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A Retrospective Study of Anti-HIV Seropositive Adolescent Parturients in Chonburi Hospital During 2001- 2006

Sarinya Thongpoonpun MD,
Teera Siwadul MD.

Department of Obstetrics and Gynecology, Chonburi Hospital, Chonburi 20000, Thailand

ABSTRACT

Objective To assess the prevalence of anti-HIV seropositive adolescent parturient and maternal and neonatal outcomes.

Study design Retrospective descriptive study.

Materials and methods The study group consisted of pregnancy aged 14-21 years who had the anti-HIV (ELISA) test positive and gave births at Chonburi Hospital from January 1, 2001 to December 31, 2006. Demographic data, obstetric and neonatal informations were collected from medical records.

Results Among the total 5,302 deliveries of adolescent pregnancy in Chonburi Hospital, fifty cases with anti-HIV seropositive were found. The prevalence was 9.43 per 1000 cases. Majority of these (40%) were in age group 20-21 years. Seventy four percent had 4 times or more of antenatal care visits. The mean CD4 level during pregnancy was 448.4± 190.3 cells/mm^3 and 74% received zidovudine during antenatal care. Only 22 newborns (44%) could be followed up until 12 months, and only 1 baby was infected. Preterm labor and premature rupture of the membranes were common obstetric complications. Most of them had good neonatal outcomes. The average birth weight in antiretroviral drug receiving was significant higher than in non-receiving groups (2,988.1 ± 384.5 versus 2,702± 394.5 grams, P= 0.026). The number of antenatal care visits and CD4 level in antiretroviral drug receiving group were also significant higher than in non-receiving group (7.5± 2.9 versus 2.9± 2.1 times, P<0.01 and 468.9± 180.2 versus 229.7± 183.9 cells/mm^3, P= 0.035)

Conclusion The prevalence of anti-HIV seropositive adolescent parturient in Chonburi Hospital was 9.43 per 1,000 cases. None of the mothers and fetuses had serious complications.

Keywords: adolescent pregnancy, anti-HIV seropositive, antiretroviral drug

Introduction

HIV-infected adolescent pregnancy is one of the important problems in mother and child health. The major problems of adolescent pregnancy in developing countries seem to be unplanned and unwanted pregnancy, high rate of inadequate

prenatal care and high rate of loss to follow-up[1-3]. All these factors may affect the maternal and neonatal outcomes.

Although the number of actual AIDS cases among teens is low, HIV infection during these years is significant. There is growing concern that HIV infection may be spreading in this age group despite education, prevention, and treatment programs.

The objectives of this study were to determine the prevalence of anti-HIV seropositive in adolescent parturient in Chonburi Hospital from 2001 to 2006 and to study the characteristics as well as outcomes of them.

Materials and Methods

In Chonburi Hospital, women diagnosed as anti-HIV positive during pregnancy were managed by a multidisciplinary team; including an obstetricians, HIV physicians and specialist nurses. All pregnants who were anti-HIV positive were advised to take antiretroviral therapy during pregnancy and delivery. Plasma CD4 cell count was tested by flow cytometry technique and maternal antiretroviral drug regimens were reviewed by the HIV physicians at regular intervals during pregnancy. Antiretroviral therapy (single-agent zidovudine) was usually commenced between 28 and 32 weeks of gestation and continued intrapartum. Women with advanced HIV were treated with a HAART (Highly Active Antiretroviral Therapy) regimen. The start of treatment was differed until after first trimester, if possible, and continued after delivery. From the policy of vaginal delivery, cesarean section was performed for the usual obstetric reasons and to avoid a prolonged labor and prolonged rupture of membranes. After delivery, all women were advised not to breastfeed their babies and all infants born to mothers with anti-HIV positive were treated with antiretroviral therapy from birth. Zidovudine was usually administered orally to the neonate for four to six weeks.

Patients were identified by reviewing medical records of those who delivered at Chonburi Hospital from January 1, 2001 to December 31, 2006. The research proposal was approved by Ethic Committee of Chonburi Hospital.

The inclusion criteria was the pregnant women age 14-21 years, who had the result of anti-HIV test (ELISA) positive and gave birth at Chonburi Hospital from January 1, 2001 to December 31, 2006.

