OBJECTIVES

Risk of Low Birth Weight and Adverse Pregnancy Outcomes in Adolescent Pregnancies at Chainat Hospital

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ABSTRACT

Objective: To compare maternal and neonatal outcomes between adolescent and adult pregnancy, focused on the risk of low birth weight (LBW) infants.

Study design: Retrospective study.

Materials and Methods: A total cases of 594 from 625 pregnant women that delivered at Chainat Hospital between June 1 and November 30, 2008 were recruited in this study. Two groups were divided by aged, 259 cases aged below 20 years old and 335 cases aged between 20-25 years old. The demographic, obstetric and neonatal outcomes data were collected from all relevant inpatient records and were reviewed and compared between two groups. The statistical analysis used were unpaired student's t-test and Pearson Chi-square test.

Results: The adolescent mothers had significant lower mean hematocrit than the adult mothers (mean 34.7 ± 3.7 % and 35.5 ± 3.5 %, p=0.005). The adolescent group had significant higher risk of preterm birth (RR 2.31, CI 1.25 -4.24, p=0.006) and LBW infants (RR 1.96, CI 1.16 -3.31, p= 0.010). The maternal aged between 13-16 years had the highest relative risk of LBW infants (RR 2.49, CI 1.19 -5.21, p= 0.013 ).

Conclusion: Adolescent pregnancy is one of the risk factor of LBW infants and preterm delivery.

Keywords: adolescent pregnancy, low birth weight infants, preterm birth

Introduction

LBW infants is the important public health problem in Thailand and one of the most common adverse pregnancy outcomes discussed worldwide. This condition is the cause of many neonatal morbidities and mortalities. The incidence of LBW infants in Thailand in 1998 was 8.1 %,(1) In attempt to lower this rate, the Ninth Five-Year National Health Development Plan 2002-2006, Thailand, plan to reduce the LBW infants to 7% of total live birth.

Adolescent mother is one of the important risk factors of delivering low birth weight infants. Adolescent pregnancy, defined by maternal age less than 20 years old, is the cause of higher maternal risk and adverse neonatal outcomes in many countries. Each year, almost 750,000 women aged between 15-19 years become pregnant especially in the underdeveloped and the developing countries.(2)

In Thailand in 2002 the adolescent birth rates were 49 per 1000, which aged 15-19 years.(3) Now adolescent pregnancy is a challenging public health issue around the world. Several studies looked for
the adverse outcomes associated with adolescent pregnancy such as preeclampsia, premature rupture of membranes (PROM), gestational diabetes mellitus and, more interesting in LBW infants, preterm birth, and small-for-gestational-age infants.\(^{(4-7)}\)

The purpose of this study is to compare the maternal complications and fetal outcomes of the adolescent pregnancy to adult pregnancy delivered at Chainat Hospital and focusing on the LBW infants.

**Material and Method**

This study was a retrospective study. The data was collected from the labor records, inpatient records, perinatal records and patient's information charts from Unit of Obstetrics and Gynecology, Chainat Hospital. The study groups were the pregnant women aged below 20 years (adolescent group) and aged between 20-25 years (adult group), who delivered at Chainat Hospital between June 1 and November 30, 2008. Pregnant women aged between 20-25 years were the reference group in our study because they had the lowest risk of maternal and neonatal adverse outcomes. According to the previous study, prevalence of LBW infants in Thailand were 12% and 4% in adolescent and adult pregnancy, respectively.\(^{(6)}\)

Demographic data, including maternal age, gravidity, parity, previous abortion, gestational age and number of antenatal care were collected. Maternal complications such as anemia (hematocrit less than 30%), pregnancy induced hypertension (PIH), premature rupture of the membrane (PROM), placenta previa, preterm birth, breech presentation, and mode of delivery were collected. Neonatal complications included LBW infants (less than 2500 grams) and birth asphyxia (Apgar score less than 7 at 1 min.) were recorded.

Statistic analysis was undertaken using SPSS version 12 for Microsoft Windows, SPSS Inc, Chicago, USA. The prevalence of important demographic data, risk factors and adverse outcomes were compared between the study (adolescent) and control (adult) group. Variables were compared using unpaired student's t-test and Pearson Chi-square test. Relative risk ratio and 95% confidence interval of these complications were calculated. Level of significant was \(p<0.05\).

**Results**

The ratio of adolescent births and total births at Chainat Hospital during 3 years period (2006 - 2008) were 442/2,280 (19.4%), 455/2,465 (18.5%) and 490/2,409 (20.4%) respectively. Between June 1 and November 30, 2008, there were 1,204 total births at Chainat Hospital, of which pregnant women aged 25 years and less represented 625 birth cases, 259 adolescent pregnancies and 335 adult pregnancies were selected in this study. The 13 adolescent pregnancies and 18 adult pregnancies were excluded from the study because of inadequate data. Maternal demographic characteristics in both groups were presented in Table 1. The mean age of adolescent mothers was 17.4 ± 1.3 years old, with the youngest case was 13 years old, and the mean age of adult group was 22.5 ± 1.7 years old. The difference of mean hematocrit was significant lower in adolescent group than adult group (mean hematocrit 34.7 ± 3.7 % and 35.5 ± 3.5%, \(p=0.005\)). Primipara or multipara pregnancy was significant higher in the adult group than adolescent group (119/335, 35.5% and 23/259, 8.9%, \(p= <0.00\)). There was no significant different of mean gestational age (GA), previous abortion, number of antenatal care visits and anemia between both groups.

