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Pregnancy outcome in chronic hypertensive pregnant women in Maharaj Nakorn Chiangmai Hospital

Yuree Yanase MD,
Suchaya Luewan MD,
Theera Tongsong MD.

Department of Obstetrics & Gynecology, Maharaj Nakorn Chiangmai Hospital, Chiangmai 50200, Thailand

ABSTRACT

Objective: To assess pregnancy and fetal outcome in pregnant women with chronic hypertension who delivered at Maharaj Nakorn Chiangmai Hospital.

Study design: A retrospective descriptive study.

Materials and methods: All 173 pregnant women with chronic hypertension from the maternal - fetal medicine unit database and medical records during 10-year period (1997-2006) of Maharaj Nakorn Chiangmai Hospital were reviewed. The baseline characteristics were analyzed. The main outcomes were superimposed preeclampsia and other maternal and fetal outcomes were studied.

Results: 153 pregnant women complicated with chronic hypertension were recruited in the study. These pregnancies were complicated by superimposed preeclampsia (19%), preterm delivery (36.6%), postpartum hemorrhage (6.5%), and puerperal infection (2%). Adverse fetal outcomes found in this group consist of stillbirth (2%) and small for gestational age (11.1%).

Conclusions: Adverse pregnancy outcome especially superimposed preeclampsia are commonly found among pregnant women complicated with chronic hypertension.

Keywords: chronic hypertension, pregnancy, superimposed preeclampsia

Introduction

Chronic hypertension in pregnancy associated with serious maternal and fetal complications, including superimposed preeclampsia, preterm birth, fetal growth restriction, placental abruption and also increased cesarean section rate.[1-3] The incidence of chronic hypertension in pregnancy ranges from 0.5 to 5%, depending on the populations studied and the diagnostic criteria used.[1,2] The National High Blood Pressure Program Working Group on High Blood Pressure in Pregnancy defined chronic hypertension as hypertension present before pregnancy or present before the 20th week of gestation.[4]

About superimposed preeclampsia, common complication of chronic hypertension in pregnancy, this may be associated with worsening or malignant hypertension, cerebral hemorrhage, cardiac decompensation and renal failure. The reported incidence of superimposed preeclampsia ranges from 4.7 to 52% and vary in severity, according to race,

nationality and natural history of disease in each country. [1,2,5-7] Study about this complication may be useful in prediction of pregnancy outcome. The objective of this study was to determine the pregnancy outcomes in a population of pregnant women with chronic hypertension who delivered during 10 consecutive years (1997-2006) in a referral and tertiary care hospital in northern Thailand. The secondary aim was to investigate the adverse perinatal outcomes.

Materials and Methods

This is a retrospective study about pregnant women complicated with chronic hypertension who delivered at Maharaj Nakorn Chiangmai Hospital, between January 1997 and December 2006. The database of Maternal-Fetal-Medicine unit of Maharaj Nakorn Chiangmai Hospital and medical records were reviewed. The inclusion criteria was single fetus without anomaly, chronic hypertension diagnosed before pregnancy by internist or during pregnancy before 20 weeks of gestations. The criteria for hypertension during pregnancy were persistent of blood pressure elevation of at least systolic blood pressure 140 mmHg or diastolic blood pressure 90 mmHg. Baseline data included age, parity, gravidity, obstetric history, onset of hypertension, gestational age at delivery, delivery details (indication and route) and also fetal and maternal complications. The main outcome was superimposed preelampsia, which diagnosis when use National High Blood Pressure Education Program (NHBPEP) criteria, by new onset proteinuria of 300 mg or greater in a 24-h specimen, or an increase in blood pressure in a woman whose hypertension had previously been well controlled, or thrombocytopenia or an increase in alanine transaminase (ALT) or aspartate transaminase (AST) to abnormal levels.[4,6,8]

For each neonate, we recorded the following data: small for gestational age (SGA defined as birth weight below the 10th percentile for gestational age compared with the values of a reference population) and gestational age at delivery and mode, birth weight, Apgar score, and complications.

This study was approved by Research Ethics Committee, Faculty of Medicine, Chiangmai University.

Data were processed with software SPSS 13.0 (SPSS Inc., Chicago, IL, USA).