Adolescent pregnancy was defined as a pregnant younger than 21 years old by the definition from the State of Adolescent Health Coordinators, The Maternal Child Health Bureau and Centers of Disease Control[6].

The following variables were extracted from medical records: maternal age,residence, level of education, occupation, numbers of antenatal care, gravidity, parity, level of CD4 during pregnancy, hematocrit, result of anti-HIV test in partner, antiretroviral drug receiving, mode of delivery, obstetric complications, neonatal complications and contraception after delivery.

Statistic analysis was undertaken using SPSS for Windows version 13.0. Data was analyzed by using descriptive statistics and the statistical values were percent, mean and standard deviation. Using independent unpaired T-test compared the antiretroviral drug receiving group and antiretroviral drug non-receiving group for statistic significance ($P<0.05$)

Results

Between January 1, 2001 and December 31, 2006, 5,302 cases of adolescent parturient gave birth at Chonburi Hospital. Fifty of them were found to have anti-HIV test positive. The prevalence of HIV infection among this adolescent group was 9.43 cases per 1,000 mothers. The prevalence rates per year were shown in Fig.1. The mean age was 18.7 years old. Most of them were housewives, a junior high school level and lived in Chonburi. Most of them were nulliparity. Thirty-seven cases (74%) had antenatal care visit ≥4 times. Forty-eight percent of t he study group had hematocrit volume 33% or lower which was considered as anemia in pregnancy. The average CD4 level was 448.4±190.3 cells/mm^3. There were 12 cases (24%) of partner had positive result of anti-HIV. Seventy-four percent received

antiretroviral drug during antenatal care and mean gestational age of starting antiretroviral drug was 30.2 weeks. When we considered the outcomes of pregnancy, it was found that mean gestational age at delivery was 38.2 weeks (range 27-43 weeks) (Table 1). Mode of deliveries was shown in Table 2. Forty-one cases (82%) were normal delivery, 1 case (2%) was operative vaginal delivery (Vacuum extraction) and 8 cases (16%) were cesarean section. Preterm labor and premature rupture of the membranes were the two most common obstetric complications. (Table 3)

Data on neonatal outcomes were shown in Table 4. The mean birth weight of infants was 2,913.4 grams. Two of them had APGAR score at 5 min ≤7.

Infant's blood for HIV-1 PCR test was obtained at age 1, 3, 6 and 12 months. HIV antibody was determined at age 18 months. Twenty two infants (44%) could be follow-up and 1 infant had positive HIV-1 PCR test at 12 months of age. The infection rate was 4.5%

The comparative data between antiretroviral drug receiving and non-receiving groups revealed that number of antenatal care visits, CD4 level and birth weight in antiretroviral drug receiving group were significant higher than antiretroviral drug non-receiving group ($P < 0.05$), while age, Apgar score at 5 min and obstetric complications were not significantly different. (Table 6).

Contraception of choice after delivery was tubal ligation (60%), DMPA (6%), oral contraceptive pill (4%) or implants (2%), however 28% of them had no family planning.

