Rates of adverse outcomes in AGA neonates misdiagnosed as FGR and unexposed controls

Outcome	AGA birth- FGR US	CTL	Unadjusted p-value (Chi²)	Adjusted Odds Ratio (95% C.I.)
Preterm delivery	19/78 (24.4%)	28/702 (4.0%)	<0.001	7.13 (3.55-14.3)
NICU admission	20/78 (25.6%)	87/702 (12.4%)	0.001	2.60 (1.42-4.74)
Cesarean delivery	23/78 (29.5%)	186/702 (26.5%)	NS	1.18 (0.69-2.04)
Neonatal death	1/78 (1.3%)	0/702	-	-
5 min. Apgar<4	0/78	0/702	-	-

221 Impact of inclusion of fetal growth restriction in severe preeclampsia diagnosis

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OBJECTIVE: Based on the newest ACOG guidelines (2013), fetal growth restriction (FGR) is no longer a criterion for diagnosis of preeclampsia (PE) with severe features. This study examines the impact of including FGR as criteria for the diagnosis of PE with severe features on neonatal and maternal outcomes.

STUDY DESIGN: Retrospective cohort of women with PE at a tertiary care center from 2011-2015. Inclusion criteria was diagnosis of PE <37 weeks. Women with preeclampsia with neither severe features (blood pressure $\geq$ 160/110 or a serum laboratory abnormality) nor FGR were excluded. Exposure groups include PE with severe features and no FGR (SPEnoFGR), PE with FGR and no severe features (SPEbyFGR), and PE with severe features plus FGR (SPE+FGR). The primary outcome was perinatal death (stillbirth or neonatal death). Secondary outcomes were abruption, delivery for non-reassuring fetal heart tones (NRFHTs), intrapartum or postpartum eclampsia, and a composite of adverse maternal outcomes (cardiomyopathy, ICU admission, intubation, and readmission for hypertension). Groups were compared with ANOVA and χ^2, as appropriate.

RESULTS: Of the 618 women included, 527 (85.3%) were SPEnoFGR, 20(3.4%) were SPEbyFGR, and 70(11.3%) were SPE+FGR. The gestational age at delivery was earliest with SPE+FGR (31.1 wks) and latest in SPEbyFGR (35.5 wks). In spite of this, the presence of FGR in PE with or without other severe features was associated with an increased incidence of perinatal death (p<0.01). Presence of FGR in PE with or without other severe features was also associated with an increased incidence in delivery for NRFHTs (p<0.01). Maternal outcomes did not differ significantly between groups.

CONCLUSION: Although utilizing FGR as a severe feature would reclassify relatively few cases of PE, the presence of FGR has a significant impact on neonatal mortality.

Neonatal and maternal outcomes with FGR included in SPE diagnosis (presented as n (%))

	Severe Preeclampsia no FGR	Severe Preeclampsia FGR only	Severe Preeclampsia plus FGR	P value
	n=527	n=21	n=70	
Perinatal death	24 (4.6%)	2 (9.5%)	11 (16.4%)	<0.01
Stillbirth	16 (3.0%)	1 (4.8%)	4 (5.8%)	0.47
Neonatal death	11 (2.1%)	1 (4.8%)	7 (10.5%)	<0.01
Abruption	5 (1.0%)	0	2 (2.9%)	0.32
Non-reassuring fetal heart tones	40 (7.6%)	5 (23.8%)	23 (32.9%)	<0.01
Adverse maternal outcomes	35 (6.6%)	1 (4.8%)	3 (4.3%)	0.72
Eclampsia (intrapartum/postpartum	3 (0.6%)	0	0	0.77

222 Global transcriptomic analysis of human placenta in the setting of intrauterine growth restriction (IUGR) using RNA sequencing (RNA-Seq)

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OBJECTIVE: Appropriate fetal growth is linked to normal placental development and function. Identification of key pathogenic pathways that may be responsible for the increased morbidity and mortality of fetuses with IUGR is critical. We performed a genome-wide transcriptome RNA-seq analysis to discover placental villous trophoblast transcripts differentially expressed in the setting of preeclampsia (PE) as opposed to idiopathic IUGR.

STUDY DESIGN: Total RNA was extracted from 25 placental villous tissue samples of women with: 1) idiopathic PTB (iPTB, n=5, GA: 32±1wks; 2) idiopathic IUGR (n=5, GA: 29±1 wks); 3) severe PE & normal fetal growth (sPE, n=8, GA: 30±1 wks); 4) sPE & IUGR (n=7, GA: 30±1 wks). All IUGR fetuses had birthweights <10% (85% were at <3%) and abnormal Dopplers. Cord blood Insulin-like growth factor 1 (IGF-1) was measured as a marker of IUGR. RNA-seq was performed using the Illumina platform. Following data curation and quality control, statistical analyses were performed using 'DESeq2' and 'edgeR' (FDR<0.1).

RESULTS: Relative to iPTB, idiopathic IUGR resulted in altered expression of 3,908 placental transcripts. Relative to iPTB, placentas of sPE & IUGR exhibited altered expression of 1,639 genes. This group profile was consistent with significantly lower cord blood IGF-1 levels in idiopathic IUGR vs. iPTB newborns (P<0.001). Conversely, 576 genes were differentially expressed in the setting of sPE alone. Overall, the global transcriptional profiles of sPE and sPE & IUGR placentas were highly similar, with differential expression of <10 genes. In contrast, idiopathic IUGR differed from sPE & IUGR by 91 transcripts and from sPE & normal fetal growth by 543 transcripts. Idiopathic IUGR was associated with dysregulation of gene sets related to cell cycle regulation, oxidative phosphorylation, and insulin growth factor regulation. sPE was linked to pathways associated with altered adipokine signaling, lipid and sugar metabolism, and amyloid precursor processing.

CONCLUSION: The transcriptome of villous trophoblasts of pregnancies complicated by sPE and sPE & IUGR is remarkably similar, implying that in sPE, IUGR cannot be linked to a markedly different gene expression profile. The large variability of placental transcriptome in idiopathic IUGR emphasizes again the heterogeneity of the growth restricted phenotype.

223 Fetal growth restriction is associated with different patterns of placental abnormalities in twin and singleton pregnancies

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OBJECTIVE: The rate of fetal growth restriction (FGR) is higher in twin compared with singleton pregnancies. However, the mechanisms underlying FGR may differ between twins and singletons. Our aim was to compare the placental findings between twin and singleton pregnancies complicated by FGR.

STUDY DESIGN: This was a retrospective cohort study of all singleton and twin SGA (birth weight <10th%) newborns delivered in a single tertiary referral center between 2001-2015. SGA was diagnosed in twins and singletons using the recently published NICHD twins- and