SIRIRAJ MEDICAL LIBRARY

Dengue Disease in Thailand: Don't Let the Outbreak Keep Going On and On!

Kumnuan Ungchusak*, Kanoktip Thiparat*, Surapee Anantapreecha, Jirapat Ketkeaw*****

**Bureau of Epidemiology, Department of Disease Control, **Department of Medical Sciences, ***Bureau of Vector-borne Disease, Department of Disease Control, Thailand.*

Siriraj Med J 2007; 59: 195-196
E-journal: http://www.sirirajmedj.com

Dengue diseases which includes Dengue Fever (DF), Dengue Hemorrhagic Fever (DHF) and Dengue Shock Syndrome (DHF), is one of the major communicable diseases in countries around the world. Before B.E. 2513, there were reported cases of Dengue from only 9 countries. At present more than 100 countries report Dengue diseases. The World Health Organization (WHO) has estimated that 50 million people are infected by Dengue virus annually. Southeast Asian countries, South Pacific and many tropical countries in South America are endemic areas with repeated outbreaks.

Dengue situation in Thailand

DF, DHF and DSS were diseases under the national surveillance system which required notification to the Ministry. All patients with signs and symptoms of suspect Dengue are subjects for reporting to the provincial health office and to the Bureau of Epidemiology, under the Thai Ministry of Public Health. There were reported cases since B.E. 2492. The first obvious outbreak occurred in Bangkok and Thonburi municipal area in B.E. 2501[1]. In that outbreak there were 2,706 patients and 296 deaths or a 10% case fatality rate. Since then, the disease has spread over the country with an increasing morbidity trend. The biggest outbreak happened in B.E. 2530 when the country recorded 174,285 cases or 325 per 100,000 population, with 1,008 deaths (case fatality rate of 0.6 %). Big outbreaks occurred every two or three years (Fig 1). As a result of good clinical management, the case fatality rate was curbed down from 10% to 0.12% over the past five decades. The majority of the reported cases, over 90% at the beginning were under diagnosis of DHF. However, the proportion of DF cases was found increasing to 37% in the previous year. This might be the result of early diagnoses made by physicians or the changing of the epidemiology of the disease itself.

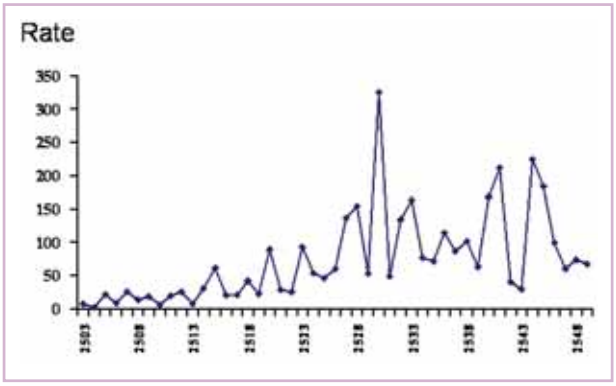


Fig 1. Rate of Dengue (DF+DHF+DSS) per 100,000 population in Thailand from B.E 2503-2549.

Distribution of Dengue cases by age

The most prevalent age group for Dengue has been the school age population from 5-9 followed by the 10-14 years. During the past five years, one can observe that more elder students and young adults were affected by Dengue. In the past year, of all the fatal cases that resulted from DHF (38%) and Dengue Shock Syndrome (62%), none of Dengue fever cases was fatal.

Seasonal variability

Although cases of Dengue were reported around the year, but there is a seasonal trend during the rainy months starting from May to October. This is explained by the increasing number of breeding places for the Aedes mosquito and the optimal humidity and temperature which favor the egg laying and hatching of Aedes mosquitoes.

Distribution by place

Dengue can be found in all regions and provinces over the country. Historically, cases were believed to emerge from the urban setting and spread to the rural area because of people movement and good transportation. One study showed the disease spreading from Bangkok Metropolitan to other provinces with a rate of 148 kilometers per month[2]. Provinces in the Central region and Southern region experienced more outbreaks in the past five years.

