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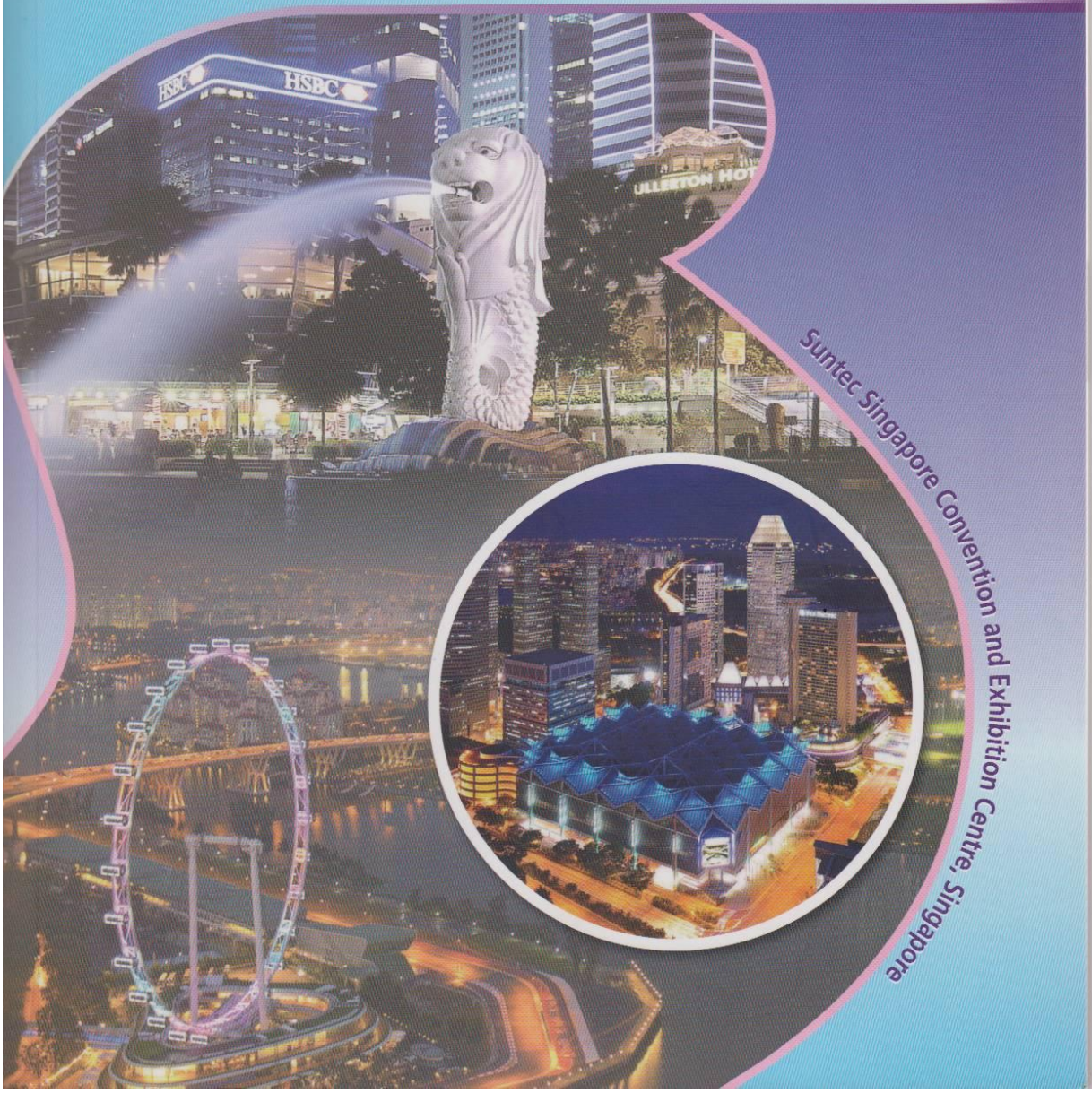


