association between GWG categories and complications was significant. In the second trimester (T2), GWG+1 was associated with LGA [1.48 (CI95% 0.99;2.22)]; p=0.05 and GWG-1 was associated with pre-eclampsia [0.42 (CI95% 0.17;1.01)]; p=0.05. In the third trimester (T3), GWG+1 was associated with gestational hypertension [2.35 (CI95% 1.31;4.24)]; p=0.05, and pre-eclampsia [2.12 (CI95% 1.01;4.47)]; p=0.05, whereas GWG-1 was associated with prematurity [1.73 (CI95% 1.05;2.87)]; p=0.03.
Conclusion: The impact of GWG on maternal-fetal complications differs according to trimester of pregnancy, independent of HbA1c, year of delivery, or type of treatment. More specifically, GWG+1 is associated with the development of LGA at T2 and with gestational hypertension and pre-eclampsia at T3. In contrast, GW-1 is associated with prematurity at T3. These results confirm the importance of weight management during these T1D pregnancies.
Disclosure: **M. Lemaitre:** None.

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New clinical score to predict neonatal hypoglycaemia in women with gestational diabetes

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Background and aims: Gestational diabetes mellitus (GDM) is a known risk factor for neonatal hypoglycaemia (NNH). Women with macrosomic foetus, those treated with insulin or with preterm labour are also at increased risk. We aimed to create a clinical score to predict NNH in women with GDM.
Materials and methods: Retrospective study of women with GDM with a live singleton birth between 2012 and 2017 included in the Portuguese GDM registry. We excluded women without data on NNH, body mass index (BMI), preeclampsia, gestational age at birth, new-born sex and weight, treatment approach or HbA1c. Women with and without NNH in the new-born were compared. We built a multivariate logistic regression analysis including all variables with different distribution between groups to study the predictors of NNH. Variables with independent association with NNH were used to score derivation. The performance of the model was evaluated. The prevalence of NNH in the new-born was calculated in each score interval (0-1, 2-3, 4-5, and ≥6). The association between the score (both as a continuous and as a dummy-coded variable with 0-1 as the reference category) with NNH in the new-born was accessed using a logistic regression analysis.
Results: A total of 10216 women were studied, 410 (4.0%) with a history of NNH. Women with new-born with NNH more often had chronic arterial hypertension, and family history of type 2 diabetes mellitus. They needed insulin treatment more frequently and more often had a history of preeclampsia, and preterm and caesarean deliveries. New-borns with NNH were more often male and small or large for gestational age (SGA and LGA, respectively). In the multivariate logistic regression analysis, insulin treatment, preeclampsia, preterm delivery, male sex and SGA and LGA were independently associated with NNH. Hosmer-Lemeshow test p=0.58. Points were assigned according to the model's regression coefficient: insulin therapy 1 point, pre-eclampsia 3 points, preterm delivery 2 points, male gender 1 point, and SGA 2 points or LGA 3 points. The median score value was 1.0 (1.0-2.0). The prevalence of NNH in patients with a score 0-1, 2-3, 4-5, and ≥6 was 2.8%, 5.0%, 7.6%, and 16.2%, respectively. Per each score point the OR for NNH was 1.35 (95% IC: 1.27-1.42). Compared to women with a score ≤1, those with a score of 2-3, 4-5, and ≥6 had a OR of 1.85 (1.45-2.31), 2.89 (2.14-3.91), and 6.84 (4.34-1.78), respectively.
Conclusion: Women with GDM with higher proposed score value had a higher risk of NNH. Women with a score 2-3, 4-5, and ≥6 had an almost 2-fold, 3-fold, and 7-fold higher risk of NNH compared to those with score 0-1.
Disclosure: **B. Silva:** None.

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Insulin reverts macrosomia in a mouse model of gestational diabetes

