Demographic and Clinical Characteristic of Symptomatic Vertical HIV-Infected Children at Chiang Mai University Hospital

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Abstract
From January, 1989 to December, 1994; a total of 353 symptomatic vertical HIV-infected children were admitted to Department of Pediatrics, Chiang Mai University Hospital. The number of cases per year increased several folds during 1993-4. Median age at the time of diagnosis of total cases was 7.6 months with the range of 1-94 months. However, the median ages of cases in each year at the time of diagnosis were progressively older towards 1994. Among the eldest ones some were born in 1987. Eighty percent presented with fever and/or dyspnea and/or diarrhea. Other presentations included neurological disorders, overt opportunistic infections, hematological disease, chronic pneumonitis (lymphoid interstitial pneumonitis) and failure to thrive. On the first admission signs and symptoms of non-specific findings of HIV infection such as hepatosplenomegaly, generalized lymphadenopathy, failure to thrive, thrush, chronic fever and chronic diarrhea were presented in 66, 66, 52, 46, 26 and 23 percent respectively. The mortality rate was 42 percent. The median age of the mothers and the fathers of the patients were 25 and 28 years respectively. Twenty of 201 fathers (10%) whose blood samples were tested for HIV antibody revealed negative result. (J Infect Dis Antimicrob Agents 1996; 13:89-93.)

INTRODUCTION
The first documented case of human immunodeficiency virus (HIV) infection in Thailand was reported in 1984. He was a Thai student returning from the United States. However, the first wave of the HIV epidemic in Thailand began late in 1987 among homosexuals and injecting drug users (IDU). In 1989 the system of nationwide HIV sentinel surveillance was established and HIV seroprevalence has been monitored in various population groups in every province. This surveillance revealed the second wave of HIV epidemic among female prostitutes in 1989. It is most prevalent in the northern provinces including, Chiang Mai, Chiang Rai, Payao, Mae Hong Son, Lampang and Lamphun. The second wave among female prostitutes was followed by successive waves of transmission to their non-IDU clients, then to “low-risk” non-prostitute wives and girlfriends of these men in the general population (1). The current wave was reflected tragically by the fact that the national median seroprevalence among prenatal clinic attendees has increased from 0 in 1989 to 2.3 percent in June 1995 (2). Although the peak maternal and pediatric epidemics is in the upper north provinces (5-10%), the infection has spread to all areas of the country.

Hospitals in Chiang Mai and its neighboring provinces in northern Thailand are experiencing a rapid increase in the number of HIV-infected patients. The patients has already overburdened hospital facilities including beds. Although most of them are adults, which at present occupied about one third of the beds, the number of AIDS children is also increasing and their clinical data were described in the article.

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OBJECTIVE
To describe the demographic and clinical characteristics of symptomatic vertical HIV-infected children admitted to Chiang Mai University Hospital from the beginning of the epidemic of HIV infection in children in Thailand.

METHODS
All symptomatic HIV-infected children who were admitted to Chiang Mai University Hospital from January 1989 to December 1994 were included in the study. For children age over 18 months, the diagnosis of HIV infection was made when the child's serum was reactive by both ELISA (Enzymun-Test® Anti-HIV 1+2, Boehringer Mannheim GmbH Diagnostica) and particle-agglutination test (Serodia® -HIV, Fujirebio Inc., Tokyo, Japan). If they were less than 18-month-old, the diagnosis was made when the serum was reactive and symptoms and signs of HIV infection or HIV-related conditions were present (3). The patients’ history, physical examination, common presenting problems and outcome were recorded prospectively.