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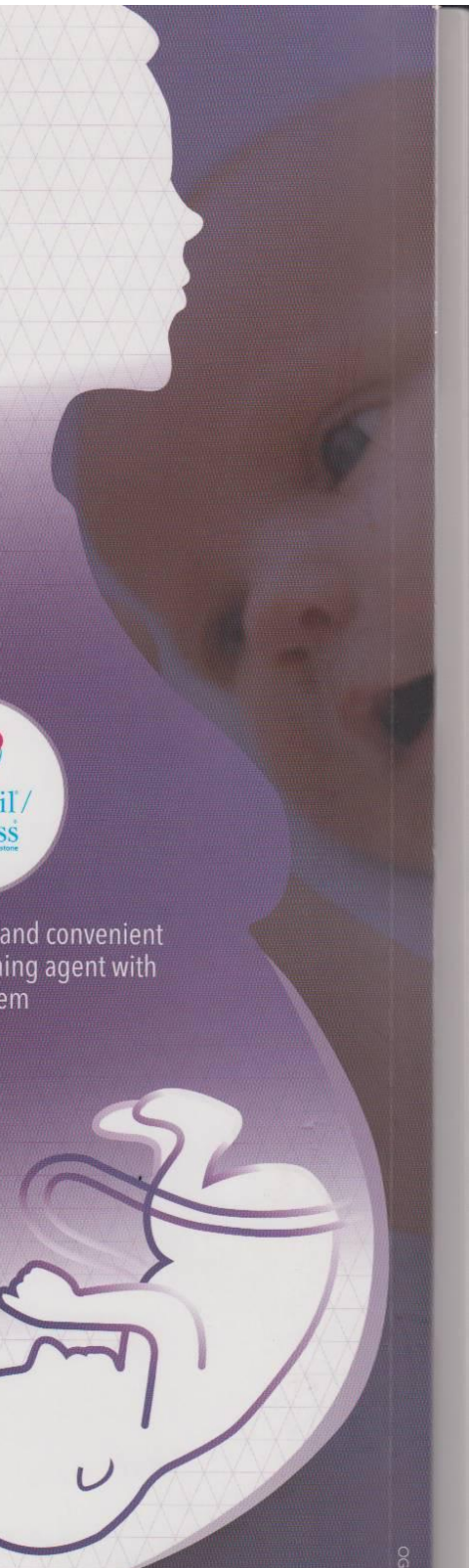

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1. Royal College of Obstetricians and Gynaecologists. Green-top Guideline No. 1b. February 2011. Tocolysis for women in preterm labour. 2011.



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### CONCLUSION
The birth weight of the smaller twin in MCDA twins with sIUGR depends on the subtype. Larger numbers are required to analyse mortality in the subgroups.

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## FETAL HEART RATE CATEGORIES II AND SHORT-TERM NEONATAL OUTCOMES, IS THERE DIFFERENCE BETWEEN LOW RISK AND HIGH RISK PREGNANCY?

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### AIM
The specific goal of electronic fetal monitoring is to detect high risk fetuses for hypoxic status. In this condition early intervention may prevent the adverse neonatal outcome. The purpose of our study was to estimate the proportions of hypoxic fetus and short term neonatal outcomes in high risk and low risk mothers with category II fetal heart rate pattern.

### METHODS
From retrospective and prospective data, a total of 594 cases divided into low risk and high risk pregnancy. Two obstetricians, blinded to neonatal outcomes reviewed intra-partum fetal heart rate tracing. Umbilical artery PH at birth, Apgar at 1min, Apgar at 5min and admission to the neonatal care unit were assessed. Differences between categorical variables were evaluated using Chi-Square or Fisher's exact test.

### RESULTS
This study showed that high risk women had more significant adverse neonatal outcomes in relation to variable deceleration, tachycardia and overshoot patterns. The proportion of 1-min Apgar <7 and neonatal intensive care unit admission were reported more common in high risk mothers with shoulder pattern. There was no significant difference between two groups of women with late deceleration pattern.

