Maternal and perinatal mortality rate in Thammasat University Hospital from 1998 to 2002

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Abstract

Between 1998 to 2002, the number of patients in Obstetrics and Gynecologic department of Thammasat University Hospital have been increasing every year. In 5-year period there were 16,353 women delivered and 15,483 neonates were born in Obstetrics and Gynecologic department of Thammasat University Hospital. There were only one maternal death, the cause of death was congestive heart failure precipitate on valvular heart disease. The maternal mortality rate decreased from 47.48 to 6.6 per 100,000 live births and the perinatal mortality rate decreased from 13.68 to 9.56 per 1,000 total births when compare to the previous ten years (year 1988-1997). These are the results of increasing number of obstetricians, neonatologists, facility of patient care team and intensive care unit and the utilization of antenatal corticosteroid and postnatal surfactant.

Key words: maternal mortality rate, perinatal mortality rate, stillbirth rate, neonatal mortality rate

Introduction

Thammasat University Hospital was established since December 5th, 1987. The aim of establishment is to take care of patients in local area and to be the referral center from central region and lower part of northern region of Thailand. The other objective of Thammasat University Hospital is to support Faculty of Medicine, Thammasat University that established since March 9th, 1989. Then Thammasat University Hospital is also the primary and tertiary care center.

The majority of patients in Thammasat University Hospital live in Klonglaung, Kukot and other districts of Pathumtani province and other provinces in central region of Thailand such as Ayuthaya, Samuthprakarn, Saraburi, Lopburi and Singhburi provinces. Some of the patients in Thammasat University Hospital were migrants from Northern and Northeast regions of Thailand and some are Cambodians or Laos who came to work around Thammasat University Hospital. The variety of patients made Thammasat University Hospital had the

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variance of diseases and had many complicated patients.

Obstetrics and Gynecologic department of Thammasat University Hospital started service at the initial time of establishment of Thammasat University Hospital. The number of the patients has been increasing every year. The data of the patients in Obstetrics and Gynecologic department of Thammasat University Hospital was collected systematically since the beginning of the department.

This study was conducted to evaluating the maternal and perinatal mortality of Obstetrics and Gynecologic department of Thammasat University Hospital between 1998-2002 as the descriptive study.

Material and methods

All data of patients in Obstetrics and Gynecologic department of Thammasat University Hospital between January 1st, 1998 to December 31st, 2002 were collected and analyzed. The data that we collected were number of patients delivered at Thammasat University Hospital and their neonates, maternal death, stillbirth, neonatal death and perinatal death. In the analysis, the following definitions were used:

- Maternal mortality rate or maternal death rate refers to the number of women's death during pregnancy or within 42 days of the termination of pregnancy. The death may be from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes. This statistic is measured per 100,000 live births.1 8

- Stillbirth rate or fetal death rate refers to the number of stillborn infants weighting at least 1,000 grams, or after 28 completed weeks of gestation. This statistic is measured per 1,000 infants born, including live births and stillbirths.1

- Early neonatal death rate refers to the number of deaths occurring before 7 completed days of the infants' life. This statistic is measured per 1,000 live births.1 8

- Perinatal mortality rate refers to the number of unborn fetus weighting at least 1,000 grams, or after 28 completed weeks of gestation plus the number of neonatal deaths. When birthweight is unavailable a crown-heel length of 25 centimeters or more is used. This statistic is measured per 1,000 total births.1 8

- Low birth weight neonate refers to the first newborn weight obtained after birth is less than 2,500 grams.1

- Very low birth weight neonate refers to the first newborn weight obtained after birth is less than 1,500 grams.1

- Extremely low birth weight neonate refers to the first newborn weight obtained after birth is less than 1,000 grams.1

Results

Since January 1st, 1998 to December 31st, 2002 there were 15,353 women delivered and 15,483 neonates were born in Obstetrics and Gynecologic department of Thammasat University Hospital. The details were shown in Table 1.
Table 1. Delivered women and neonate of Thammasat University Hospital in 1998-2002

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of delivered women</th>
<th>Number of Neonate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>1998</td>
<td>2,372</td>
<td>1,159</td>
</tr>
<tr>
<td>1999</td>
<td>2,643</td>
<td>1,330</td>
</tr>
<tr>
<td>2000</td>
<td>3,193</td>
<td>1,643</td>
</tr>
<tr>
<td>2001</td>
<td>3,257</td>
<td>1,677</td>
</tr>
<tr>
<td>2002</td>
<td>3,888</td>
<td>1,971</td>
</tr>
<tr>
<td>total</td>
<td>15,353</td>
<td>7,780</td>
</tr>
</tbody>
</table>

Among 15,353 women that delivered as shown in Table 2, and Table can be classified by antenatal care and methods 3.