Results

Between January 1997 and December 2006, 173 patients complicated with chronic hypertension during pregnancy delivered at Maharaj Nakorn Chiangmai Hospital. Twenty patients were excluded because of incomplete data. The remaining 153 patients were analyzed. Most of the patients lived in Chiangmai (80.4%). The other (19.6%) lived in nearly provinces. In Table 1, the demographic data and characteristics of all subjects included in the study are shown. Mean age of the patients was 34.1 $\pm$ 5.64 years, range between 17-45 years. Most women were diagnosed during current pregnancy (56.2%) while only 43.8% were diagnosed prior to pregnancy and received antihypertensive drugs such as hydrochlorothiazide, enalapril, nifedipine, atenolol, amlodepine, or methyldopa. None of these patients had proteinuria at the beginning of pregnancy.

In Table 2, maternal and perinatal outcomes are shown. Superimposed preeclampsia was occurred in 19%. Maternal mortality and eclampsia did not occur. Hypertension was the most frequent indications for admission. Only few patients demonstrated clinical change headache (9.4%), blurred vision (1.4%), epigastric pain (0.7%), and legs edema (0.7%). The incidence of gestational diabetes was 17.7%. Abruptio placenta was uncommon; only one case (0.7%) was recorded and was accompanied by superimposed preeclampsia. Cesarean section rate was 33.3% which nearly three fourth were emergency cesarean. Postpartum hemorrhage was 6.5% and infection was 2.0%.

Mean gestational age at delivery was 36.58 $\pm$ 2.63 weeks, Preterm delivery occurred in about one third of these cases (36.6%) and 1.8% of these occur before 28 weeks,41.1% between 28 to 34 weeks, and 57.1% between 35 to 36 weeks. Mean birth weight was 2687.1 $\pm$ 696.04 gm. and SGA was identified in 11.1%. A low Apgar score at 5 min was observed in 5.2%. There were 5 (3.26%) perinatal deaths (3 stillbirths, 1 dead fetus in utero and 1 neonatal death). Of the 3 stillbirths, pregnant women were induced abortion for

exacerbated hypertension and had intrapartum fetal death with all fetuses weighing < 600 gm at 19, and 25 weeks in 2 cases. The neonatal death was in woman without superimposed preeclampsia, the baby with hydrocephalus delivered vaginally at 35 weeks then expired shortly after delivery.

Table 1. Demographic data and baseline characteristics

Characteristics	Study group (N = 153)
Age (mean ± SD, years)	34.1 ± 5.64
Parity	
• Nulliparous	45 (29.4%)
• 1	78 (51%)
• 2	21 (13.7%)
• 3	8 (5.2%)
• 4	1 (0.7%)
Diagnosis of hypertension	
• Before pregnancy	67 (43.8%)
• During pregnancy	86 (56.2%)

Table 2. Maternal and fetal outcomes

Outcomes	Study group (N = 153)(%)
Maternal outcome(%)	
Superimposed preeclampsia	29 (19.0)
Placental abruption	1 (0.7)
Preterm delivery	56 (36.6)
• < 28 wk	1 (1.8)
• 28-34 wk	23(41.1)
• > 34 wk	32 (57.1)
Cesarean section	
• Elective	13 (8.5)
• Emergency	38 (24.8)
Mean GA at delivery (± SD), weeks	36.58 ± 2.63
Mean birth weight (± SD), gram	2687.1 ± 696.04
Postpartum hemorrhage	10 (6.5)
Postpartum infection	3 (2.0)
Eclampsia	0
Maternal mortality	0
Fetal outcomes	
Birth weight below 10th percentile (%)	17 (11.1)
Stillbirth	3(2.0)
Neonatal death	1(0.7)
Apgar score < 7 at 5 min	8 (5.2)

Discussion

Chronic hypertension during pregnancy is one of the common causes of maternal morbidity-mortality due to increased risk for superimposed preeclampsia. The incidence of superimposed preeclampsia in the present study (19%) is similar to that reported by Sibai et al (25%)[3] and Mc Cowan et al (17%).[9] A half of pregnancies complicated with superimposed preeclampsia occurred in later than 36 weeks of gestation whereas in most cases of other studies it occurred during 28-32 weeks of gestation. The incidence of placental abruption among patients with chronic hypertension has been reported to be 2.3% to 10%[10-12] while it was rarely seen in this study, only 1 in 153. Like in previous studies, operative deliveries in this study were increased, 24.8% for emergency cesarean section, 20.3% for vacuum extraction, and 3.3% for forceps extraction. Most common indication for vacuum extraction and forceps extraction in this study was shortened second stage of labor due to maternal hypertension at delivery. For emergency cesarean section most common indication was nonreassuring fetal heart rate pattern.