Distribution of Dengue virus and serotypes

All of the four serotypes, Den-1, Den-2, Den-3 and Den-4 were circulated in the country. The serotyping of Dengue from patients from provinces by the Department of Medical Sciences, the Ministry of Public Health, showed changing proportions among the four Dengue serotypes with Den-1 and Den-4 more predominant than others in the past couple of years[3] (Fig 2). This observation can reflect the immunity of the population to specific dengue

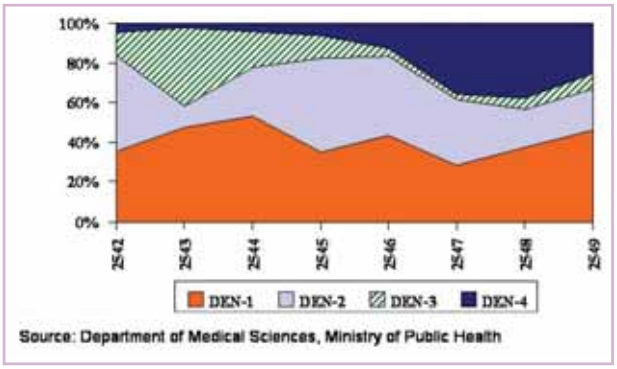


Fig 2. Proportion of Dengue serotype in Thailand B.E. 2542-2549.

serotypes in the past year. An abrupt change of a new Dengue serotype might then cause an outbreak or more severe cases.

Vector distribution

Aedes egypti is the main epidemiological vector in transmission of Dengue diseases. The vector breeds in water containers in the household area especially in the bath room and inside the jar with water for drinking or consumption purpose. The Ministry of Public Health has set up a target of controlling these breeding places so that the house index (the number of house with Aedes larvae found in water container per 100 surveyed households) will not exceed 10%. In B.E. 2548, the Department of Disease Control conducted a vector survey in 43 provinces[4]. The survey showed that 81% of the villages or communities still have HI more than 10%. This finding showed that the control of the vector is still far from successful and is a prone condition for outbreaks.

Lessons learned from outbreaks

With one symptomatic case, there are also more than ten asymptomatic infection present at the same time. The Bureau of Epidemiology has encouraged more Dengue outbreak investigation. In that sense, a case of Dengue clearly needs investigation and prompts control action. For an outbreak, one can use an easy definition of having two or more cases in the same village within a two week period as the criteria. Most of the outbreak investigations revealed at least three common findings. First, the outbreak can last from 2 to 4 weeks and subsides when the most susceptible are infected. Second, the number of cases are around 10-15 cases. Third, the HI in those communities are always over 10%.

After the Tsunami in Phuket area, the province recorded 54 cases during the four week period in the month of January. The investigation showed that this is not directly from the Tsunami itself as cases happened in the unaffected area. The more reasonable explanation is because all public health resources had to be directed to the affected area and maintaining of vector control in the unaffected areas was reduced.

Migrant camps along the Thai-Mynmar border also experienced big outbreaks of Dengue from time to time. In B.E. 2546, a migrant camp in Ratchaburi reported 220 cases of Dengue with 2 deaths during the two months period from 25 March to 28 May. Another migrant camp in Tak province recorded 455 Dengue cases (11 per 1,000 population) between October to December of B.E. 2547. The epidemic dragged on with cases occurring until July of the following year with 1,572 cases (30 per 1,000 population) and 4 died. The investigation found the HI of almost 40%. The factors which contributed to the outbreaks were the increased storage of water for consumption and the lack of a public health program and staff to concentrate on vector control.

These investigations showed that there is still room to reduce the morbidity and mortality rate if the public and health authorities maintain their vigilance and acts rapidly whenever there is an outbreak.

CONCLUSION

It is impossible to eradicate Dengue, but control of the disease is quite possible. Regular control of breeding places in the household, school and community by the participation of local people and local authority are the corner stones which we need to advocate, support and maintain all year round. In the outbreak situation, an early detection, immediate investigation to identify the source and rapid response by destroying larvae in all breeding places is a must. Doing this provides the opportunity to minimize the number of cases and deaths from Dengue. Let's stop the outbreak of Dengue from going on and on!

REFERENCES

1. ประเสริฐ ทองเจริญ. ไข้เลือดออก. โรงพิมพ์อักษรสมัย. กรุงเทพมหานคร พ.ศ.2520 หน้า 188-226.
2. Cummings DA, Irizarry RA, Huang NE, Endy TP, Nisalak A, Ungchusak K, et al. Travelling waves in the occurrence of dengue haemorrhagic fever in Thailand. Nature 2004; 427:344-7.
3. Dengue Serotypes in Thailand from: URL:http://webdb.dmsc.moph.go.th/ifc-nih/a_nih_3_001c.asp?info_id=1125
4. สำนักโรคติดต่อนำโดยแมลงสรุปผลการสำรวจลูกน้ำยุงลายในเขตเทศบาลนครและเทศบาลเมือง ปีงบประมาณ 2548 (กุมภาพันธ์-มีนาคม 2548) (เอกสารอัดสำเนา)