### CONCLUSION
With respect to mother's condition, neonatal outcome might differ according to specific fetal heart tracing type II.

### KEYWORDS
Intra Partum Fetal Monitoring; High Risk Pregnancy; Indeterminate Pattern; Fetal Cardiotocography Type II; Variable Deceleration

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## OBESITY AND PREGNANCY

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### INTRODUCTION
Globally, obesity in pregnancy has been linked to many complications such as diabetes mellitus, pregnancy induced hypertension and many more. This research was a retrospective study conducted to observe the difference in risk between normal weight, overweight and obese mothers in developing complications during pregnancy from the post natal wards in Hospital Tuanku Ja'afar, Seremban.

### MATERIALS
Consent from mothers was obtained from a total of 182 mothers of which 63 were of normal weight, 60 were overweight and 59 were obese. Survey forms were used and the collected data was analyzed using SPSS 20.0 programme.

### RESULTS
A significant increase in birth weight (overweight- $p<0.05$, $p=0.004$ and obese -$p<0.05$, $p=0.001$ as compared to normal) and mean number of children in the groups with higher BMI were found. Also, an increased number of cases of gestational diabetes mellitus (GDM- 70% increase), pre-eclampsia (150% increase in both overweight and obese), wound infection (5% increase in obese), deep vein thrombosis (DVT- 2% increase in obese), newborn admissions (5.05% increase in overweight and 6.94% increase in obese) and mean caesarean delivery rates (9.76% increase in overweight and 24.4% increase in obese) were seen in the groups with a higher BMI. Decreased Apgar score was found in the groups with higher body mass index (BMI- -0.84% in obese and -0.21% in obese).

The study concluded that there is an increased risk of complications in pregnancy and labour in overweight and obese mothers.

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## ASSESSMENT OF FETAL VENTRICULAR EJECTION TIME AND EARLY TO ATRIAL DIASTOLIC PHASE VELOCITY RATIO (E/A) IN PREGNANCIES ASSOCIATED WITH LOW LIQUOR VOLUME.

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### AIM
This study is to evaluate the fetal ventricular ejection time and early to atrial diastolic phase velocity ratio (E/A) in pregnancies associated with low liquor volume, as these are indicators of fetal cardiac systolic and diastolic dysfunction respectively.

### METHODS
The study included 20 normal fetuses with no associated maternal/ fetal risk factors with normal liquor volume for the period of gestation (group 1) and 20 fetuses associated with isolated reduction in liquor volume (Group 2). Association of other maternal illness was excluded. All fetuses had a gestational age of more than 28 weeks. The ventricular ejection time for right and left ventricles were measured by placing the sample volume at the respective outflow tracts. The early to atrial phase diastolic velocity ratio for the right and left sides of the fetal heart were measured by placing the sample volume across the inflow tracts ie across the tricuspid and mitral valves respectively.

### RESULTS
Statistically significant differences were found in the mean values between groups 1 and 2 for the ejection time of the right ventricle and for the E/A ratio of right side of heart. The mean ejection time and E/A ratio were less in group 2 when compared with group 1.No significant differences were observed between the ejection time of the left ventricle and for the E/A ratio of left side of heart.

# Fetal Heart Rate Categories II and Short-Term onatal Outcomes, Is There Difference between Low Risk and High Risk Pregnancy?

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## Abstract

**Aim:** The specific goal of electronic fetal monitoring is to detect high risk fetuses for hypoxic status. In this condition early intervention may prevent the adverse neonatal outcome. The purpose of our study was to estimate the proportions of hypoxic fetus and short term neonatal outcomes in high risk and low risk mothers with category II fetal heart rate pattern.

**Methods:** from retrospective and prospective data, a total of 594 cases divided into low risk and high risk pregnancy. Two obstetricians, blinded to neonatal outcomes reviewed intra-partum fetal heart rate tracing. Umbilical artery PH at birth, Apgar at 1min, Apgar at 5min and admission to the neonatal care unit were assessed. Differences between categorical variables were evaluated using Chi-Square or Fisher's exact test.