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Background and aims: SOCS2 (*Suppressor of Cytokine Signaling 2*) protein modulates cytokine-mediated metabolism of lipids, carbohydrates and growth. SOCS2 ablation in mice (*Socs2*$^{-/-}$) generates gigantism, insulin-resistance and spontaneous gestational diabetes (GDM) with macrosomia. As both conditions in *Socs2*$^{-/-}$ show high maternal (88%) and neonatal mortality rates, we aimed to evaluate the effect of insulin treatment on macrosomia.
Materials and methods: Fasting glycemia was measured (Glucomen Aero, Menarini) at every gestational third (7, 14 and 18 days (d)) in 8 *Socs2*$^{-/-}$ and 8 *C57BI/6J* control pregnant females (age: 210 ± 11 days). In addition, 8 *Socs2*$^{-/-}$ mothers received insulin (*Socs2*$^{-/-}$-ins) (0.5 U/kg, Glargine) from day 10 once daily, during pregnancy. All females were followed and offspring, if born, were evaluated for macrosomia (39 *Socs2*$^{-/-}$ postmortem-neonates, *vs* 41 *C57*-neonates *vs* 44-neonates from *Socs2*$^{-/-}$-ins). Macrosomia was previously defined as > 1.43 g birth weight. Besides, glucose metabolism was characterised in the offspring of *Socs2*$^{-/-}$-ins at 90 days, following an oral glucose tolerance test (OGTT) (2 g glucose/kg) and an intra-peritoneal insulin tolerance test (ITT) (0.5 U/Kg). Results were compared with previously obtained data from *C57* and *Socs2*$^{-/-}$ females. Mann-Whitney's U, Student's and Chi^2 test were used for comparisons.
Results: Fasting glycemia during pregnancy tends to be higher in *Socs2*$^{-/-}$ (7d: 146 ± 17.6 ; 14d: 138.5 [131,5-145,5]; 18d: 114.8 ± 21.4mg/dL) than in *C57* (7d: 133.9 ± 29.0; 14d: 113.6 ± 26.5; 18d: 109 [98-120] mg/dL) ($p = 0.059$). During treatment, mean glycemia of *Socs2*$^{-/-}$-ins was 135.6 ± 9.7 mg/dL. Neonates from *Socs2*$^{-/-}$ were heavier than neonates from *Socs2*$^{-/-}$-ins and *C57* (1.5 ± 0.03 *vs* 1.2 ± 0.2 *vs* 1.3 ± 0.1 g, respectively) ($p < 0.01$) and the prevalence of macrosomia was higher too (61.1 % *vs* 2.8 % *vs* 2.4%, respectively) ($p < 0.01$). We previously described mild glucose intolerance in 90d *Socs2*$^{-/-}$ females compared to *C57*. At 90d *Socs2*$^{-/-}$-ins female offspring show a clear worsening of this impairment, with higher glucose values for each timepoint, glucose peak and AUC, compared to *C57,* but also to *Socs2*$^{-/-}$ (peak (mg/dL): 332 ± 33.1 *vs* 260.7 ± 27.8 *vs* 286.7 ± 33.5, respectively); AUC (a.u.): 265.1 ± 15.7 *vs* 201 ± 20.7 *vs* 223.81 [212,8-234,8], respectively) ($p < 0.05$). Further, insulin resistance was also observed following ITT, shown by higher AUC and 15 minutes glucose compared to *C57* and *Socs2*$^{-/-}$ (AUC (a.u.): 112.8 ± 25.5 *vs* 89.7 ± 14.8 *vs* 85.7 ± 6.1, respectively; 15 min. glucose (mg/dL): 73 [31-115] *vs* 57.4 ± 7.6 *vs* 56.8 ± 6.2, respectively) ($p < 0.05$).
Conclusion: *Socs2*$^{-/-}$ females develop gestational hyperglycemia compared to *C57* controls. Insulin administration during pregnancy in *Socs2*$^{-/-}$ normalizes birth weight. However, the offspring of the treated

females show enhanced hyperglycemia and insulin resistance, compared to controls and untreated *Socs2*$^{-/-}$. The relationship of hyperglycemia with SOCS2 mechanisms in the development of GDM, the role of insulin treatment in the resolution of macrosomia but worsening glucose intolerance in the offspring, generates a paradox that needs to be further explored.

Supported by: ULPGC Predoctoral Contract (PIF2021-2022 ING-ARQ-2)

Disclosure: **L. Hernandez-Baraza:** None.

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Association between HbA_{1c} levels and materno-foetal complications in type 2 diabetes

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Background and aims: Despite optimisation of the management of pregnancy in subjects with type 2 diabetes (T2D), an increased risk of materno-fetal complications remains, which is at least as great as that seen in type 1 diabetes. Our aim was to examine the relationship between HbA1c levels in the 1st and 3rd trimesters of pregnancy (T1 and T3) and materno-fetal complications.

Materials and methods: A monocentric observational study was undertaken, including T2D patients who gave birth to a child between 1997 and 2021. Data on the appearance of complications was collected, including: macrosomia defined by birth weight ≥90th percentile according to AUDIPOG (large for gestational age [LGA]), prematurity, congenital malformations, and transfer to neonatal intensive care unit (NICU). The association of these complications with HbA1c levels in T1 and T3 was examined. Sub-group analysis was carried out as a function of glycemic imbalance (according to HbA1c levels) to examine its association with complications.

