178 Tumor volume to fetal weight ratio > 0.12 is associated with worse perinatal outcomes in fetuses with sacrococcygeal teratoma

Juliana S. Gebb, Nahla Khalek, Huma Qamar, Tulin Ozcan, Mark P. Johnson, Norma Rendon, Edward R. Oliver, Beverly G. Coleman, William H. Peranteau, Holly L. Hedrick, Alan W. Flake, N. Scott Adzick, Julie S. Moldenhauer
Children's Hospital of Philadelphia, Philadelphia, PA

OBJECTIVE: Tumor volume to fetal weight ratio (TFR) > 0.12 before 24 weeks has been associated with poor perinatal outcomes in fetuses with sacrococcygeal teratoma (SCT) but is not universally accepted. We evaluated the predictive value of TFR in our large cohort of fetuses with SCT.

STUDY DESIGN: Retrospective, single-center, cohort review of fetuses evaluated for SCT from 1997-2015. Patients who chose termination of pregnancy (TOP), delivered elsewhere, or had their initial evaluation > 24 weeks were excluded. Outcomes were compared in fetuses with TFR ≤ vs > 0.12. Poor outcome was defined as intrauterine fetal demise, neonatal demise, fetal deterioration warranting open fetal surgery, and fetal deterioration warranting delivery prior to 32 weeks.

RESULTS: 140 pregnancies were confirmed to have SCT. 28 chose TOP, 13 delivered elsewhere, and 40 had their initial evaluation > 24 weeks. 59 fetuses with TFR at ≤ 24 weeks were stratified into two groups based on TFR (table). Fetuses with TFR > 0.12 were more likely to have a poor perinatal outcome compared to those with TFR ≤ 0.12 (24/32 vs 3/27; p<0.01). The sensitivity, specificity, positive predictive value, and negative predictive value of TFR > 0.12 in predicting poor outcome was 88.9%, 75.0%, 75.0% and 88.9%, respectively.

CONCLUSION: This is the largest single-center study to date and supports the use of TFR > 0.12 at ≤ 24 weeks to risk stratify fetuses with SCT. This information is useful in counseling and in forming surveillance programs for these highest risk fetuses.

Baseline characteristics and perinatal outcomes based on TFR

	TFR ≤ 0.12 (n=27)	TFR > 0.12 (n=32)	p-value
Maternal age	32.7 (19.4-49.5)	30.8 (22.7-41.7)	p=0.2
Maternal body mass index	26.6 (18.9-36.6)	28.1 (19-56.4)	p=0.7
Gestational age at intake	21.7 (18.4-24)	21.9 (17.9-24)	p=0.4
Tumor volume at intake	**14.0 (1.2-53.5)**	**119.9 (45.4-668.9)**	**p<0.01**
TFR at intake	**0.03 (0.002-0.08)**	**0.24 (0.121-0.97)**	**p<0.01**
SCT type	Type I (6; 22%), Type II (19; 70%), Type III (0), Type IV (2; 7.4%)	Type I (12; 38%), Type II (17; 53%), Type III (3; 9%), Type IV (0)	p=0.1
>90% solid	8 (29.6%)	15 (46.9%)	p=0.2
Development of hydrops	**0**	**6 (18.8%)**	**p=0.03**
Gestational age at delivery	**36.1 (27.9-38.9)**	**28.4 (24.3-38.6)**	**p<0.01**
Preterm delivery for fetal compromise < 32 weeks	**1/26 (3.8%)**	**9/25 (36%)**	**p<0.01**
Open Fetal Surgery	0	4 (12.5%)	p=0.1
Intrauterine Fetal Demise	1 (3.7%)	7 (21.9%)	p=0.06
Neonatal demise	**1/26 (3.8%)**	**10/25 (40%)**	**p<0.01**
Poor perinatal outcome	**3 (11.1%)**	**24 (75%)**	**p<0.01**

