

chikungunya infection; the diagnosis of these cases were based on haemagglutination-inhibition test results, the criteria being a fourfold or greater rise in titre or high fixed titres ($>1:640$) in paired sera.

Clinical manifestations

The chief complaints of these patients were fever (100%), petechial haemorrhage (70%), and headache (60%).

Fever

The duration of the fever varied from five to nine days. The fever was usually moderate, in the range 101°F-104°F (38.3°C-40°C), but in one case rose to 106°F (41.1°C).

Cardiovascular findings

Bradycardia (50/min) was noted in two patients on the fourth and fifth days of convalescence. Peripheral vascular failure was observed in only one patient, on the third day of illness. The electrocardiogram was studied in five cases, two showing abnormal ventricular complexes, which later became normal. In two cases, bradycardia was confirmed by electrocardiography, which showed sinus bradycardia.

1776

Respiratory findings

Respiratory tract complaints were rare. Two patients showed accentuation of lung marking bilaterally on X-ray examination, and one showed evidence of pleurisy at the right costophrenic angle.

Gastrointestinal findings

Gastrointestinal complaints were mild and uncommon, only three patients having a mild degree of nausea and vomiting. In three patients the liver was enlarged by one or two finger-breadths.

Neurological findings

Semiconsciousness, was noted, associated with peripheral vascular failure in one patient. However, there were no signs of meningeal irritation or other abnormal neurological findings.

Haematological findings

Leucopenia was noted in 5 patients (50%), and one showed an extremely low leucocyte count (about 2000 per mm³). In almost every case the leucocyte count varied from 2000 to 6000 per mm³ (90%), but one patient showed leucocytosis. The differential leucocyte counts were mostly normal.

Bone marrow was studied in four cases. They showed an increased number of megakaryocytes, but other haemopoietic cells were normal in cellularity.

Comparative Clinical and Laboratory Findings in Confirmed Dengue and Chikungunya Infections *

SUCHITRA NIMMANNITYA & PETHAI MANSUWAN

Sinke chikungunya and dengue viruses (group A and group B arboviruses, respectively) have been proved to be the causative agents of Thai haemorrhagic fever, an attempt was made to compare the clinical manifestations produced by these two viruses. Among 815 patients with haemorrhagic fever admitted to the Children's Hospital, Bangkok, in 1962, 160 were selected at random for virus isolation and serological studies. The clinical diagnosis was confirmed in 93% as dengue or chikungunya. Altogether, 135 confirmed infections (98 of dengue, 29 of chikungunya, and 8 cases of possible double

infections) were analysed. Fatal cases were not included in this series.

In dengue, females predominated by 1.6:1, but in chikungunya males predominated by 2.6:1.

The clinical manifestations of haemorrhagic fever covered a spectrum ranging from mild to severe life-threatening illness. In typical cases the disease was characterized by four major manifestations: fever, haemorrhagic phenomena, enlargement of the liver and signs of circulatory failure. In all cases the illness began with high fever, usually of abrupt onset. This was frequently accompanied by flushed skin, sore throat associated with injected pharynx, anorexia, vomiting, headache and muscle pain. Cough and nasal catarrh were neither frequent nor severe. A few patients had convulsions associated

* From the Children's Hospital, Department of Medical Services, Ministry of Public Health, Bangkok, Thailand. Originally issued as document IR/Haem.Fever/Sem.1/WP/2.

with high fever. The tourniquet test was usually positive early in the febrile period. The skin haemorrhages (petechiae or ecchymosis) were frequently observed on the extremities, trunk, and face, respectively, in order of frequency. A few patients presented epistaxis. An erythematous maculopapular eruption resembling that of rubella was observed in some cases. The liver was usually palpable; it might be palpable in the early stage of illness or late in the post-febrile phase. Fever usually lasted 2-7 days and then began to fall by rapid lysis. In mild or moderate cases, all signs and symptoms abated without any serious signs of circulatory failure as soon as the temperature became normal.

In severe cases the patient, usually on about the fifth or sixth illness day and shortly after or simultaneously with the drop in temperature, rapidly went into shock. The skin became cool and blotchy, the pulse pressure narrowed rapidly and then the blood pressure and pulse became imperceptible. Restlessness or lethargy might ensue. The skin haemorrhage became more intense; purpuric spots were observed. In about one-third of the shock patients, severe haemorrhage was manifested as melaena and/or haematemesis. It was noted that the liver was palpable in all shock patients. Pleural effusion was frequently observed in the severe cases. A few patients presented abnormal neurological signs. Most patients, even in shock, were conscious throughout, although a few, rare, patients, were comatose.

Convalescence, when it occurred, was usually very prompt and uncomplicated, even after shock. Some patients, however, presented bradycardia and/or sinus arrhythmia.

1777

Among the differences noted between these two infections is that in chikungunya no shock or severe haemorrhage manifested as melaena or haematemesis occurred. Thus the disease caused by chikungunya infection was milder than that caused by dengue. Other points of difference are:

(1) The onset of illness in chikungunya seemed to be more acute than in dengue, and a temperature over 40°C was more frequent. Some 70% of chikungunya patients came to hospital as early as on the day of onset or the first day of illness because of high fever. Convulsion associated with high fever was observed three times as frequently in chikungunya as in dengue.

(2) The duration of fever in chikungunya was much shorter than in dengue; 50% of chikungunya patients had fever for only two days but only 1% of dengue patients, in most of whom the fever lasted 5-7 days.

(3) Petechial haemorrhage occurred in both groups, but with differences in degree and extent. An extensive confluent petechial rash did not occur in chikungunya but was found in about 13% of dengue patients. In chikungunya, the petechiae were usually tiny and scanty. Complete subcutaneous or intracutaneous haemorrhage (purpuric spots) was not observed in chikungunya.

(4) Erythematous maculopapular eruption occurred in chikungunya four times more frequently than in dengue.

(5) Headache and muscle pain seemed to be predominant in chikungunya.

(6) No other abnormal neurological signs, apart from convulsions, was observed in chikungunya infection.

Haematology of Thai Haemorrhagic Fever (Dengue)*

ETHEL R. NELSON,¹ SOODSARKORN TUCHINDA,² HOWARD R. BIERMAN³
& RUCHEE CHULAJATA⁴

Since 1958 Bangkok has been experiencing recurring annual epidemics in children of haemorrhagic

fever due to the dengue virus. Because the peripheral blood findings present interesting features of leucopenia, thrombocytopenia and frequent haemoconcentration, bone-marrow studies have been done to determine whether there is a characteristic pattern in both the peripheral blood and marrow secondary to the viral effect. Other questions to be answered lie in the realm of peripheral destruction of leucocytes and platelets and the relationship of blood findings to the fatal shock seen in 5%-10% of the cases.

* Originally issued as document IR/Haem.Fever/Sem.1/WP/9.

¹ Pathologist, Bangkok Sanitarium and Hospital, Bangkok, Thailand.

² Senior Paediatric Haematologist, Siriraj Hospital, Bangkok, Thailand.

³ Institute for Cancer and Blood Research, Beverly Hills, Calif., USA.

⁴ Paediatrician, Bangkok Sanitarium and Hospital, Bangkok, Thailand.