GENERAL

# Abstracts 1 – 8

Moderators: Joshua Copel, MD, President, SMFM; Sarah J. Kilpatrick, MD, PhD, Immediate Past President, SMFM; Norman Gant, MD

## 1 Assessment of Perinatal Outcome with Sustained Tocolysis in Early Labor (APOSTEL)

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**OBJECTIVE:** In women with threatened preterm labor a beneficial effect of sustained tocolysis has not been proven. We tested the hypothesis that sustained tocolysis reduces adverse perinatal outcome.

**STUDY DESIGN:** We performed a multicenter, double-blind, placebo-controlled trial in all perinatal centers in The Netherlands (NTR 1336, www.ntr.nl). Between May 2008 and February 2010 women with preterm labor ($26^{+0}$ and $32^{+2}$ weeks), who did not deliver after 48 hours tocolysis and a completed course of corticosteroids, were invited to participate. We excluded women with placenta previa, signs of intra-uterine infection, fetal distress, lethal congenital anomalies and maternal hypertensive diseases. After informed consent patients were randomly allocated to sustained tocolysis with nifedipine (80mg/day) or placebo for 12 days. Study medication was discontinued in case of intra-uterine infection or development of pre-eclampsia. The primary endpoint was adverse perinatal outcome, defined as a composite of perinatal death, chronic pulmonary dysplasia, necrotizing enterocolitis, neonatal sepsis, periventricular leucomalacia > grade I and intraventricular hemorrhage > grade II. Based on an expected 11% difference in adverse perinatal outcome, we randomized 406 patients (two-sided, $\alpha$ 0.05, $\beta$ 0.80).

**RESULTS:** Of 406 patients, 201 were allocated to nifedipine and 205 patients to placebo. Baseline characteristics in both groups were comparable. Gestational age at randomization was 29.2 weeks for both groups. Median prolongation of pregnancy was equal for both groups (4.8 weeks); Kaplan-Meier analysis indicated no difference in time interval to delivery (HR 1.0 [0.8 to 1.3]). Adverse perinatal outcome was not significantly different between the two groups, 9.3% in the nifedipine group and 11.6% in the placebo group (RR 0.81 [0.46 to 1.44]).

**CONCLUSIONS:** In women with threatened preterm labor, sustained tocolysis with nifedipine neither prolongs pregnancy, nor improves perinatal outcome.

## 2 Stillbirth Collaborative Research Network: genetic changes identified in stillbirths using molecular cytogenetic technology

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**OBJECTIVE:** To determine if the use of emerging genetic technology identifies gross numerical and structural chromosomal abnormalities not detected by conventional cytogenetic methods in cases of stillbirth.

**STUDY DESIGN:** Prospective, multicenter, population-based, case-control study of all stillbirths occurring in 5 geographically diverse regions with >80,000 deliveries per year from 03/06 to 08/08. Karyotype was done on fetal tissue and placental DNA was analyzed for aneuploidy and copy number changes (CNC), defined as a 500 kb deletion or duplication, using the Affymetrix SNP 6.0 genotyping array platform. CNCs were considered benign if they were present in either of two databases of known polymorphic CNCs. Pathologic CNC were defined as CNC not present in these databases and intersecting an Online Mendelian Inheritance in Man locus. All other CNCs were considered of unknown significance.

**RESULTS:** Useful data were obtained in a higher proportion of cases using the Affymetrix SNP 6.0 platform (305 of 343, 88.9%) versus karyotype (243 of 342, 71.1%). 298 stillbirths had at least one 500 kb CNC, for a total of 1319 CNC changes. Of the stillbirths' CNCs, 3.6% (n=11) were of unknown significance and 16.7% (n=51) were likely pathologic, 23 of which were aneuploidies. 13% of the cases with pathologic CNC and no aneuploidy (3 of 23) and complete cause of death review had a major structural anomaly. Of the 51 samples with pathologic CNCs, only 43.1% (n=22) were detected by karyotype. Examples of likely pathologic CNC identified but not visible on karyotype included a 2.2 Mb deletion of 22p11.21 involving the de George syndrome locus, 500 kb gain on 21 in Down's critical region including SIM2, 2.8 Mb gain of 17p telomere including the Miller-Dieker locus.

**CONCLUSIONS:** Twice the number of stillbirths have a genetic pathologic finding when using molecular cytogenetic techniques compared with coventional cytogenetics. The higher yield with use of a genotyping platform is due to the ability to analyze non-viable tissue and detect submicroscopic copy number changes not visible on karyotype.

## 3 Maternal high fat diet decreases placental blood flow and increases the frequency of stillbirth in a non-human primate model of excess nutrition

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**OBJECTIVE:** Pre-pregnancy maternal obesity confers an increased risk of stillbirth; however, the mechanisms whereby excess maternal nutrition affects the placenta are poorly understood. We used a nonhuman primate (NHP) model to determine the effect of chronic high-fat diet (HFD) on uterine and placental hemodynamics and placental histology.

**STUDY DESIGN:** A total of 24 adult female Japanese macaques were separated into 2 groups: the control (CTR) group (n=9) was fed a