Regarding fetal outcomes, preterm births were increased but most of them were late preterm deliveries (36 weeks of gestation). However, we cannot distinguish between spontaneous and indicated preterm labor. The fetal growth restriction is more common in hypertensive women and the severity is also dependent on the degree of maternal blood pressure.[6, 7, 9,10,13-16] Surprisingly, the incidence of IUGR in this study, 11.1%, was lower than that reported by other previous reports.[3,9,10] We believed that intrauterine growth retardation is result of poor controlled chronic hypertension. It is possible that late occurring superimposed preeclampsia and well controlled blood pressure in antenatal period explain lower incidence of intrauterine growth retardation in this study.

The benefit of this study was our population reflects maternal and perinatal outcome of chronic hypertension in pregnancy of northern Thailand and we don't have previous study about this in our center. The weakness of this study included its retrospective nature and no control group. Additionally, some limitations encountered in this study were a delayed diagnosis or misdiagnosis in case of late gestation because of difficulty in differentiating chronic hypertension from preeclampsia, therefore, we might have lost cases especially of severe chronic hypertension with or without superimposed preeclampsia. The spectrum of the disease ranges from mildly elevated blood pressure measurements with minimal clinical significance to severe hypertension and multi-organ dysfunction. Previous treatment and clinical status before pregnancy are important factors in predicting pregnancy outcome but our study couldn't have complete these data. However, this small series suggests that chronic hypertension increases adverse outcomes in both mothers and fetuses, though our overall outcome seems to be good.

In conclusion, the superimposed preeclampsia is still a common problem in our region. On the other hand intrauterine growth restriction in pregnancy with chronic hypertension in this study is much lower than data reported in previous studies. By including control group in future study may show effect of chronic hypertension on incidence of intrauterine growth retardation.

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ผลการตั้งครรภ์ของสตรีตั้งครรภ์ที่เป็นโรคความดันโลหิตสูงเรื้อรังที่คลอดในโรงพยาบาลมหาราชนครเชียงใหม่

ยุรี ยานาเซะ, สุชยา ลือวรรณ, ธีระ ทองสง

วัตถุประสงค์ *: เพื่อประเมินหาผลลัพธ์ของการตั้งครรภ์ ของมารดาและทารกแรกเกิดในสตรีตั้งครรภ์ที่เป็นโรคความดันโลหิตสูงเรื้อรังที่มาคลอดบุตรที่โรงพยาบาลมหาราชนครเชียงใหม่*

รูปแบบการศึกษา *: การวิจัยเชิงพรรณนาแบบย้อนหลัง*

วัสดุและวิธีการ *: จากการทบทวนบันทึกย่อคลอดและฐานข้อมูลของหน่วยเวชศาสตร์มารดาและทารกระหว่างเดือนมกราคม 2540 ถึงเดือนธันวาคม 2549 พบสตรีที่ได้รับการวินิจฉัยภาวะความดันโลหิตสูงเรื้อรังขณะตั้งครรภ์จำนวน 173 คน ข้อมูลเกี่ยวกับผลลัพธ์ของการตั้งครรภ์ โดยเฉพาะอย่างยิ่งความชุกของภาวะครรภ์เป็นพิษ และ ผลลัพธ์ของทารกแรกเกิดได้รับการวิเคราะห์ทางสถิติ*

ผลการศึกษา *: สตรีตั้งครรภ์ที่เป็นโรคความดันโลหิตสูงเรื้อรังจำนวน 153 คน ได้รับการคัดเลือกเข้าสู่การศึกษา พบความชุกของการเกิดภาวะแทรกซ้อนต่างๆ ในระหว่างการตั้งครรภ์ดังนี้ ครรภ์เป็นพิษ ร้อยละ 19, คลอดก่อนกำหนด ร้อยละ 36.6, ตกเลือดหลังคลอด ร้อยละ 6.5 และ ติดเชื้อหลังคลอด ร้อยละ 2 ผลเสียของการตั้งครรภ์ต่อทารกที่พบในการศึกษานี้ ได้แก่ การตายคลอด ร้อยละ 2 และทารกน้ำหนักน้อยกว่าเกณฑ์ในแต่ละอายุครรภ์ ร้อยละ 11.1*

สรุป *: สตรีตั้งครรภ์ที่เป็นโรคความดันโลหิตสูงเรื้อรังมีโอกาสพบภาวะแทรกซ้อนโดยเฉพาะอย่างยิ่งภาวะครรภ์เป็นพิษ ที่มีผลเสียต่อผลลัพธ์ของการตั้งครรภ์ทั้งในแง่ของมารดาและทารก*