

## ADDED PREDICTIVE VALUE FOR SGA OF MACHINE LEARNING ASSESSMENT OF FETAL AND MATERNAL DOPPLER IN HIGH-RISK PREGNANCIES

Pumarola C, Martinez-Egea J, Testa L, Daza M, Figueras F, Meler

Joan de Déu, Universitat de Barcelona



Institut Clínic de Ginecologia, Obstetrícia i Neonatologia (ICGON). BCNatal | Barcelona Centre de Medicina Maternofetal i Neonatal Hospital Clínic i Hospital Sant ID: 5624

## **OBJECTIVES: RESULTS:** 137 high-risk (HR) pregnancies were included. 20 women had an SGA neonate. To assess whether the addition of fetal Doppler evaluated by Fetal ultrasound was performed at 27.8 weeks (SD 0.5). Mean GA at delivery was 39.2 weeks (SD 1.6) machine learning to EFW at 27-28 weeks improves the prediction Mean EFW and median EFW centile at US were 1179 g (SD 130) and 54.4 (SD 25.3) respectively of SGA among high-risk pregnancies. Mean BW was 3223g (SD 469) and the median BW centile 47 (SD 30). **METHODS:** Prediction capacity of SGA newborns at 28 weeks 1.0 Prospective observational study including singleton pregnancies SGA (n=20) No-SGA (n=117) p-value with RCOG criteria at 2<sup>nd</sup> trimester for serial scanning 0.8 1.0 UA-PI 1.09 p=0.014 Fetal ultrasound (US) scan between 27+0 and 28+6 weeks: mUTA-PI 0.94 0.84 • Estimated fetal weight (EFW) (Hadlock-4 formula) p=0.045 - Umbilical artery (UA) PI

- Doppler evaluation
- Middle cerebral artery (MCA) PI Mean uterine arteries (mUTA) PI
- Ductus venosus (DV) PI.
- A machine learning (ML) analysis was performed off-line from waveform stored images.

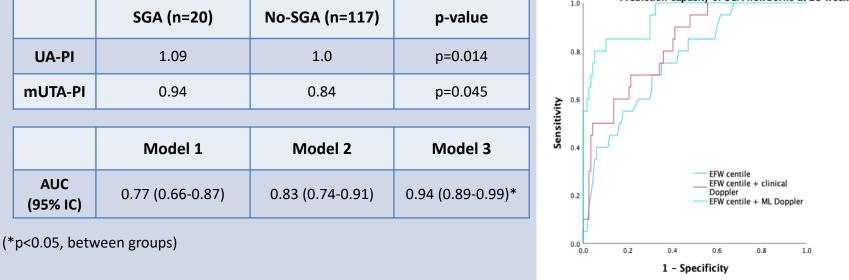
**SGA** was defined as BW <10<sup>th</sup> centile (Local curves reference)

We compared by means of ROC and AUC the predictive capacity for SGA of:

MODEL 1: EFW centile

MODEL 2: EFW centile + clinical standard Doppler

MODEL 3: EFW centile + ML derived variables



## **CONCLUSIONS:**

- UA-PI and mUTA-PI were significantly higher among SGA
- Doppler evaluation by ML adds to EFE at 28 weeks in predicting SGA among HR pregnancies

cpumarola@clinic.cat