**Results:** This study showed that high risk women had more significant adverse neonatal outcomes in relation to variable deceleration, tachycardia and overshoot patterns. The proportion of 1-min Apgar <7 and neonatal intensive care unit admission were reported more common in high risk mothers with shoulder pattern. There was no significant difference between two groups of women with late deceleration pattern.

**Conclusion:** With respect to mother's condition, neonatal outcome might differ according to specific fetal heart tracing type II.

**Keywords:** Intra Partum Fetal Monitoring; High Risk Pregnancy; Indeterminate Pattern; Fetal Cardiotocography Type II; Variable Deceleration

Key words: **Intra Partum Fetal Monitoring; High Risk Pregnancy; Indeterminate Pattern; Fetal Cardiotocography Type II; Variable Deceleration**

## Introduction

Optimizing outcomes for the mother and the newborn infants is the most important goal of obstetric care. In order to achieve this vital goal, practicing evidence based and standard care is necessary. Science contractions during labor may cause fetus hypoxia and neonatal neurologic injury, [1,2] continuous observation of fetus during labor could help labor management in order to identify hypoxic fetus. Electronic fetal monitoring (EFM) is an obstetrical instrument introduced to assess the adequacy of fetal oxygenation during labor to decrease neonatal mortality and morbidity. [3,4]

Some studies have established improved neonatal outcomes such as neonatal seizures and avoidable brain damage with EFM [5,6,7,8] whereas; a meta-analysis of randomized control trials has shown that EFM has no effect in perinatal mortality or neonatal neurologic morbidity. [9] A routine admission EFM in clinical use specially in low-risk pregnancy increases unnecessary cesarean delivery without improved neonatal outcomes[10], and so continuous EFM should be used when there are abnormalities in structured intermittent auscultation or for high-risk women. [11]

In 2008, the National Institute of Child Health and Human Development (NICHD) Workshop classified EFM to The "normal" (normal rate, normal variability, absence of decelerations), the "abnormal" (absent variability with bradycardia/ late/variable decelerations or sinusoidal pattern) and "indeterminate" category, or Category II. This category (Type 2 or undetermined) is various types of patterns with the differences in baseline rate, variability, decelerations with different severity, and also overshoot pattern and shoulder.(Table 1)[12,13] According to NICHD Workshop, Category II are not definitely prognostic for fetal hypoxia and require more evaluation in term of overall clinical condition.[14,15] The NICHD in 2008 recommended future research directed towards the category II patterns and their relationship with clinical outcome.

The Aim of this study was to evaluate arterial cord blood gases, Apgar scores and admission to the Neonatal Intensive Care Unit (NICU) in high risk and low risk pregnancy with type II of fetal heart rate.

## Materials and Methods

This retrospective and prospective study was carried out in labor ward of Tehran General Women Hospital between October 1, 2011, and January 30, 2014. The aim of the study was to assess short term neonatal outcome in low-risk and high risk pregnancies with category II FHR during the last 2hours before delivery. Institutional approval for this study was granted by Tehran University of Medical Sciences.

Inclusion criteria included: singleton pregnancy with category II FHR patterns; with fetal heart rate monitoring for at least half-hour hour. Patients whose fetus or newborn had a structural or genetic abnormality were excluded. Patients admitted for scheduled cesarean delivery, non-cephalic presentation, unrecorded data about Umbilical Artery's (UA) pH, gestational age and neonatal outcomes were excluded too.

High risk pregnancy defined as preeclampsia, severe preeclampsia, eclampsia, insulin-dependent diabetes, abruption placenta, oligohydramnios, Intra Uterine Growth Restriction (IUGR), maternal fever due to chorioamnionitis, preterm and post term labor.

As a first step, the investigator selected patients with category II FHR patterns based on 2008 NICHD document in two groups in terms of low risk and high risk pregnancy.