RESULTS
From January, 1989 to December, 1994; there were 353 symptomatic vertical HIV-infected children who were admitted to the department of Pediatrics, Chiang Mai University Hospital (Fig 1) due to problems related to HIV infection. All were newly diagnosed. Most mothers were not aware that they and their children had been infected with HIV. Seventy-five percent of the children lived in Chiang Mai. Twenty-five percent were from neighbouring provinces. This proportion remained the same over the study period (Fig 2). The median age at the time of diagnosis was 7.6 months with the range of 1-94 months. The average age at diagnosis increased every year (Fig 3). Two cases were born in 1987 (one in March and the other in April), the rest were born in later years as shown in Fig 4. Male to female ratio was 1:1. On admission, signs and symptoms of nonspecific findings of HIV infection i.e. generalized lymphadenopathy, hepatosplenomegaly, failure to thrive, thrush, history of repeated common infection, chronic fever, chronic diarrhea and severe dermatitis were present in 66, 66, 52, 46, 26, 26, 23 and 7 percent respectively. Eighty percent of all HIV-infected children presented with fever and/or pneumonia and/or diarrhea. These common problems decreased in the later years with other problems increasing as shown in Fig 5. The other problems included neurological disorders, specific opportunistic infections, hematological disease, chronic pneumonitis (lymphoid interstitial pneumonitis) and failure to thrive (Table 1). The documented common and opportunistic infections in this group of children have been reported elsewhere (4). The mortality rate during their first admission was 48 percent before
1992 and decreased in the later years as shown in Fig 6.
The parents’ blood were also tested for HIV-antibody and the results were shown in Table 2. Twenty of 201 fathers (10%) were negative for HIV antibody. The median age of the mother and the father of the patients were 25 and 28 years. There median ages did not change over the study period. The mode of infection in the parents was mostly heterosexual. Most of the parents were asymptomatic.

**DISCUSSION**
The number of newly diagnosed cases increased every year. In 1994 they occupied about 15 percent of the pediatric beds in Chiang Mai University Hospital. This raised the problems of administration in patient care and medical education. In the early years (1987-1990) of the HIV epidemic in Thailand, health care workers did not have much experience in managing HIV-infected patients, there was usually an unreasonable...
fear of caring for these patients. This caused difficulties in recruiting and maintaining personnel. Inclusion of HIV education in the curricula for medical students, nurses, and other paramedical personnel, as well as continuing medical education, is needed to alleviate problems.

The majority of the patients were from Chiang Mai. The proportion of patients who resided in Chiang Mai remained constant over the study period, suggesting that Chiang Mai was indeed one of the epidemic sites. Among reports of the first cases of HIV-infected children in Thailand, the patients were born in 1988 (5,6). The first in our report were born in 1987 and the number of cases had increased exponentially especially after 1990. This finding correspond with the serosurveillance rate of HIV-infected pregnant women, which increased from 0.3 percent in 1990 to 1.7 percent in 1994.

Although the timing of occurrence of clinical manifestations varies, most of the vertically HIV-infected children developed signs and symptoms of HIV infection very early in life (7-10). These could explain the finding in this study that the age of most cases were less than one year. The fact that the age at the time of diagnosis increased in subsequent years suggested that the epidemic of pediatric AIDS began in 1987 to 1991.

The occurrence of nonspecific findings of HIV infection in these patients depended on their age. Older children tended to have more nonspecific findings. Most of the hospital admission were necessitated by HIV-related infectious diseases. These are more common in younger children (one to two years of age). They usually presented with fever and/or pneumonia and/or diarrhea. In older children there were also neurological disorder, hematological diseases, chronic pneumonia (lymphoid interstitial pneumonitis) and failure to thrive, in addition to HIV-related infectious diseases. The decreasing mortality rate in the later years might be due to the early recognition and treatment of opportunistic infections.

The mothers of these infected infants needed counselling. Most of them did not know her infection status; therefore, it is important to have time and privacy to discuss with her the consequences of the fact that her child and herself have been infected. The finding that 10 percent of the fathers of the patients were not infected with HIV raised the importance of the art of counselling of the family.

Current understandings of HIV disease in children is based predominantly on data obtained from several settings. In Romania, most of reported HIV-infected children acquired the infection through untested blood and use of unsterile equipment (11). In western Europe and the United States of America the epidemic was mainly in homosexuals and comparatively few cases of pediatric AIDS were reported (12-14). Although most of HIV-infected children are found in countries in Africa, little is known regarding the clinical and demographic characteristics of HIV infection among children in these countries. They may not live long enough to develop clinical AIDS due to high mortality rate of common childhood diseases in immunocompromised children with HIV infection. At present Southeast Asia and the Indian subcontinent are experiencing an explosive outbreak of HIV infection (15, 16). In Thailand the number of HIV-infected women and children is increasing at a disproportionate rate compared to that of the whole Thai population. The experience gained by Thai workers in pediatric HIV disease will be beneficial to other countries in the world.

References
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