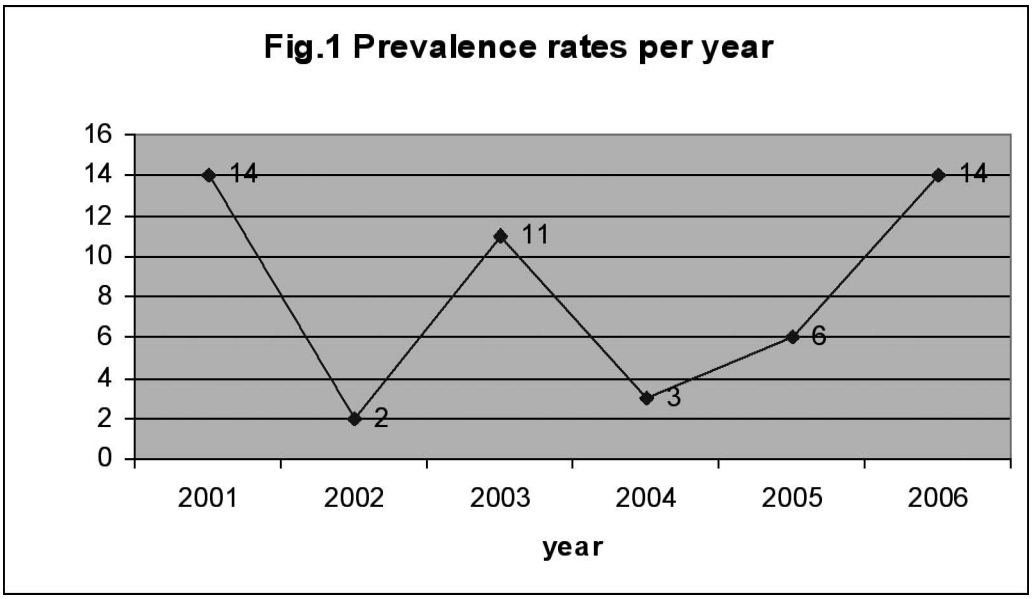

Table 1. Demographic characteristics (N=50)

Characteristics	Cases (%)	
Age (years) (mean±SD)	18.7 ±1.4	Range 14-21
Address		
Chonburi	37 (74)	
Other provinces	13 (26)	
Level of education		
Primary school or lower	21(42)	
Junior high school	23 (46)	
Senior high school	4 (8)	
Diploma	1 (2)	
Bachelor degree	1 (2)	
Occupation		
Housewives	26 (52)	
Employee	23 (46)	
Business	1 (2)	
Antenatal care visit		
No ANC	5 (10)	
ANC <4 times	8 (16)	
ANC ≥4 times	37 (74)	
Hematocrit volume (%) (mean±SD)	32.9± 3.8	Range 26-44
VDRL positive	0	
Gravidity		
1	37 (74)	
2	11 (22)	
>2	2 (4)	
Parity		
0	44 (88)	
1	6 (12)	
Gestational age at delivery (weeks) (mean±SD)	38.2± 2.8	Range 27-43
CD4 level (cells/mm3) (mean±SD)	448.4± 190.3	Range 17-874
Antiretroviral drug		
Yes	37 (74)	
No	13 (26)	
Result of Anti-HIV in partner		
Positive	12 (24)	
Negative	2 (4)	
Unknown	36 (72)	

Table 2. Modes of delivery (N=50)

Modes of delivery	Cases (%)
Normal delivery	41 (82)
Operative vaginal delivery (Vacuum extraction)	1 (2)
Cesarean section	8 (16)
Indication: Cephalopelvic disproportion	2 (25)
Abnormal presentation	1 (12.5)
Prior cesarean section	2 (25)
Fetal distress	2 (25)
Elective	1 (12.5)

Table 3. Obstertric complications (N=20)

Complications	Cases (%)
Premature rupture of membranes	4 (8)
Pregnancy-induced hypertension	3 (6)
Preterm labor	4 (8)
Cephalopelvic disproportion	2 (4)
Abnormal presentation	1 (2)
Transient hypertension	1 (2)
Prolonged second stage of labor	1 (2)
Intrauterine growth restriction	2 (4)
Postterm	2 (4)

Table 4. Neonatal outcome

Neonatal outcomes	Cases (%)	
Birth weight (grams)	(N=50)	
<2000	1 (2)	Mean =2,913.8± 403.4
2000-2499	7 (14)	
2500-2999	31 (62)	
3000-3499	10 (20)	
3500-3999	1 (2)	
Apgar score at 5 min ≤7	2 (4)	
Result of HIV-1 PCR test after 12 months follow-up	(N=22)	
Positive	1(4.5)	
Negative	21 (95.5)	

Table 5. Contraceptions after delivery (N=50)

Contraceptions	Cases (%)
Tubal ligation	30 (60)
Oral contraceptive pill	2 (4)
DMPA	3 (6)
Implants	1 (2)
No planning	14 (28)

Table 6. Comparative data between antiretroviral drug receiving and non-receiving groups

