

VP38.14

Improving Mothers for a better Prenatal Care Trial Barcelona (IMPACT BCN): randomised controlled trial study protocol

F. Crovetto¹, F. Crispi¹, R. Borrás², R. Casas⁴, A. Martín³,
E. Vieta⁵, R. Estruch⁶, E. Gratacós¹

¹Fetal Medicine Research Centre (BCNatal), Hospital Clinic and Hospital Sant Joan de Déu, University of Barcelona, Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), CIBER-ER, Barcelona, Spain; ²Institut Clinic de Malalties Cardiovasculars, Hospital Clinic, University of Barcelona, Barcelona, Spain; ³esMindfulness Institute, Barcelona, Spain; ⁴Centro de Investigación Biomédica en Red de Fisiopatología de la Obesidad y Nutrición, Instituto de Salud Carlos III, Barcelona, Spain; ⁵Department of Psychiatry and Psychology, Hospital Clinic, Neuroscience Institute, IDIBAPS, University of Barcelona, CIBERSAM, Barcelona, Spain; ⁶Department of Internal Medicine, Hospital Clinic, IDIBAPS, University of Barcelona, Barcelona, Spain

Objectives: Fetal growth restriction (FGR) affects almost 30% of high-risk pregnancies. The pathophysiology, related to several factors, includes also suboptimal maternal diet and maternal stress. Maternal lifestyle can have a role to prevent this condition. We present a protocol for the IMPACT BCN trial, which will evaluate two different maternal lifestyle strategies: improved nutrition by promoting Mediterranean diet (MD) and stress reduction program based on mindfulness technique. The primary objective is to reduce the prevalence of FGR by 30%. Secondary aims are to reduce adverse perinatal outcomes and to improve neurodevelopment and cardiovascular profile in children at two years of age.

Methods: The study is designed as randomised 1:1:1 ratio, parallel, open blind from a single centre (N=1,218). High-risk singleton pregnancies for FGR will be recruited at second-trimester ultrasound scan, and randomly allocated to one of the three arms of intervention (MD; mindfulness stress reduction program, MBSR; usual care without any intervention). Maternal sociodemographic, clinical data, biological samples and lifestyle questionnaires will be collected at enrolment and at the end of the interventions (34⁺⁰–36⁺⁶ weeks of gestation), together with fetoplacental ultrasound and magnetic resonance. Fetoplacental biological samples and perinatal outcomes will be recorded at delivery. Postnatal follow-up is planned up to 2 years of corrected age including neurodevelopmental tests, measurement of blood pressure and biological sample.

Results: Univariate and multivariate comparisons among groups will be performed based on the principles of intention-to-treat analysis. Adherence to the MD will assess by an improvement adherence of ≥ 3 points, for MBSR program class attendance (6/9). Compliance to the interventions will be specific biomarkers randomly tested in 30% of the sample size.

Conclusions: The study is conducted in accordance with the principles of good clinical practice and it has been register in clinicaltrials.gov (#NCT03166332).

VP39: FETAL GROWTH: HEMODYNAMICS

VP39.01

Maternal hemodynamics and umbilical vein flow in fetal growth restriction

D. Farsetti^{1,2}, G. Tiralongo², I. Pisani², D. Lo Presti²,
G. Gagliardi², F. Pometti¹, B. Valentini¹, B. Lupoli¹,
B. Vasapollo², G. Novelli³, H. Valensise^{1,2}

¹Obstetrics and Gynecology, University of Rome "Tor Vergata", Rome, Italy; ²Obstetrics and Gynecology, Policlinico

Casilino, Rome, Italy; ³Integrated Care Processes, Fondazione Policlinico Tor Vergata, Rome, Italy

Objectives: To test whether there is a relationship between maternal hemodynamic function and fetal hemodynamics. To verify if the assessment of umbilical vein blood flow (QUV) could predict the fetal growth rate in pregnancy affected by fetal growth restriction (FGR).

Methods: We enrolled 28 normotensive pregnant women with a diagnosis of FGR and performed the maternal hemodynamic assessment using a non-invasive method (USCOM) and US evaluation in order to obtain the sonographic estimated fetal weight (EFW) and the fetal hemodynamic evaluation by Doppler velocimetry (QUV, umbilical artery PI and middle cerebral artery PI). The maternal hemodynamic measurement and the US assessment were performed every 7 or 14 days, according to medical indications, until the delivery.

Results: The fetal growth rate (g/day) correlates positively with the QUV corrected for EFW (QUVc) ($r = 0.27$, $p = 0.02$) and QUVc centile ($r = 0.37$, $p < 0.01$). The fetal weight gain between two US evaluation is correlated with the QUVc value in the first check. The maternal hemodynamic parameters correlated with QUVc are the systemic vascular resistance (SVR) and the potential/kinetic energy ratio (PKR). Higher values of SVR and PKR are associated with lower QUVc ($r = -0.23$, $p = 0.027$ and $r = -0.22$, $p = 0.038$, respectively).

Conclusions: The value of QUV in FGR seems to predict the fetal weight gain, as measured by US, in the days following the US evaluation. The maternal hemodynamics, in particular values of SVR and PKR, seems to influence the QUV in FGR. In conclusion, according to our results, cardiovascular evaluation and QUV measurement might play a key role in the management of FGR.

Supporting information can be found in the online version of this abstract

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Biochemical markers of cardiac and placental dysfunction in pregnancies with fetal smallness

S. Ondrova, A. Dudova, L. Krofta, J. Feyereisl

Institute for the Care of Mother and Child, Prague, Czechia

Objectives: The exact mechanism responsible for fetal smallness in the third trimester of pregnancy is still unclear. Recent studies have revealed that except for pathological placentation, dysfunction in maternal cardiovascular system also plays a role. The aim of this study is to analyse laboratory markers of cardiac dysfunction and placental dysfunction in pregnant women with fetal smallness diagnosed in the third trimester.

Methods: Prospective cohort control study in 80 patients with singleton pregnancies with EFW < 10 . pt (according INTERGROWTH-21). The control group consists of 20 physiologic singleton pregnancies. Maternal serum biochemical markers: s-Flt, PlGF and copeptin were evaluated on BRAHMS KRYPTOR Compact and also other markers of cardiac dysfunction: NT-proBNP, troponin T were measured.

Results: In the compared groups there was no significant difference in age, parity and BMI. Women with SGA/FGR fetuses showed statistically higher blood pressure values either systolic or diastolic ($p = 0.005$). We found statistically significant positive correlation between blood pressure and copeptin ($p = 0.02$) and statistically significant positive correlation between copeptin and troponin T ($p = 0.000$). Statistically significant difference in markers of placental dysfunction were described: PlGF ($p = 0.000$), s-Flt ($p = 0.001$), s-Flt/PlGF ratio ($p = 0.000$). Markers of cardiac dysfunction separately showed no statistically significant difference.

Conclusions: Our study demonstrated a significant difference in markers of placental dysfunction and values of blood pressure in pregnancies with fetal smallness when compared to controls. We