Results: 583 pregnancies out of 689 involved women with T2D. Women were 33.9 ± 5.4 years old and had a BMI of 34.9 ± ±7.1 kg/m2. The duration of diabetes was on average about 2 years (0; 5). HbA1c was 6.3±0.9 % in the first trimester, to 5.9 ± 0.8 % in the 2nd trimester and 5.9 ± 0.7 % (5.9; 6.9) in the 3rd trimester. HbA1c level in T1 was associated with prematurity (OR 1.39; 95% CI 1.11 - 1.75; p=0.004), and with NICU (OR 1.33; 95% CI 1.75 - 2.29; p<0.001). HbA1c level in T3 was associated with LGA (OR 2.67; 95% CI 1.75 - 4.07; p<0.001). Sub-group analysis showed, that in the case of early (T1) imbalance, for each increase in HbA1c of 0.1%, the risk of prematurity (OR 1.39; 95% CI 1.11 - 1.75; p=0.004) and admission to NICU (OR 1.75; 95% CI 1.33 - 2.29; p<0.001) were increased. In the case of late imbalance (T3), the risk of LGA was increased (OR 2.67; 95% CI 1.75 - 4.07; p<0.001).

Conclusion: This study confirms that HbA1c is associated with materno-fetal complications in T2D. In the case of early glycemic imbalance, elevation of HbA1c in T1 is associated with an increased risk of transfer to NICU and of prematurity, even when the glycemic imbalance is corrected in T3. In the case of late glycemic imbalance, HbA1c elevation is associated with an increased risk of LGA.

Disclosure: **A. Vambergue:** None.

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Association between TGFβ1 levels in cord blood and weight progress in the first year of life

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Background and aims: Adipokines are a vast group of signaling proteins secreted primarily from adipose tissue. Their likely role in fetal programming raises interest in their function during metabolic processes throughout pregnancy, particularly during pathological states. Unclear remains whether these adipokines are of maternal or fetal origin. We examined the levels of several adipokines in healthy maternal and fetal serum probes, in the interest of establishing standard values of adipokines during normal pregnancy. Furthermore, we sought to clarify the correlation of adipokine levels with associated parameters of intrauterine growth and child growth during the first year of life, and to determine whether their source is primarily of fetal or maternal origin.

Materials and methods: We investigated the levels of 11 adipokines in maternal serum at 36 weeks gestation and umbilical cord serum at birth in 79 healthy mother-child pairs. All serum probes were obtained from the LIFE Child/Pregnancy study, a large cohort study and biobank based in Leipzig with the purpose of investigating civilization diseases. Measurements were conducted using enzyme-linked immunosorbent assays. Moreover, we explored the correlation of both maternal and child adipokine levels with parameters of child growth measured at U-checkups during the first year of life (U1 at birth and U6 at 10-12 months of age). Statistical analysis was performed using GraphPad Prism and R-Studio. Maternal and cord serum levels were compared using Mann-Whitney U-test, and linear regression analyses were performed to investigate the relationship between adipokine levels and parameters of growth.

Results: Chemerin, FABP4, adiponectin (p<0.0001) and TGFβ1 (p=0.0015) levels were significantly increased in cord serum when compared with levels found in maternal serum. In contrast, leptin, RBP4, NRG4 and progranulin were significantly increased in maternal serum (p<0.0001). While cord TGFβ1 did not significantly correlate with birthweight, linear regression analyses revealed a strong positive correlation between cord TGFβ1 levels at birth and child weight (p=0.0003) as well as child weight SDS (p=0.03) at U6. Furthermore, cord TGFβ1 was significantly correlated with child weight gain from birth until ca. age one (p=0.0015). After adjustment for birthweight, this correlation remained significant. An increase of 10000 pg/ml in TGFβ1 levels in cord blood at birth was associated with a weight increase of 203.42 g at U6.

Conclusion: Circulating cord chemerin, FABP4, adiponectin and TGFβ1 appear to be of fetal origin. TGFβ1 levels in cord blood at birth are significantly correlated with child weight measured roughly at age one as well as weight gain in the first year of life. An increase of 10000 pg/ml in cord TGFβ1 levels correlated with an increase of child weight measured at U6 of 203.42g. This correlation was independent of birthweight. To our knowledge, no study thus far has demonstrated the direct correlation of a novel adipokine in cord blood at birth with child weight at one year of age.

Disclosure: **N. Kabbani:** None.