	Antiretroviral drug receiving group (mean±SD) N=37	Antiretroviral drug non-receiving group (mean±SD) N=13	P-value*
Birth weight (grams)	2,988.1± 384.5	2,702± 394.5	0.026
No. Of ANC	7.5± 2.9	2.9± 2.1	<0.01
CD4 level (cells/mm3)	468.9± 180.2	229.7± 183.9	0.035
Age (yr)	18.9± 1.3	18.2± 1.6	0.090
Apgar score at 5 min	9.8± 1.2	9.6± 1.4	0.722
Obstetric complications	14 (37.8%)	6 (46.2%)	0.269

* Significance if P<0.05

Discussion

From this study, the prevalence of anti-HIV seropositive adolescent parturient in Chonburi Hospital was 9.43 per 1000 mothers, and corresponded with those from previous study in Thailand.[4] It seemed to be higher than the previous study of Watcharaseranee N et al.[5] This study used the definition of adolescent pregnancy from the State of Adolescent Health Coordinators, the Maternal Child Health Bureau and Center of Disease Control that include the pregnancy age 11 to 21 years old.[6] This different definition might be the cause of different prevalence. Interestingly, during 2004 the prevalence rates trend to increased. This finding warrants the necessary to encourage all health care to provide the programs that educate teenagers about the risks of sexual transmitted disease, including HIV and prevention of unintended pregnancy.

Most demographic characteristics of this study were similar to Taneepanishkul S, et al[4] only the level of education was higher.

The outstanding of this study was studying of the CD4 level. Because seventy-four percent of parturients in this study had adequate antenatal care visits, so before antiretroviral drug was started, CD4 level was evaluated in seventy percent of them.

Since 1998, zidovudine using in the 3rd trimester of pregnancy is found to decrease HIV-1 mother to child transmission from 18.9% in the placebo group to 9.2% in the study group accounting for 50% reduction.[7] Seventy four percent of the women in this study received zidovudine during their pregnancies, and their infants received zidovudine prophylaxis after delivery and only 1 out of 22 cases (4.5%) after 12 months was found to have positive HIV -1 PCR test. In Chonburi Hospital we used the HIV-1 PCR test for all infants who were born from anti-HIV seropositive mothers and those with positive HIV-1 PCR test performing at or after 12 months of age or with positive HIV-antibody test at age 18 months were classified as HIV-1 infected infants.[8] Because of the limitation of this study design, we could follow-up only 22 infants, and we found that only 1 of them had HIV-1 PCR test positive in 12 months follow-up. The mother of the infected infant had no antenatal care and did not receive antiretroviral drug during pregnancy.

The study revealed the discordance of 2 out of 14 cases (14.3%) known anti-HIV test of the partners. These couples should have intensive counseling about HIV prevention and psychological support from counselors or relatives.[9]

Preterm labor and premature rupture of membranes were common complications in anti-HIV-infected adolescent parturients which were similar to those observed by Boer K et al,[10] while the other two studies[2,11] had reported more complications: low birth weight. The causes of increase risk of preterm labor might be the same as general adolescent pregnancy e.g., poor nutrition, inadequate antenatal care and lower level of education. However, the prevalence of premature rupture of membrane in this study was higher than general adolescent pregnancy (8% versus 0.6%).[5] It is important that HIV infection is the main risk factor for cervicovaginal infections that significant association with premature rupture of membrane and increased risk of maternal-to-child transmission.

The mode of delivery in HIV pregnancy was debated for a long time, whether vaginal or cesarean section for decreasing mothers to child transmission rate. Two previous studies supported the benefit of elective cesarean delivery and zidovudine usage to lower the risk of mother to child transmission[12,13] and cost-effective to prevent vertical transmission of HIV among women receiving various antiretroviral therapy regimen.[14] Recently, 2 studies showed no difference about mother to child transmission rate and mode of delivery.[10,15] In our study, 42 cases delivered by vaginal route and 8 cases by cesarean deliveries. None of them had serious maternal and neonatal complications.

Comparing about neonatal outcomes between this study and previous study, we found no difference in birth weight and APGAR score at 5 min between HIV seropositive and general adolescent pregnancy, this might be due to an appropriate antenatal

interventions and intrapartum care in these high risk pregnancy group nowadays.

