

HYPERTENSION AND MEDICAL COMPLICATIONS

Abstracts 31-41

Moderators: Jeanne Sheffield, MD; Brenna Hughes, MD

31 Maternal treatment with sildenafil in a non-severe hypertensive murine model lowers maternal blood pressure without reducing fetal growth

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OBJECTIVE: Treatment of non-severe hypertension (HTN) during pregnancy is controversial. Sildenafil (SIL) is a phosphodiesterase inhibitor that potentiates nitric oxide by promoting vasodilation. Our aim was to determine whether treatment with SIL during pregnancy would lower maternal blood pressure without adversely affecting fetal growth.

STUDY DESIGN: Females with non-severe HTN (eNOS+/-) were crossbred with normotensive wild-type (WT) males. At gestational day 1 (GD1), pregnant dams were randomly assigned either to sildenafil (SIL, 0.4 mg/ml/day, comparable dose to human pregnancy) or water for 3 weeks. Four groups were generated: WT, WT-SIL, eNOS+/- (HTN) and eNOS+/--SIL (N = 5-6 per group). On GD18, systolic blood pressure (SBP) and maternal weight was measured. Dams were sacrificed, fetal and placental weights were obtained and carotid arteries isolated for in vitro vascular reactivity with wire-myography system. Responses to phenylephrine (PE), acetylcholine (ACh) and sodium nitroprusside (SNP) were studied.

RESULTS: Mean SBP was significantly elevated in the eNOS+/- (HTN) pregnant dams compared to WT controls. When treated with SIL, SBP was decreased in the eNOS+/- and WT groups treated with SIL compared to non-treated pregnant dams (p = 0.02, Figure 1). In addition, maximal vascular relaxation induced by ACh was lower in the eNOS+/- dams treated with SIL compared to eNOS+/- non-treated dams (eNOS+/--SIL: 68.5 ± 9.2 vs. eNOS+/-: 46.3 ± 8.6, p = 0.001). No differences were seen between control dams, treated and non-treated (WT: 98 ± 1.3 vs. WT-SIL: 93.5 ± 3.9). Also, no changes were observed in response to PE or SNP vasoactive agents. Moreover, fetuses from the eNOS+/- dams were smaller compared to WT controls. Interestingly, when these eNOS+/- dams were treated with SIL, fetal weights were significantly higher, similar to fetuses from WT controls (p = 0.001, Figure 2). Maternal and placental weights were not significantly different amongst groups.

CONCLUSION: Maternal treatment with SIL lowered maternal SBP and increased fetal growth in a murine model of non-severe hypertension. Treatment with SIL may be beneficial in pregnancies complicated by non-severe HTN.

Figure 2: Fetal Weight after Maternal Sildenafil Treatment

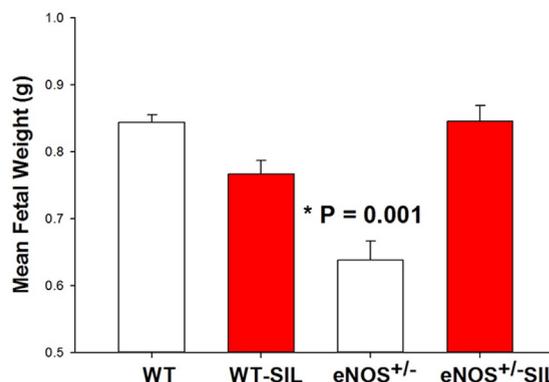
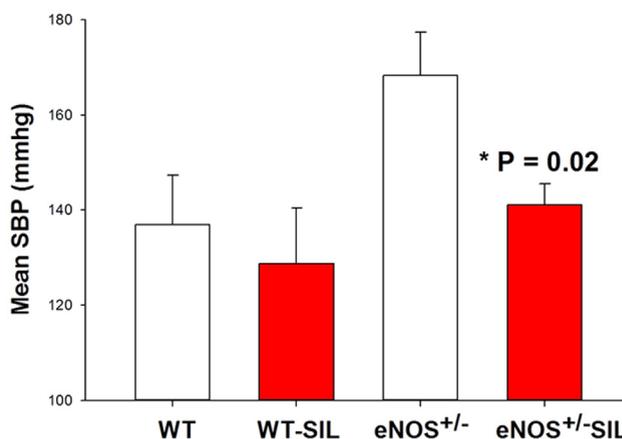


Figure 1: Systolic Blood Pressure in Pregnant Dams after Sildenafil Treatment



32 High-flavanol chocolate to improve placental function and to decrease the risk of preeclampsia: a double blind randomized clinical trial

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OBJECTIVE: Previous studies showed conflicting results regarding the role of chocolate consumption during pregnancy and the risk of preeclampsia. We aimed to evaluate the impact of high-flavanol chocolate in a randomized clinical trial.

STUDY DESIGN: We conducted a single-center randomized controlled trial including women with singleton pregnancy between 11 and 14 weeks gestation who had double-notching on uterine artery Doppler. The pregnant women selected were randomized to either high-