All fetal heart rates were recorded with electronic fetal monitoring machine (EDAN, China). Obstetrician and gynecology residents assessed the strips during the labor period. All tracings were reviewed by two obstetrics & gynecologists, who were blinded to umbilical cord gases results and other neonatal outcomes. Intra-observer and inter-observer reliability was more than 90% and 85% respectively.

Adverse neonatal outcomes was defined as; UA pH <7.1 at birth, Apgar score <7 at 1 min, Apgar score <7 at 5 min, and admission to NICU for distress at birth. Immediate after delivery, all fetuses were underwent cord clamping by obstetrician resident. While the placenta was still in situ, the cord was double clamped at a minimum length of 10 cm and the artery was sampled in pre-heparinized syringes 2cc and analyzed within 10 min.

Categorical variables were presented as absolute frequencies and percentages. Proportions were compared using chi-square or Fisher's exact test. Statistical analysis was carried out with the SPSS (version 20) and P<0.05 was considered statistically significant.

## Results

A total of 594 patients were included in the study. 315 pregnant women met criteria for high risk group and 279 women were selected for low risk group. Labor was vaginal delivery in 427 patients and non-selective cesarean in 167 women.

The average age of the participants in the study was 27.8 years. The mean gestational age was 38.3week.Most of delivery was vaginal delivery. Demographic& delivery characteristics of the entire group are detailed in Table 2.

**Table 1**
**Three-Tier Fetal Heart Interpretation System Recommended by the 2008 NICHD Workshop on Electronic Fetal Monitoring**

| |
|---|
| **Category I—Normal** |
| Baseline rate: 110–160 bpm<br>Baseline FHR variability: moderate<br>Late or variable decelerations: absent<br>Early decelerations: present or absent<br>Accelerations: present or absent |
| **Category II—Indeterminate** |
| Include all FHR tracings not categorized as Category I or III. Category II tracings may represent an appreciable fraction of those encountered in clinical care. Examples include any of the following: |
| **Baseline rate**<br>Bradycardia not accompanied by absent baseline variability<br>Tachycardia |
| **Baseline FHR variability**<br>Minimal baseline variability<br>Absent baseline variability not accompanied by recurrent decelerations<br>Marked baseline variability |
| **Accelerations**<br>Absence of induced accelerations after fetal stimulation |
| **Periodic or episodic decelerations**<br>Recurrent variable decelerations accompanied by minimal or moderate baseline variability<br>Prolonged deceleration >2 minutes but < 10 minutes<br>Recurrent late decelerations with moderate baseline variability<br>Variable decelerations with other characteristics, such as slow return to baseline, "overshoots," or "shoulders" |
| **Category III—Abnormal** |
| Absent baseline FHR variability and any of the following:<br>Recurrent late decelerations<br>Recurrent variable decelerations<br>Bradycardia<br>Sinusoidal pattern |

Table2. Demographic& delivery variables in 594 singleton deliveries

| Maternal age (y, mean ± SD) | Fetal weight(gr)(mean, SD) | Gravid (mean ± SD) | Gestational Age (w)(mean ± SD) | Bloody AF positive No (%) | Meconium AF positive No (%) | Vaginal delivery No (%) | Cesarean section No (%) |
|---|---|---|---|---|---|---|---|
| 28.7(5.7) | 3067(64.8) | 2(1.3) | 38.3(2.1) | 27(4.5) | 92(15.5) | 427(71.9) | 167(28.1) |

