Dengue Fever in Costa Rica and Panama

In October and November 1993 Costa Rica and Panama detected indigenous transmission of dengue fever in their territories. The reappearance of the disease in these countries occurred after more than 40 years of absence in Costa Rica and more than 50 years in Panama. Consequently, there are no longer any continental Latin American tropical countries free from dengue fever. In the last 10 years, with the exception of Cuba, Bermuda, and the Cayman Islands, dengue fever has been reported by practically all the other Caribbean countries and territories.

The continued progress of dengue fever and of dengue hemorrhagic fever in the Region of the Americas is due to the dissemination and increase in the populations of Aedes aegypti and the consequent circulation of multiple serotypes of the dengue virus. This, in turn, reflects the failure of the program to eradicate Aedes aegypti in the Americas. This program achieved its greatest success at the beginning of the 1960s; however, due to several causes, it gradually disintegrated.

Reports prepared by the health authorities of Costa Rica and of Panama are presented herein describing the occurrence of dengue fever in these countries in 1993. It is noteworthy that the epidemic in Costa Rica was caused by dengue type 1 virus, while that in Panama was caused by dengue type 2 virus. Since they are neighboring countries it was to be expected that they would be affected by the same serotype of the virus.

As of April 1994, only 14 autochthonous cases were registered in Panama, in addition to one imported case. This apparent interruption of the transmission of dengue fever demonstrates the response capacity of the country's dengue surveillance and control program.

Panama

Panama is the only country that has detected autochthonous cases of dengue fever in the absence of an explosive epidemic, which is attributable to the active surveillance of dengue the country has maintained since 15 September 1988. Over a period of five consecutive years this system has documented seven imported cases of dengue that have led to investigation and the taking of appropriate control measures.

As part of the surveillance activities, during the last quarter of 1993, blood samples from 400 patients with a clinical picture similar to that of dengue fever were received: 50% came from the region of San Miguelito (7.25% from the Santa Librada sector), 35% from the Metropolitan Region, 7% from western Panama, 3.7% from Chiriquí, and 3.5% from the other six regions.

On 19 November 1993, eight years after reinestation of the country with Aedes aegypti, the first case of indigenous dengue fever was confirmed since the last dengue epidemic in 1942. Subsequently, 12 cases were confirmed in four blocks of the Third Housing Complex of the Santa Librada sector, Belisario Porras Section, Special District of San Miguelito, Panama City; one case in the Valle de San Isidro four kilometers from Santa Librada; and one case imported from Colombia. The distribution by age group for the autochthonous cases was: three under 15 years of age, three between 15 and 24 years of age, one 37 years of age, and seven between 40 and 50 years of age; nine were females.

Two of the cases presented symptoms of dengue fever in October, 11 in November, and 1 in December 1993. The principal clinical symptoms registered were: fever 93%; chills, headache, or myalgia 71%; arthralgia 64%; retro-orbital pain 57%; and exanthema 43%. Between 7% and 36% of the patients had cough, pruritus, nausea or vomiting, diarrhea, coryza, sore throat, or lymphadenopathy. Eight of the cases sought treatment in a health facility, without any need for hospitalization. Nine of the cases took part in daily activities outside their areas of residence. None of the patients reported travel outside the country, and eight reported having had contact with persons with a similar disease. Eleven blood samples of convalescent patients were examined, and the diagnosis was confirmed solely by serological methods (IgM/IgG tests). In the three remaining patients who were examined in the first day of evolution of the disease, dengue type 2 virus was isolated.

In December 1993 samples of 27 asymptomatic residents of Santa Librada were examined that were found to be negative in the IgM/IgG tests for dengue. In January and February 1994 a study was made of 120 patients suspected of dengue fever from the region of San Miguelito (48%), the Metropolitan Region (45%), and western Panama (7%) in which infection by the dengue virus was ruled out.