Table 2. Number of delivered women classified by place of antenatal care

<table>
<thead>
<tr>
<th>Antenatal care</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thammasat hospital &gt; 4 times</td>
<td>1,237</td>
<td>1,205</td>
<td>1,377</td>
<td>1,312</td>
<td>1,487</td>
<td>6,618 (43.11%)</td>
</tr>
<tr>
<td>Thammasat hospital 1-3 times</td>
<td>194</td>
<td>191</td>
<td>219</td>
<td>194</td>
<td>363</td>
<td>1,161 (7.56%)</td>
</tr>
<tr>
<td>The other center</td>
<td>761</td>
<td>1,025</td>
<td>1,373</td>
<td>1,507</td>
<td>1,833</td>
<td>6,499 (42.33%)</td>
</tr>
<tr>
<td>No antenatal care</td>
<td>180</td>
<td>222</td>
<td>224</td>
<td>244</td>
<td>205</td>
<td>1,075 (7.00%)</td>
</tr>
</tbody>
</table>

Table 3. Number of delivered classified by method of delivery

<table>
<thead>
<tr>
<th>Method of delivery</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal delivery</td>
<td>1,612</td>
<td>1,747</td>
<td>1,988</td>
<td>1,986</td>
<td>2,387</td>
<td>9,720 (63.31%)</td>
</tr>
<tr>
<td>Cesarean section</td>
<td>461</td>
<td>587</td>
<td>774</td>
<td>887</td>
<td>1,082</td>
<td>3,751 (24.43%)</td>
</tr>
<tr>
<td>Forceps extraction</td>
<td>110</td>
<td>112</td>
<td>137</td>
<td>128</td>
<td>128</td>
<td>615 (4.01%)</td>
</tr>
<tr>
<td>Vacuum extraction</td>
<td>159</td>
<td>176</td>
<td>262</td>
<td>246</td>
<td>286</td>
<td>1,109 (7.22%)</td>
</tr>
<tr>
<td>Breech assisting</td>
<td>25</td>
<td>12</td>
<td>23</td>
<td>19</td>
<td>30</td>
<td>109 (0.71%)</td>
</tr>
<tr>
<td>Twins vaginal delivery</td>
<td>5</td>
<td>9</td>
<td>9</td>
<td>11</td>
<td>15</td>
<td>49 (0.32%)</td>
</tr>
<tr>
<td>Total</td>
<td>2,372</td>
<td>2,643</td>
<td>3,193</td>
<td>3,257</td>
<td>3,888</td>
<td>15,353 (100.00%)</td>
</tr>
</tbody>
</table>
Between 1998 to 2002 there were only one maternal death, the cause of death was congestive heart failure precipitate on valvular heart disease at gestational age 32 weeks. Overall maternal mortality rate in this 5-year interval was 6.6 per 100,000 live births.

From the data of neonate, there were 15,483 neonates who were born in Thammasat University Hospital between 1998 to 2002 can be classified into 7,780 male newborns (50.25%), 7,700 female newborns (49.73%) and 3 newborns with ambiguous genitalia (0.02%) as shown in Table 1.

If we classified neonate into groups by birthweight, we found the details as shown in Fig. 1

Among 15,483 neonates, there were 52 neonate with congenital anomalies (0.34%). 6 neonates had neural tube defect (5 were anencephaly and 1 was meningoencephalocele). 6 neonates were hydrocephalus. 3 neonates had abdominal wall defect (2 were gastroschisis and 1 was omphalocele). One neonate had diaphragmatic hernia. 3 neonates had imperforate anus. 3 neonates had ambiguous genitalia. The other 30 newborns had minor anomalies such as cleft lip and cleft palate, polydactyly.

There were 148 neonates that dead equal to perinatal mortality rate 9.56 per 1,000 total birth. The stillbirth rate was 5.30 per 1,000 total births. The neonatal death rate was 4.30 per 1,000 live births. Details of perinatal mortality rate were shown in Fig. 2
In 5-year period, there were 66 neonatal death. The most common cause of death in neonate was preaturity (69.69%). The other causes were congenital anomalies (9.09%), severe birth asphyxia (9.09%), prolapsed umbilical cord (4.59%), early and late neonatal sepsis, meconium aspiration syndrome, abruptio placentae and hydrops fetalis.

There were 82 stillbirths in this period. The most common cause of stillbirth was idiopathic (63.41%). The other causes were intrauterine growth retardation or IUGR (10.98%), congenital anomalies (9.76%), abruptio placentae (6.10%), hydrops fetalis (2.44%) and other causes such as obstetrics and maternal medical complications (7.31%).

**Discussion**

Between 1998 to 2002, the numbers of patient in Obstetrics and Gynecologic department of Thammasat University Hospital have been increasing every year. When compare to the previous ten years that Tanprasertkul and Wanichsetakul reported earlier, this study clearly showed 2-3 times of increasing number of delivered women in Thammasat University Hospital. The reasons of this increasing were the expansion of the size of Thammasat University Hospital, respect more of Thammasat University Hospital among the population around hospital and the increasing number of referral patients from other hospitals.

