pressure a full haemodynamic profile is calculated

• Sample size: Need 59 in each group to detect a significant difference in SVR and CO
Results: Haemodynamic Data

- 168 women: 70 Normotensive, 23 chronic hypertensive, 22 gestational hypertensive, 20 preeclamptics and 33 non pregnant women

- Hypertensive - higher BSA

- GH and PE - higher gestational age

- PE higher SVR and SVRi - GH higher SVRi but not SVR

- CO and COi remained stable

- Hypertensive pregnancies = Increased MAP, sBP, dBP
Results: Pregnancy Outcomes

• Preeclampsia = early delivery and lower birth weights

• Superimposed Preeclampsia:
  
  CH: 32%
  GH: 35%
  Norm: 4%
Results: In Context

• Overall, pregnancy outcomes support what is already known, haemodynamic data contradicted previous results.

• Preeclamptic pregnancies - decrease in CO and SV followed by an increase in SVR.

• **THIS STUDY:** increase in SVR while other parameters remained stable.
Conclusions

• Significant difference in systemic vascular resistance but not over all cardiac output

• Pregnancy induced hypertensive disorders are at increased risk of preeclampsia development.

• Validate USCOM as a useful diagnostic tool in predicting which pregnancies will progress to preeclampsia