Comparison of pregnancy outcomes between adolescent and adult groups were presented in Table 2. There were significant increase in risk of LBW infant (RR 1.96, 95% CI 1.16-3.31, \(p=0.010\)) and preterm birth (RR 2.31, 95% CI 1.25-4.24, \(p=0.006\)) in adolescent group but placenta previa (RR 0.35, 95% CI 0.13-0.95, \(p=0.031\)) and cesarean section (RR 0.61, 95% CI 0.44-0.86, \(p=0.004\)) were found significant higher in adult group. The differences for breech presentation, PROM, PIH and birth asphyxia between two groups were not statistically significant.
There were statistically significant risk of LBW infants in younger adolescent group (RR 2.49, 95% CI 1.19-5.21, p= 0.013) and older adolescent group (RR 1.79, 95% CI 1.01-3.16, p= 0.044) compared with the adult group, as shown in Table 3.

Table 1. Comparison of the demographic data

<table>
<thead>
<tr>
<th>Demographic data</th>
<th>Adolescent group</th>
<th>Adult group</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (years) ± SD</td>
<td>17.4±1.3</td>
<td>22.5 ±1.7</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mean GA at delivery (weeks) ±SD</td>
<td>38.3±1.9</td>
<td>38.4± 1.7</td>
<td>0.614</td>
</tr>
<tr>
<td>Primipara or multipara</td>
<td>23 (8.9)</td>
<td>119 (35.5)</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Previous abortion</td>
<td>13 (5.0)</td>
<td>24 (7.2)</td>
<td>0.283</td>
</tr>
<tr>
<td>Antenatal care visit (≥4 times)</td>
<td>241 (93.4)</td>
<td>317(94.6)</td>
<td>0.425</td>
</tr>
<tr>
<td>Mean hematocrit (%)</td>
<td>34.7± 3.7</td>
<td>35.5±3.5</td>
<td>0.005*</td>
</tr>
<tr>
<td>Anemia</td>
<td>19 (7.3)</td>
<td>13 (3.9)</td>
<td>0.064</td>
</tr>
</tbody>
</table>

p-value by T-test and Pearson Chi-Square; * statistically significant
SD = standard deviation; GA= gestational age

Table 2. Comparison of the pregnancy outcomes between both groups

<table>
<thead>
<tr>
<th>Pregnancy outcomes</th>
<th>Adolescent group</th>
<th>Adult group</th>
<th>RR (95%CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n =259 (%)</td>
<td>n = 335 (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBW infant</td>
<td>38 (14.7)</td>
<td>27 (8.1)</td>
<td>1.96(1.16-3.31)</td>
<td>0.010*</td>
</tr>
<tr>
<td>Preterm birth</td>
<td>30 (11.6)</td>
<td>18 (5.4)</td>
<td>2.31(1.25-4.24)</td>
<td>0.006*</td>
</tr>
<tr>
<td>Placenta previa</td>
<td>5(1.9)</td>
<td>18 (5.4)</td>
<td>0.35(0.13-0.95)</td>
<td>0.031*</td>
</tr>
<tr>
<td>Breech presentation</td>
<td>9(3.5)</td>
<td>5 (1.5)</td>
<td>2.38(0.79-7.18)</td>
<td>0.114</td>
</tr>
<tr>
<td>PROM</td>
<td>6 (2.3)</td>
<td>8 (2.4)</td>
<td>0.97 (0.33-2.83)</td>
<td>0.955</td>
</tr>
<tr>
<td>PIH</td>
<td>14(5.4)</td>
<td>11 (3.3)</td>
<td>1.68 (0.75-3.78)</td>
<td>0.202</td>
</tr>
<tr>
<td>Birth asphyxia</td>
<td>0(0)</td>
<td>2 (0.6)</td>
<td>N/A</td>
<td>0.213</td>
</tr>
<tr>
<td>Cesarean section</td>
<td>86(33.2)</td>
<td>150(44.8)</td>
<td>0.61(0.44-0.86)</td>
<td>0.004*</td>
</tr>
</tbody>
</table>

p-value by Pearson Chi-Square; * statistically significant
LBW = low birth weight; PROM = premature rupture of membrane; PIH = pregnancy induced hypertension
Table 3. Relative risk (RR) of LBW infants in younger and older adolescent pregnancies compared with the adult group.