These results, from a sector with an infestation index of 6%, should encourage other areas to remain active in their search for febrile patients who will make it possible to make early diagnosis of the disease and undertake appropriate control measures.
**Costa Rica**

The vector of dengue fever, the *Aedes aegypti* mosquito, was eradicated from Costa Rica in 1960. However, since 1971, frequent reinfestations have been detected, mainly in Puntarenas and Liberia on the Pacific coast and in Limón on the Atlantic coast. Success had been achieved in controlling infestation in these localities. Household entomological surveys carried out in the first half of 1993 again detected the presence of the mosquito, and a subsequent survey demonstrated infestation in all the health regions of the country.

On 9 October 1993 a 37-year-old man residing in the city of Puntarenas, Province of Puntarenas, consulted the health services for an illness characterized by fever and intense retro-orbital and muscular pain, without respiratory symptoms. The physician in attendance suspected dengue fever, and by means of subsequent visit of the patient's neighbors, detected 19 similar cases. In a survey carried out in the same neighborhood during the following two days, the health personnel detected 200 cases with similar symptoms. On 17 October the city of Liberia (Province of Guanacaste) reported the first case in that province, a man who that day had sought consultation in the hospital center.

The Ministry of Health expanded its system for reporting of cases, centered on hospitals and health centers, by including other information sources, such as pharmacies and community leaders.

As of 1 December 1993, 4,103 suspected cases of dengue fever were reported, of which 1,594 were in the Province of Puntarenas, 2,498 in the Province of Guanacaste, and 11 in two provinces in the central valley. These 11 cases were documented as cases imported from Puntarenas and Guanacaste, the only two provinces in which documented transmission of dengue fever has taken place thus far. The maximum peak in reporting of cases was observed in the last week of October, with nearly 100 cases per day. The attack rate for the Province of Puntarenas was 10.5 suspected cases per 1,000 population and for the Province of Guanacaste, 13.3 per 1,000.

The national reference laboratory, INCIENSA, received blood samples for diagnosis of dengue fever from 13% of the suspected cases. Of the samples processed by the central reference laboratory, 17% were positive by IgM-ELISA. Three reference laboratories, the Central Virology Laboratory of the Teaching Hospital of Tegucigalpa, Honduras, the Gorgas Memorial Laboratory, Panama City, Panama, and the Centers for Disease Control and Prevention, Fort Collins, Colorado, United States, reconfirmed the diagnosis and isolated dengue serotype 1 virus from samples of cases sent by Costa Rica.

The predominant clinical characteristics during the epidemic were fever, headache, retro-orbital pain, myalgia, arthralgia, bitter flavor in the mouth (described as "rusty"), and prostration in bed in the most severe cases. In the Province of Puntarenas only one case (confirmed) was reported with hemorrhagic manifestations in a girl seven months of age with positive tourniquet test and petechiae on the palms of the hands and the soles of the feet. Nevertheless, her general state was not severely affected and she recovered rapidly. In the province of Guanacaste some suspected cases were reported with nasal bleeding, but with negative tourniquet tests. No case in the country has required hospitalization and no deaths have been reported related to dengue infection.

The Department of Control of Arthropods and Rodents implemented measures in the epidemic and high-risk areas for immediate reduction of the adult populations of the mosquito, combining chemical control methods and source reduction. At the same time a sustained educational campaign was organized at the national level. From 5 November to 5 December a clean-up campaign was carried out throughout the country, with the motto "Costa Rica can overcome dengue fever." With the support of the Ministry of Education, primary school students went from house-to-house on 25 November (declared National Day for the Elimination of Breeding Sites) to distribute information pamphlets and seek out the presence of breeding sites in homes. Mass dissemination of information on the prevention of dengue fever was carried out through educational radio and television spots, together with the distribution of posters in places of business and in public and private institutions.

In order to maintain active surveillance in the areas free of transmission but at high-risk for dengue fever (through entomological indicators and population movement), a surveillance system using sentinel sites has been set up, initially in the city of Limón, but with a view to extending it to all the other provinces. A seroprevalence study is being carried out in the Province of Puntarenas in order to determine the incidence and distribution of the disease among the population.

As of 15 December 1993 the reporting of cases had declined notably to an average of eight suspected cases per day.

*Source: Ministry of Health, Costa Rica and Panama, and Communicable Diseases Program, Division of Communicable Disease Prevention and Control, HCT/HPC,PAHO.*