Preeclampsia and the Trisomy 21 Conceptus

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Pre-eclampsia is one of the leading causes of maternal and fetal morbidity and mortality worldwide. It affects approximately 2-8% of pregnancies. It is characterized by new onset hypertension and proteinuria. Primiparity, family history, pre-existing hypertension, multiple pregnancy, hydatidiform placental changes, hyperplacentosis, and fetal hydrops have all been associated with pre-eclampsia. There are multisystemic manifestations of pre-eclampsia. The condition can only be cured by delivery of the fetus, and because of this, pre-eclampsia is responsible for approximately 15% of all pre-term related births. It has been reported that pre-eclampsia is associated with an increased number of fetal cells or fetal DNA in the maternal circulation. Interestingly, aneuploid fetuses also seem to cause an increase in fetal cells in the maternal circulation and several studies have found an association between fetal aneuploidy and pre-eclampsia. Our study evaluated 2,294 Trisomy 21-affected pregnancies and 1,959 isolated oral cleft-affected pregnancies. Isolated cleft lip with or without cleft palate was chosen as a comparable cohort because this particular birth defect is rarely associated with Trisomy 21. Our results are in accordance to previous studies in that we did not find and increase prevalence of preeclampsia when the fetus is affected with Trisomy 21. Approximately 3.7% of Trisomy 21-affected pregnancies developed preeclampsia and 5.7% of oral cleft-affected pregnancies developed preeclampsia (OR=.632 with 95% CI of .467 - .854). Parity and maternal age were found to be effect modifiers. Our study has important implications for epidemiology, biological plausibility, and genetic counseling. Women who are deciding whether or not to continue with a Trisomy 21-affected fetus may only decide to terminate if there are specific health risks to the mother. Our study demonstrates that there is not an increase of preeclamptic-related risks to the mother.