179 Decreased placental folate transport in early pregnancy of obese women

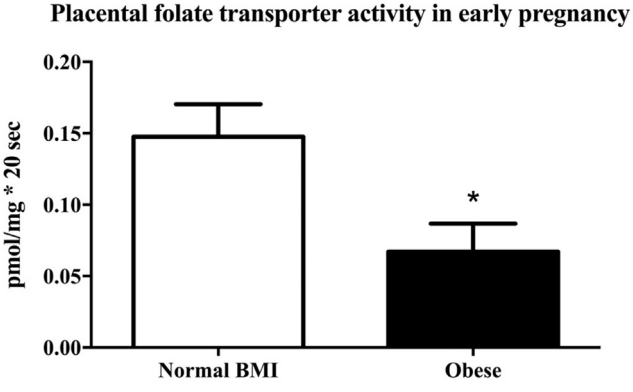
Rebecca H. Jessel[1,2], Yi-Yung Chen[1,3], Frederick Rosario[1,3], Anita Kramer[1,3], Stephanie Teal[1,4], Thomas Jansson[1,3], Theresa Powell[1,3,5]
[1]University of Colorado School of Medicine, Aurora, CO, [2]Division of Maternal Fetal Medicine, Aurora, CO, [3]Division of Reproductive Sciences, Aurora, CO, [4]Division of Family Planning, Aurora, CO, [5]Division of Neonatology, Aurora, CO

OBJECTIVE: Neural tube defects (NTDs) are one of the most common birth defects worldwide and represent a major cause of disability. Obese women have two fold higher risk for NTDs, which appear to be resistant to folate supplementation. Placental transfer of folate is mediated by three proteins; folate receptor alpha (FR-α), proton coupled folate transporter (PCFT), and reduced folate carrier (RFC). Decreased placental transport capacity may contribute to NTDs in women with normal folate levels. We tested the hypothesis that early pregnancy placental folate transport capacity is reduced in obese women.

STUDY DESIGN: Placental tissue was collected from 13 women with normal BMI (21.9 ± 1.9), mean gestational age 14.3 weeks and 11 obese women (33.1 ± 2.8), mean gestational age 15.6 weeks, who were undergoing elective termination of pregnancy. The syncytiotrophoblast microvillous plasma membranes (MVM) were isolated using homogenization, magnesium precipitation, and differential centrifugation. MVM expression of FR-α, PCFT and RFC was determined by western blot. Folate transport was assessed using radiolabeled methyl-tetrahydrofolate and rapid filtration techniques. We measured serum folate levels in both groups of women. Statistical differences were evaluated by student's *t* test with significance of $p \leq 0.05$.

RESULTS: Serum folate levels were not significantly different in normal and obese women. Placental MVM folate transporter expression did not change significantly with gestational age (range 8-22 wks). Expression of PCFT was not altered by maternal BMI. Placental expression of RFC (-19%) and FR-α (-17%) was significantly decreased in obese women as compared to normal BMI women ($p < 0.05$). Additionally, folate placental transporter activity was reduced by 52% (p<0.05) in obese compared to normal women (Figure 1).

CONCLUSION: Folate transporter expression and activity in the placental MVM is reduced in obese women in early pregnancy. This decrease would impair placental folate transfer to the fetus and could result in fetal folate deficiency. These results may explain the higher incidence of NTDs in fetuses of obese women despite adequate maternal folate levels.



180 North American fetal therapy network: selective reduction in complicated monochorionic twins

Julie Moldenhauer[1], Foong-Yen Lim[2], Russell Miller[3], Anthony Johnson[4], Stephen P. Emery[5], Anita J. Moon-Grady[6], Louise Wilkins-Haug[7], Erika Peterson[8], Ozan M. Bahtiyar[9], Anjani Villa[1], Haley Zarrin[1], Nahla Khalek[1]
[1]Children's Hospital of Philadelphia, Philadelphia, PA, [2]Cincinnati Fetal Center, Cincinnati, OH, [3]Columbia University Medical Center, New York, NY, [4]University of Texas Health Science Center, Houston, TX, [5]University of Pittsburgh School of Medicine, Pittsburgh, PA, [6]University of California San Francisco, San Francisco, CA, [7]Brigham and Women's Hospital, Boston, MA, [8]Fetal Concerns Center of Wisconsin, Milwaukee, WI, [9]Yale University Medical Center, New Haven, CT