Maternal hemodynamic findings as a tool to predict the risk of Left Ventricular Hypertrophy (LVH) in pregnant women with chronic hypertension (CH)

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Objective. To evaluate the accuracy of hemodynamic parameters in predicting the risk of LVH in women with CH.

Materials and Methods. A prospective study including a cohort of singleton pregnancies with a diagnosis of CH according to ISSHP guidelines. A non-invasive hemodynamic evaluation by USCOM-1A and a trans-thoracic echocardiography were performed before 16 weeks of gestation. We also calculated the ratio between the Mean Arterial Pressure and the maternal Heart Rate (MAP/HR Ratio). LVH was diagnosed when Left Ventricular Mass Index was over 95 g/m^2. An adverse pregnancy outcome (APO) was defined in presence of one of the following complications: delivery < 32 weeks, superimposed preeclampsia, Intrauterine Growth Restriction, stillbirth.

Results. 49 women were included. Cardiac Output and Systemic Vascular Resistance showed the highest accuracy in predicting the risk of LVH (AUC 94.4 95%CI 0.86-0.99 cut-off 5.8 and AUC 94.0% 95%CI 0.86-0.99 cut-off 1387, respectively). The MAP/HR ratio also showed a good accuracy (AUC 80.6 95%CI 0.68-0.93, cut-off 1.20) while maternal age showed a fair accuracy (AUC 71.8%, 95%CI 0.57-86.0, cut-off 37.0). The incidence of an APO was significantly higher in those women with LVH (50% *vs* 18.5%, p = 0.019, OR 4.4, 95%CI 1.2-15.8).

Conclusions. Hemodynamic parameters by USCOM-1A can stratify the risk of pregnant woman with CH in presenting LVH and to identity those who are likely to have an increased risk of an APO.