interface affecting pregnancy metabolism, for e.g gestational diabetes and preeclampsia. This study examined the origin and molecular characteristics of the placental macrophages in women with pre-gravid obesity.

STUDY DESIGN: Eighteen overweight/obese women (pre-gravid BMI 34.9±7.2) were recruited at term elective cesarean delivery of male fetuses. Activated maternal monocytes (mono+) and placental macrophages (macro+) were isolated from venous maternal and cord blood as well as placental villous tissue and then immunoselected with CD14 coated-beads. DYS14 was used as a Y chromosome marker. Transcriptome analysis was performed with Affymetrix U133A microarrays.

RESULTS: DYS14 quantification indicated that placental macro+ were primarily of maternal genotype with only 9.4±1.2 % being of male fetal (placental) genotype. Global gene profiling identified 73 % similarity between the maternal mono+ and placental macro+ transcriptome. 885 genes were differentially regulated (fold change >2 and <2 $p<0.0001$) between placental macro+ and maternal mono+. Immune genes for both classic and adaptive cytokine responses represented the main functional cluster, suggesting a combination of M1-M2 macrophage subtypes in the placenta.

CONCLUSIONS: The maternal genotype of the placental macrophages as well as their M1-M2 immune signature suggests that they were derived from infiltration of activated maternal monocytes of obese women. These findings highlight the role of the pre-gravid environment in affecting the inflammatory responses at the maternal-fetal interface. NIH 22965

24 Prepregnancy obesity and sFlt1-induced preeclampsia: developmental programming model of metabolic syndrome

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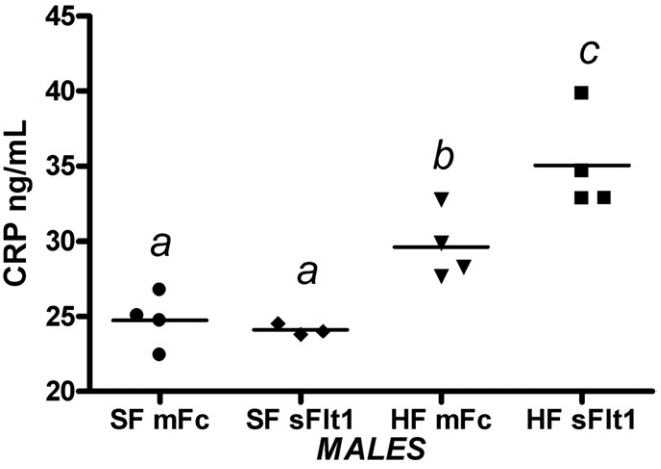
OBJECTIVE: To establish a model of fetal programming of metabolic syndrome by inducing sFlt1-overexpression and preeclampsia in pregnant mice with pre-existing obesity.

STUDY DESIGN: CD-1 female mice were placed on either standard fat (SF) or high fat diet (HF) for 3 months before they were bred with SF male. On day 8 of pregnancy, mice were injected with either adenovirus carrying sFlt1 (HF sFlt1 n=6, SF sFlt1 n=6) or adenovirus carrying mFc as virus control (HF mFc n=4, SF mFc n=7). After weaning, all offspring were placed on a SF diet. At 6 months of age, intravascular blood pressure (BP) was measured in conscious unrestrained offspring by telemetry and circulating levels of total cholesterol (Chol), triglycerides (Trigl), insulin (Ins), leptin (Lep), adiponectin (Adp), free fatty acids (FFA), C-reactive protein (CRP), interleukin-6 (IL-6) and soluble intercellular adhesion molecular-1 (sICAM-1) were determined using commercially available assays. One-way ANOVA with post hoc tests were used for statistical analysis (significance: $p<0.05$).

RESULTS: At 6 months of age males and females born to HF dams were significantly heavier. Mean BP was significantly higher in males of HF sFlt1 group with no differences between females. In males, Chol was significantly elevated in HFsFlt1, Ins, Trigl, FFA - in both HF groups, CRP in both HF groups with even higher numbers in HF sFlt1 than HF mFc group (figure), while Adp was significantly decreased in both HF groups. In females, Chol, CRP and sICAM-1 were significantly elevated in both, HF and in SF sFlt1, while Trigl, Lep, FFA - in both HF groups.

CONCLUSIONS: Exposure to maternal prepregnancy obesity and sFlt1-induced preeclampsia during pregnancy alter the offspring's blood pressure, as well as its metabolic, inflammatory and atherosclerotic profiles later in life. This fetal programming exhibits gender differences.



25 Magnesium sulphate (Mg) prevents maternal inflammation induced offspring cerebral injury evident by magnetic resonance imaging (MRI)

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OBJECTIVE: Fetal and/or maternal infectious processes may be associated with newborn neurologic injury and data suggest that Mg may protect the preterm fetus from cerebral palsy. As infection/inflammation may be etiologic in preterm labor, we sought to assess the inflammation-associated neuroprotective potential of Mg. We examined the effect of Mg on prevention of maternal lipopolysaccharide (LPS)-induced neonatal brain injury using MRI.

STUDY DESIGN: Pregnant Sprague-Dawley rats at 18 days gestation received i.p. LPS (500 μg/kg) or saline at time 0. Dams were randomized to treatment with s.c. saline or Mg (270 mg/kg loading followed by 27 mg/kg q20 min) for 2 hours prior to and following the i.p. LPS or saline. Pups were delivered spontaneously (e21) and allowed to mature until postnatal day 25. Female offspring (4-8 per group) were examined under isoflurane anesthesia by MRI brain imaging and analyzed using voxel based analysis (VBA) after spatial normalization. T2 relaxation time was used to assess for white matter injury and diffusion tensor imaging for Fractional Anisotropy (FA) comparison.

RESULTS: Offspring of LPS-treated dams exhibited (1) significantly increased T2 levels, and (2) reduced FA levels in white and gray (eg, corpus callosum, thalamus, hippocampus) matter, consistent with diffuse cerebral injury. In contrast, offspring of Mg-treated LPS dams demonstrated similar T2 and FA levels as control in both white and gray matter.

CONCLUSIONS: Mg treatment significantly reduced evidence of neonatal brain injury associated with maternal LPS. These studies suggest that maternal Mg therapy may be most effective in human preterm deliveries associated with maternal/fetal inflammation.

26 Inhibition of uterine contractility during pregnancy with various tocolytics alone or in combination with progesterone

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OBJECTIVE: Various tocolytics are presently used to suppress uterine contractility in patients in preterm labor (PTL), but there is little evidence that these agents are successful in prolonging pregnancy by more than about two days. Progesterone (P4) has also been used to treat patients at high risk for PTL. In this study, we evaluated the effects of various tocolytics with and without P4 to examine their