## Discussion

The results of our study showed the existence of a significant higher proportion of neonatal outcomes (UA pH <7.1, Apgar score <7 at 1 min, Apgar score <7 at 5 min, and NICU admission) in high risk pregnancy with FHR type II.The frequency of pH <7.1 observed in high risk cases with variable deceleration, tachycardia and overshoot pattern were significantly higher as compared with low risk women. Other studies have addressed the variable deceleration and tachycardia was associated with fetal acidosis and hence, may develop fetal asphyxia. [2] DiGibb *et al* [16] showed that the presence of repetitive variable decelerations related to the hypoxia in fetus. In addition, Eric H. Dellinger et al mentioned that, in normal tracings were only 5.1% of Apgar scores <7 at 1 minute and 1.0% of Apgar scores <7 at 5 minutes. Only 5.6% of neonates in this group were admitted NICU. None of the neonate in this group was considered as hypoxic.[5] other studies tried to estimate the relationship between the time spent in each fetal heart rate category during the last 2hours before delivery and short-term neonatal outcomes. Not Surprisingly, they found there is an increased chance of adverse short-term outcomes with increasing time in category II fetal heart rate patterns.[1,17] As well as, Wood C et al showed that the association of fetal acidemia and depth of variable decelerations. They reported, the deeper variable decelerations are attributed to less fetal PH [18]. Our study showed that the cases with shoulder patterns had higher frequency of Apgar <7 at 1 min and NICU admission, but our analysis failed to demonstrated a relationship between shoulder pattern and PH<7.1.Similarly , Alison G. Cahill et al in a retrospective cohort study indicated there was no association between shoulders and acidemia.[19]

Despite the existence of late deceleration pattern in both groups of mothers, majority of neonates experienced no adverse short term outcomes. More recently, Hamilton et al compared fetal heart monitoring patterns of normal neonates with two groups; (1) with metabolic acidosis and no evidence of encephalopathy, (2) with acidosis and encephalopathy. They reported no association between atypical features of FHR and neonatal metabolic acidosis. [20]

An important aspect of the current study refers to compare neonatal outcomes and FHR type II regarding high risk and low risk pregnancy. Another power of our study was the interpretation of the fetal heart rate tracing by two independent obstetrics& gynecologists, who were blinded to all clinical factors and outcome data.

In contrast, there is a potential limitation that is imperative to consider with respect to current study. Part of our samples related to retrospective recorded data influencing the precision of information. However, we tried to conduct a supervised data collection.

Despite this potential limitation, we believed that our results contribute to the recent existing literature associating fetal heart monitoring type II with fetal acidemia and others birth outcomes in high risk pregnancy. We suggest more research to assess the duration of each specific pattern of type II influence on PH at birth and other neonatal outcomes. These data support the presence of higher frequency of fetus acidemia and also neonatal complication at birth in high risk mothers with type II fetal heart rate in particular variable deceleration, tachycardia, overshoot and slow return to base patterns.

### Refferences

1. Jackson M, Holmgren CM, Esplin MS, Henry E, Varner MW (2011) Frequency of fetal heart rate categories and short-term neonatal outcome. Obstetrics & Gynecology 118: 803-808.
2. Beard R, Filshie G, Knight C, Roberts G (1972) The significance of the changes in the continuous fetal heart rate in the first stage of labour. Obstetrical & Gynecological Survey 27: 236-237.
3. Neldam S, Osler M, Hansen PK, Nim J, Smith SF, et al. (1986) Intrapartum fetal heart rate monitoring in a combined low-and high-risk population: a controlled clinical trial. European Journal of Obstetrics & Gynecology and Reproductive Biology 23: 1-11.
4. Druzin ML, Peterson N (2011) Strip of the Month: April 2011. NeoReviews 12: e232-e239.
5. Dellinger EH, Boehm FH, Crane MM (2000) Electronic fetal heart rate monitoring: early neonatal outcomes associated with normal rate, fetal stress, and fetal distress. American journal of obstetrics and gynecology 182: 214-220.
6. Paul RH, Hon E (1974) Clinical fetal monitoring. Am J Obstet Gynecol 118: 529-533.
7. Alfirevic Z, Devane D, Gyte G (2006) Continuous cardiotocography (CTG) as a form of electronic fetal monitoring (EFM) for fetal assessment during labour. Cochrane Database Syst Rev 3.
8. Graham EM, Petersen SM, Christo DK, Fox HE (2006) Intrapartum electronic fetal heart rate monitoring and the prevention of perinatal brain injury. Obstetrics & Gynecology 108: 656-666.