About contraception, all HIV-infected pregnancies who delivered in Chonburi Hospital was counseled about permanent contraception. 60% accepted tubal ligation, 12% were using reversible contraceptive methods. However there was need to encourage use of condoms in combination with other contraceptive methods, because that is one of the good techniques to prevent HIV infection.[16]

The prior hypothesis was that protease inhibitor (PI)-containing regimens are associated with an increased risk of low birth weight.[17] In this study, birth weight in antiretroviral drug receiving was significance higher than non-receiving groups. These finding were in contrary to these hypothesis.

Conclusion

The prevalence of anti-HIV seropositive adolescent parturient did not change so much from the past. No serious obstetric and neonatal complications were found in this study group. Future prospective research should be performed to collect more information about risk behavior of HIV infection. HIV prevention programs are going to have impact in reducing risk behaviors in Thailand adolescents.

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การศึกษาย้อนหลังสตรีหลังคลอดวัยรุ่นที่ผลเลือดแอนตี้ เอช ไอ วี เป็นบวกในโรงพยาบาลชลบุรี ระหว่างปี พ.ศ. 2544-2549

สรินยา ทองพูนพันธ์, ธีระ ศิวะดุลย์

วัตถุประสงค์: *เพื่อศึกษาอุบัติการณ์และผลต่อมารดาและทารกในสตรีหลังคลอดวัยรุ่นที่ผลเลือดแอนตี้เอช ไอ วี เป็นบวก*
รูปแบบการวิจัย: *การศึกษาเชิงพรรณนาแบบย้อนหลัง*
วัสดุและวิธีการ: *เก็บข้อมูลจากแฟ้มประวัติผู้ป่วยในและเวชระเบียนผู้ป่วยนอกของสตรีตั้งครรภ์อายุระหว่าง 14-21 ปีที่ผลเลือดแอนตี้ เอช ไอ วี เป็นบวกที่คลอดบุตรในโรงพยาบาลชลบุรีตั้งแต่เดือนมกราคม ปีพ.ศ. 2544 ถึงเดือนธันวาคมปีพ.ศ. 2549*
ผลการศึกษา: *ช่วงเวลาที่ทำการศึกษามีสตรีตั้งครรภ์วัยรุ่นที่มาคลอดบุตรที่โรงพยาบาลชลบุรีจำนวน 5,302 คน และมีจำนวน 50 คนที่ผลเลือดแอนตี้ เอช ไอ วี เป็นบวก คิดเป็นอุบัติการณ์ 9.43 ต่อการคลอด 1,000 คน ส่วนใหญ่มีอายุระหว่าง 20-21 ปี (40%) ร้อยละ 74 มารับการฝากครรภ์ตั้งแต่ 4 ครั้งขึ้นไป ค่าเฉลี่ยของระดับ CD4 เท่ากับ 448.4 ± 190.3 cells/mm^3 ร้อยละ 74 ได้รับยาต้านไวรัสระหว่างการฝากครรภ์ สามารถติดตามผล HIV-1 PCR test ของบุตรจนถึง 12 เดือนหลังคลอดได้เพียง 22 คน (44%) และพบว่ามีทารกเพียง 1 คนที่มีผลตรวจเป็นบวกที่อายุ 12 เดือน ภาวะแทรกซ้อนที่พบมากที่สุดคือการเจ็บครรภ์คลอดก่อนกำหนด และถุงน้ำคร่ำแตกก่อนการเจ็บครรภ์ ทารกส่วนใหญ่มีผลลัพธ์การคลอดที่ดี กลุ่มที่ได้รับยาต้านไวรัสก่อนคลอด มีค่าเฉลี่ยน้ำหนักแรกเกิดของทารก, จำนวนครั้งของการฝากครรภ์ และระดับ CD4 สูงกว่ากลุ่มที่ไม่ได้รับยาอย่างมีนัยสำคัญ*
สรุป: *อุบัติการณ์ของสตรีหลังคลอดวัยรุ่นที่ผลเลือดแอนตี้ เอช ไอ วี เป็นบวก ในโรงพยาบาลชลบุรีเท่ากับ 9.43 ต่อการคลอด 1,000 คน ไม่พบภาวะแทรกซ้อนที่รุนแรงทั้งในมารดาและทารก*