<table>
<thead>
<tr>
<th>Age groups</th>
<th>Number of LBW infant (%)</th>
<th>RR (95%CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-16 years</td>
<td>12/67 (17.9)</td>
<td>2.49 (1.19-5.21)</td>
<td>0.013*</td>
</tr>
<tr>
<td>17-19 years</td>
<td>26/192 (13.5)</td>
<td>1.79 (1.01-3.16)</td>
<td>0.044*</td>
</tr>
<tr>
<td>20-25 years</td>
<td>27/335 (8.1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p-value by Pearson Chi-Square; * statistically significant

Discussion

This study showed that the complications of pregnancy especially the LBW infants and preterm birth were associated with adolescent pregnancy. From the study, there was the higher rate of anemia in adolescent group than adult group which may caused by poor nutrition. We found that pregnancy outcomes such as LBW infants and preterm birth in adolescent group were significant higher than adult group. The relative risk of breech presentation and PIH in the adolescent group was higher than the adult group, but not significant. This results may be explained by that the adolescent group tended to be unmarried, still in high school, unplanned pregnancy and they also have the problems of biological immaturity concomitant with inadequate nutrition and poor maternal self care. There are many studies that reports the same result of this study about the association between adolescent pregnancy and LBW infants.(4,8,9) In Thailand, our results were similar with the study of Watcharaseranee et al.(10) at Chonburi Hospital in 2001-2005, which found significantly increase incidence of preterm birth and LBW infants in women aged between 13-20 and 20-25 years old. Although some studies concluded that adolescent pregnancy are not at an appreciably increased risk of preterm,(11,13) most studies had found elevated rates, particularly among the youngest teen.(4,13,14) Our study also showed this increased risk of preterm in adolescent group.

No statistically significant difference in breech presentation, PIH, PROM and birth asphyxia were found in this study. This might be limited by inadequate sample size for these uncommon outcomes in our study.

In summary adolescent pregnancy is associated with LBW infants and preterm birth. They also have higher risk of some conditions such as anemia, breech presentation and PIH. Obstetrician should pay attention in all adolescent pregnancies to prevent these problems.

References

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ความเสี่ยงต่อการเกิดน้ำหนักน้อยและผลเสียจากการตั้งครรภ์ของมารดาวัยรุ่นที่โรงพยาบาลชัยนาท

มาโนช ประสิทธิ์ล้ำคำ

วัตถุประสงค์ : เพื่อศึกษาเรียบเรียง and make a comparison of the incidence and complications during pregnancy and birth in the group of adolescent and young adult women, and the group of adult women.  โดยมุ่งประเด็นการศึกษาไปที่ความเสี่ยงต่อการเกิดน้ำหนักน้อย

รูปแบบการศึกษา : การศึกษาแบบย้อนหลัง

วัสดุและวิธีการ : ศึกษาจากสถิติที่ตั้งครรภ์และคลอดที่โรงพยาบาลชัยนาท จำนวน 594 ราย จากทั้งหมด 625 ราย ที่คลอดที่โรงพยาบาลชัยนาทระหว่างวันที่ 1 มิถุนายน ถึงวันที่ 30 ตุลาคม พ.ศ. 2551 โดยแบ่งเป็น 2 กลุ่ม กลุ่มแรกเป็นสตรีตั้งครรภ์ที่อายุน้อยกว่า 20 ปี จำนวน 259 ราย และกลุ่มที่สองเป็นสตรีตั้งครรภ์ที่อายุ 20-25 ปี จำนวน 335 ราย ข้อมูลทั่วไปของมารดาและภาวะแทรกซ้อนระหว่างกลุ่มทั้งสองเก็บรวบรวมจากเวชระเบียนคนไข้และได้นำมาศึกษาเปรียบเทียบกัน

ผลการศึกษา : ในกลุ่มมารดาวัยรุ่นพบความเสี่ยงสูงขึ้นของเลือดน้อยกว่ากลุ่มมาราดาผู้ใหญ่ (34.7 ± 3.7% และ 35.5 ± 3.5%, p=0.005) และพบความเสี่ยงต่อการคลอดก่อนกำหนด (RR 2.31, CI 1.25 - 4.24, p=0.006) และพบการเกิดน้ำหนักน้อยมากกว่ากลุ่มมารดาผู้ใหญ่ (39.9 ± 3.5%, p=0.010) น้ำหนักน้อยมากกว่ามีน้อยส่งคดี (RR 1.96, CI 1.16 - 3.31, p=0.010) มารดาวัยรุ่นที่อายุ 13-16 ปี พบความเสี่ยงต่อการคลอดที่เกิดน้ำหนักน้อยมากที่สุด (RR 2.49, CI 1.19 -5.21, p=0.013)

สรุป : มารดาวัยรุ่นมีความเสี่ยงต่อการตั้งครรภ์หลายประการโดยเฉพาะความเสี่ยงต่อการคลอดก่อนกำหนดและการคลอดทารกแรกเกิดน้ำหนักน้อยกว่าปกติ