From the increasing number of patients, we also found increasingly more complicated cases than previous ten years. Comparing to the previous report, we found both maternal and perinatal mortality rate were decreased.

The maternal mortality rate of year 1988-1997 was 47.48 per 100,000 live births, was decreased to 6.6 per 100,000 live births in year 1998-2002. There was the only one maternal death from 15,863 delivered women.
The cause of death was medical complication in pregnancy (heart failure precipitate on valvular heart disease). The decrease in maternal mortality rate occurred because of Thammasat University Hospital had much more obstetricians, more complete in facility of patient care team and delivery unit to take care of the mothers.

About perinatal mortality, there were decreased from 13.68 per 1,000 total births to 9.56 per 1,000 total births. Comparing to maternal mortality, the perinatal mortality rate was decreased in lower proportion than maternal mortality rate. The occurrence of this because some patients in Obstetrics and Gynecologic department of Thammasat University Hospital moved from the other provinces to work around Thammasat University Hospital. This group had poor or no antenatal care, leading to poor pregnancy outcome such as preterm labor, low birth weight infants and fetal growth restriction. If we pay attention to birthweight, the rate of low birthweight infant was 14.41%, very low birthweight was 0.97% and extremely low birthweight was 0.21%. In the year 1988-1997, low birthweight infant rate was 9.04%. Although low birthweight infant rate was higher than previous ten years but neonatal and infant mortality rate were lower. This was due to the utilization of antepartum corticosteroid to stimulate fetal lung maturity, the use of neonatal surfactant to reduce respiratory distress syndrome (RDS), the increasing number of neonatologists and the increasing facility of newborn ICU.

In conclusion, from the data of Obstetrics and Gynecologic department of Thammasat University Hospital showed that between 1998 to 2002, the number of delivered women and newborn were increased every year especially compare to the previous ten years before (1997-1998). The maternal mortality rate was decreased from 47.48 to 6.6 per 100,000 live births and the perinatal mortality rate was decreased from 13.68 to 9.56 per 1,000 total births. These are the results of increasing number of obstetricians, neonatologists, facilities of patient care team and intensive care unit and the utilization of antenatal corticosteroid and postnatal surfactant. These decreasing in maternal and perinatal mortality rate showed the development in quality of service of Thammasat University Hospital. The details from this study were the baseline data of Obstetrics and Gynecologic department of Thammasat University Hospital for further study, development of education and service qualities.

References
บทคัดย่อ

อัตราการตายของมารดาและอัตราการตายวัยก่อนคลอดของโรงพยาบาลธรรมศาสตร์
เฉลี่ยประจำปีระหว่างปี พ.ศ. 2541 ถึง พ.ศ. 2545

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ในระยะเวลาปี พ.ศ. 2541 ถึงปี พ.ศ. 2545 พบว่าจำนวนผู้มารดาการในแผนกสุขศาสตร์ของ
โรงพยาบาลธรรมศาสตร์เฉลี่ยปีวิธีมีจำนวนเพิ่มขึ้นทุกปี โดยในช่วงระยะเวลาที่ก่อนคลอดนั้นมีการตาย
ที่มากที่สุดในปีพ.ศ. 2541 จำนวนรวมทั้งหมด 15,353 ราย และมีการตายที่คลอดที่โรงพยาบาลธรรมศาสตร์ฯ
รวมทั้งหมด 15,483 ราย ในจำนวนทั้งหมดนี้พบว่ามีการตายในช่วงคลอด 1 รายจากสาเหตุวัยอมลงเหลือ
เมื่อเทียบกับอัตราการตายของมารดาในช่วงที่เท่ากับ 6.6 ต่อการเกิดมีชีพที่หมด 100,000 ราย
ตลอดจากตั้งแต่ปีแรกที่เปิดโรงพยาบาล (ปี พ.ศ. 2531-2540) ซึ่งพบวามีอัตราการตายของมารดาอยู่ 47.48
ต่อการเกิดมีชีพ 100,000 ราย ในช่วงปี พ.ศ. 2541-2545 และพบการตายวัยก่อนคลอดจาก 13.68
ต่อการคลอด 1,000 รายในปี พ.ศ. 2531-2540 เหลือเพียง 0.56 ต่อการคลอด 1,000 รายในช่วงปี พ.ศ.
2541-2545 ที่นี้อัตราการตายที่คลอดนั้นน้อยและสามารถเป็นผลมาจากที่ทางโรงพยาบาลธรรมศาสตร์ฯ
มีความเข้มข้นของสุข-เวชศาสตร์, คุณภาพยาและทีมผู้ดูแลผู้ป่วยมากขึ้นเรื่อยๆ ทุกปี รวมถึงการที่มีการ
ใช้เทคโนโลยีเพื่อการดูแลการบริโภคและป้องกันโรค ในทางที่คลอดก่อนคลอดถูกอย่างพร้อมที่มีมากขึ้นด้วย