

DENGUE FEVER

Outbreak of Classic Dengue

Costa Rica. The mosquito *Aedes aegypti*, the vector of dengue, was eradicated from Costa Rica in 1960. However, since 1971 frequent reinfestations have been detected, especially in Puntarenas and Liberia (Pacific coast) and Limon (Caribbean coast). The reinfested localities were rendered vector-free by means of control activities. Entomological surveys carried out in homes in the first half of 1993 again detected the presence of the mosquito, while a subsequent survey revealed infestation in all the country's health regions.

On 9 October 1993, a 37-year-old male living in the city of Puntarenas, Puntarenas Province, consulted the health services on account of a condition characterized by fever, severe retro-orbital and muscular pain, with no respiratory symptoms. The physician suspected dengue; he closely observed the progress of the disease and ruled out other diagnostic possibilities on clinical grounds. On visiting the patient's neighbours he detected 19 similar cases. In a survey carried out in that neighbourhood in the next 2 days, health personnel detected 200 cases with similar symptoms. The initial case was notified by phone to the Entomological Surveillance Subsystem in the Ministry of Health on 9 October. On 17 October the town of Liberia reported the first case from Guanacaste Province, in a male patient who attended the general hospital on that day.

The Ministry of Health extended its epidemiological surveillance system, which is based on hospitals and health centres, to include pharmacists and community leaders for the purpose of case notification. The cases recorded by these sources underwent an epidemiological and clinical interview to supplement the information.

The following case definitions were adopted:

A *suspected case* is a person with a sudden rise in temperature or a history of recent fever, of 7 days' duration or less, with 2 or more of the following symptoms: headache, retro-orbital pain, muscular or articular pain, exanthema.

A *confirmed case* is:

- (1) any suspected case confirmed by the laboratory (IgM-ELISA or virus isolation); or
- (2) any suspected case which occurs in an area where an outbreak of dengue exists with laboratory-confirmed cases and the presence of the vector.

An *imported case* is any confirmed case that occurs in an area where there is no outbreak, but between 3 and 7 days beforehand the patient was in an area where there was current transmission of the disease.

By 10 December 1993, 4103 suspected cases of dengue had been notified, of which 1594 were in Puntarenas Province, 2498 in Guanacaste Province, and 11 in 2 provinces of the central valley. These 11 cases were recorded as cases imported from Puntarenas and Guanacaste, the only 2 provinces where dengue transmission has so far been documented. Case notification peaked in the last week of October, with about 100 cases per day. The attack rate was 10.5 suspected cases per 1000 population in Puntarenas Province and 13.3 per cent in Guanacaste Province.

The National Reference Laboratory, INCIENSA, was sent blood samples from 13% of the suspected cases for diagnosis of dengue. Of the samples processed by the central reference

laboratory, 17% were positive in IgM-ELISA. Three reference laboratories – the Central Virology Laboratory of Tegucigalpa Teaching Hospital, Honduras; Gorgas Memorial Laboratory, Panama City, Panama; the Centres for Disease Control and Prevention, Fort Collins, Colorado, United States of America – reconfirmed the diagnosis and isolated dengue virus serotype 1 from samples sent by Costa Rica.

The predominant clinical characteristics in the epidemic were fever, headache, retro-orbital pain, muscular pain, joint pain, bitter taste in the mouth (described as "rusty") and prostration in bed in the most severe cases. In Puntarenas Province, only 1 case (confirmed) with haemorrhagic manifestations was notified: a 7-month-old girl with a positive tourniquet test and petechiae on the palms and on the soles of the feet. However, her general condition was not greatly impaired and she recovered swiftly. In Guanacaste Province, some suspected cases with nose-bleed were notified, but with a negative tourniquet test. No cases in the country required hospital admission and no deaths related to infection with dengue were notified.

The Department of Arthropod and Rodent Control introduced measures in the epidemic and high-risk areas for the immediate reduction of the adult mosquito populations, using a combination of chemical control methods and source

reduction. At the same time, a sustained education campaign was conducted nation-wide. A cleanliness campaign was carried out throughout the country from 5 November to 5 December, with the slogan 'Costa Rica can overcome dengue'. With the support of the Ministry of Education, primary schoolchildren went from house to house on 25 November (declared National Breeding Site Elimination Day), distributing information leaflets and looking for mosquito breeding places in the homes. Mass dissemination of information on dengue prevention was achieved through educational spots on radio and television and the distribution of posters which were displayed in shops and in public and private institutions.

In order to maintain active surveillance in the areas that are free from transmission but at high risk from dengue (in view of entomological indicators and population movements), a surveillance system using sentinel sites has been introduced, beginning in the city of Limon, but with a view to extending it to all other provinces. A seroprevalence study is being carried out in Puntarenas Province to determine the incidence and distribution of the disease among the population.

By 15 December 1993 the level of case notification had dropped substantially to an average of 8 suspected cases per day.

(Based on: A report from the Ministry of Health).