Dengue hemorrhagic fever

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After public warning of the ongoing outbreak of dengue fever in Thailand, the pediatrics out-patient clinic is over-clouded with febrile kids and their parents seeking for medical treatment. To lessen the public panic, the fact about this mosquito-borne disease should be acknowledged.

Dengue and dengue hemorrhagic fever (DHF) are acute febrile disease, found mostly in tropics especially in urban or suburban area and caused by one of four closely related virus serotypes of the genus Flavivirus (Den-1, Den-2, Den-3 and Den-4). It is transmitted to humans by one specific type of mosquito named Aedes Aegypti (Yung Lai) but cannot be directly transmitted from person to person. Infection from these serotypes does not provide cross protective immunity, so persons living in the endemic area can possibly have four dengue infections during their lifetimes. These viruses and their mosquito vectors have had a worldwide distribution and periodically affected human for more 200 years. There are around 40 million cases of dengue fever and several hundred thousand cases of DHF each year globally. Although the virus can infect human of all ages, dengue fever is more common among children, over 65% of cases found between the ages of 5-14 years.

Dengue fever is manifested by a sudden onset of fever, with severe headache, joint and muscle pain, nausea, vomiting and rash. The fever rises rapidly and persisted. The petechiae rash (minute bright red spots on the skin) can be observed 3-4 days after the onset of fever, usually appears on the trunk and lower limbs first, before spreading peripherally. Symptoms usually persisted for 7 days before having a self remission. Symptoms of dengue hemorrhagic fever (DHF) are more severe which progress to faintness, shock, and systemic bleeding (gastrointestinal hemorrhage, etc.). This small
proportion of cases leading to dengue shock syndrome has a high mortality rate. In 1998 outbreak, the number of DHF cases reported in Thailand was 126,348 with 432 death and case fatality rate (per 1000) was 3.4.

Dr. Gavivann Veerakul, M.D., Vice Chairperson of Department of Pediatrics, Faculty of Medicine Siriraj Hospital, Mahidol University, elaborates that the diagnosis of dengue fever is usually made by clinical, however the first day fever is somewhat difficult to tell and sometimes confusing with flu, influenza, measles, and other viral infections. The diagnosis becomes clear when fever persists for 3 to 4 days with petechial hemorrhage and without cough, running nose or sore-throat. Thrombocytopenia (depletion of platelets on complete blood count), diminished white cell count and haemoconcentration are common. In severe cases, abdominal pain is evidenced from liver congestion. If remission occurs, most patients will recover within a week to a convalescent period but in minority of cases, some will develop hemorrhage form platelet depletion and shock from intravascular plasma leakage to the body spaces on day 5-7.

The mainstay of treatment is supportive therapy. The patients are encouraged to keep up oral intake, especially oral fluids. If they are unable to maintain oral intake from anorexia, nausea or vomiting, supplementation with intravenous fluids may be necessary to prevent dehydration and significant haemoconcentration. Paracetamol and body sponge are safe to reduce the fever. However, over-dosage use of paracetamol which may be mistaken in overweight infants will lead to further damage to the ailing liver. Aspirin should be avoid in dengue fever because it may cause the platelet dysfunction and promote internal bleeding. Antibiotics play no role and do not improve the course of the disease.

Severity of the disease is believed to affect those who have second episode of infection whose bodies already develop antibody to the first specific type of the virus. This mechanism called the immune enhancement hypothesis. Therefore, most severe cases are among those pre-school and school age children while infants who had first
episode of infection manifest a variety degree from only an unrecognized to mild or moderate symptoms.

Even-though every measure had been launched to control the disease outbreak, the number of infected patients never reduced. There is still no dengue vaccine available recently, however, attenuated candidate vaccine viruses have been developed in Thailand at Mahidol University and hopefully an effective dengue vaccine for public use will be available in a few years to come.