Results: High ASD risk placentas showed a lower optimal transport efficiency than the normal ASD risk group, a mean 50% less efficient at any given range of placental efficiency.
Conclusions: We previously established that the fetal-placental weight ratio of the two groups were similar, however these transport efficiency results suggest that the high autism risk group may be achieving a comparable fetal weight with a less well functioning placenta. This could cause stresses in fetal development with may have adverse outcomes not confined simply tolower fetal weight.
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P1.69
PLACENTAL MORPHOLOGY AND BIOMARKERS IN GESTATIONAL DIABETES

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Objectives: The prevalence of diabetes mellitus is worldwide increasing. The placenta is the mediator organ at the maternal-fetal interface and mirrors the variations and metabolic complexity in various subtypes of diabetes. Placental villous immaturity has been reported associated with adverse fetal outcome. We tested morphological maturation criteria and explored immune stains of glucose and lipid metabolism and vascular markers as diagnostic tool in placentas of patients with and without GDM.
Material and methods: From the multiethnic population-based STORK Groruddalen cohort, placentas from 77 patients were selected: 31 from normal weight mothers, with and without GDM, and 46 placentas from overweight/obese mothers with and without GDM, all delivered close to term. Villous stroma morphology, fetal vessels and trophoblasts were examined in HE (Hematoxylin-Eosin) and CD34 (endothelium) immune stained sections, blinded for clinical data. A panel of immunostains for glucose and lipid metabolism and vascular markers were semi-quantitatively assessed. The results were correlated to relevant clinical data.
Results: Diagnoses based on maturation criteria were not significantly correlated to clinical diagnosed GDM, BMI, hypertension, placental weight or child weight. Immunereactivity in placenta for AGE, FGF2, Glut3, IGF, PLA2 and Leptin showed significant association with GDM. Association between BMI and GDM was borderline significant.
Conclusion: Morphological criteria were not reliable for the diagnosis of GDM in placenta. The biomarkers AGE, FGF2 and Leptin all stimulate angiogenesis, and were significantly associated with GDM, as was Glut3, the major rate limiting transporter of glucose into the fetal circulation. The biomarkers should be tested in maternal blood during pregnancy for risk assessment. Additional similar studies are needed in placenta and maternal blood in the other types of diabetes mellitus.

P1.70
EXPOSURE TO MANGANESE AND LEAD DISRUPT THE HUMAN PLACENTAL SEROTONERGIC SYSTEM

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Objectives: Serotonin is crucial for placental function and fetal development. Maternal exposure to metals can interfere with the placenta functioning and fetal development. The aim of this study is to determine if low concentrations of manganese (Mn) and lead (Pb) alter placental serotonin system.
Methods and results: Birth biological samples from a cohort of pregnant women were collected and Mn and Pb levels were measured in maternal and cord blood, and placenta. Expression of placental serotonin 5-HT2A receptor mRNA is lower in high-level groups of Pb and Mn in maternal blood compared to low-level groups. Placental expression of the serotonin transporter (SERT) protein is lower in high-level group of Pb in cord blood compared to low-level group. To better understand the effect of metals on the placental serotonin system, BeWo cell line (trophoblast model) was exposed to increasing concentrations of Mn and Pb. Exposure to 1 nM of Pb reduced SERT expression by 64% in BeWo cells. SERT activity in BeWo cells exposed to Mn (1000 nM) and Pb (0.01 nM) was decreased by 30% and 52%, respectively, and was accompanied by a decrease in serotonin cell level.
Conclusion: This study shows that low concentrations of Mn and Pb affect placental serotonin system, which could disturb the proper course of pregnancy and fetal development.

P1.71
REGULATION OF THE PRO-COAGULATION FACTOR SERPINF2 BY PLACENTA-SYNTHESIZED STEROID HORMONES: IMPLICATIONS FOR PREGNANCY ADAPTATION OF THE MATERNAL COAGULATION SYSTEM

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Objectives: Preeclampsia exhibits a significant exacerbation of the hypercoagulation status, which reflects an impaired pregnancy adaptation. The present study aims to explore the underlying mechanisms of the pregnancy adaptation in maternal coagulation regulation.
Methods: Proteomic screening, transcription analysis, ChIP and luciferase assay, specific ELISA, placenta explant culture, and testosterone homolog treatment in mice.
Results: W**e** found that the circulating levels of SerpinF2, the primary physiological inhibitor of plasmin, were substantially higher in preeclamptic patients than normal controls throughout pregnancy. Transcription analysis revealed that estradiol and testosterone could act oppositely to regulate SerpinF2 expression via coordination with FoxA1/A2 in human renal cells, where SerpinF2 is principally synthesized. Accordingly, the higher concentrations of testosterone and lower estradiol level were observed in preeclamptic plasma throughout gestation, which at least in part, attributed to the aberrant production and activities of 17β-HSD3 and aromatase, the essential enzymes for androgen and estrogen synthesis, in the preeclamptic placenta. Pregnant CD-1 mice that were subjected to a testosterone homolog treatment could mimic preeclampsia-like phenotypes, and exhibited SerpinF2 over production and hypercoagulation status.
Conclusion: Taken together, the data deepen our understanding of the pregnancy adaptation of the maternal coagulation system, and provides new insight into the development of preeclampsia from the perspective of renal-placental crosstalk.

P1.72
THC SUPPRESSES HUMAN AMNIOTIC EPITHELIAL CELL MIGRATION VIA THE INHIBITION OF MMP2 AND MMP9

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Objectives: The deleterious effects of cannabis consumption for fertility and pregnancy outcome are recognized for years. Its consumption during gestation is associated with alterations in fetal growth, low birth weight and preterm labor. The main psychoactive molecule of cannabis, Δ(9)-tetrahydrocannabinol (THC) is able to cross the placenta barrier and its effects mainly mediated through cannabinoid receptors (CB1R and CB2R) . However, its effect on the human amniotic epithelial cells is unknown. Actually, the role of THC in cell migration of human amniotic epithelial cells remains to be explored.