

RESEARCH NOTE

An Outbreak of Dengue in the State of Ceará, Brazil

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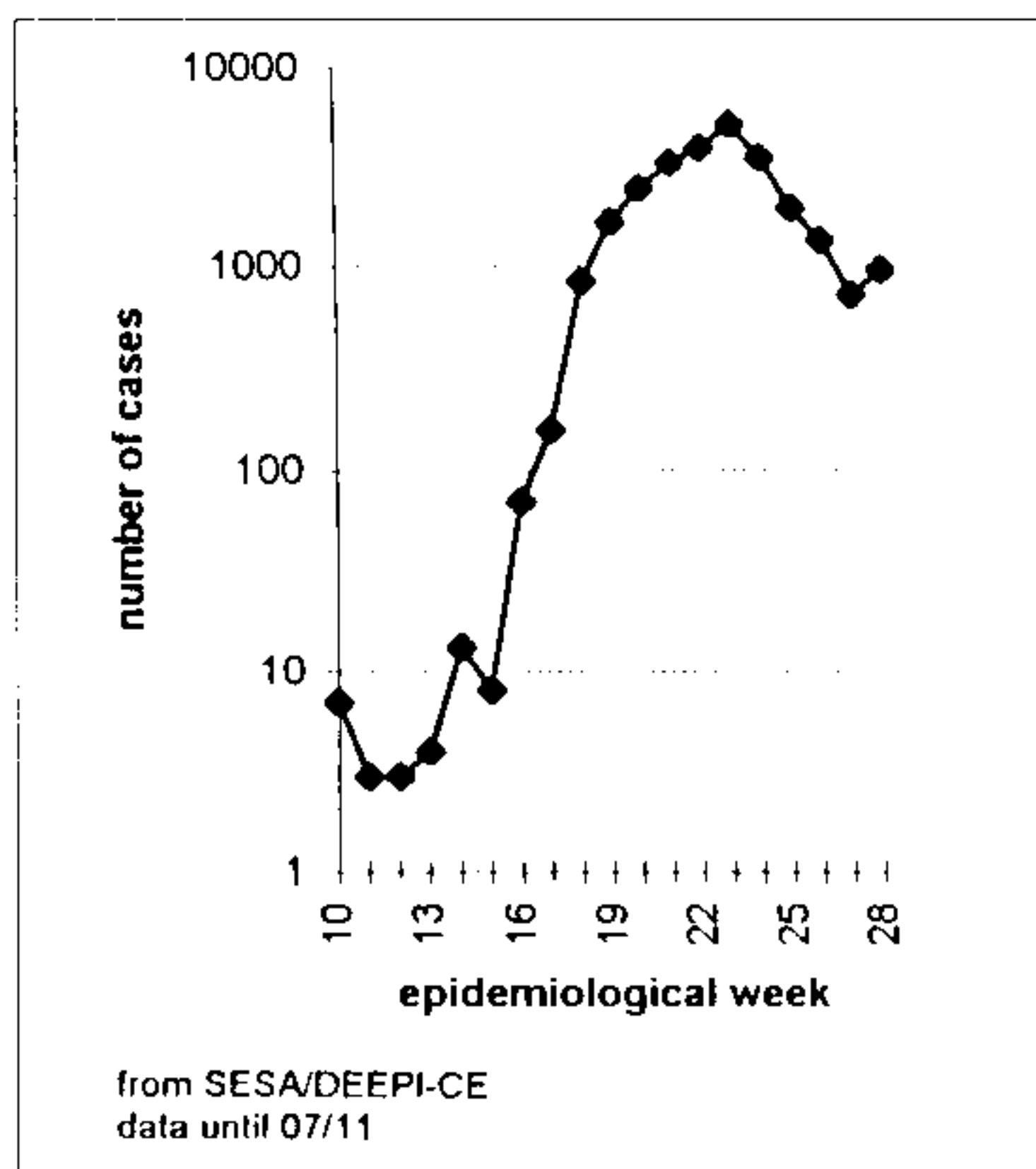
After a dengue virus type 1 (DEN-1) epidemic in Rio de Janeiro in 1986 (HG Schatzmayr et al. 1986 *Mem Inst Oswaldo Cruz* 81: 245-6) this serotype was introduced in Fortaleza (38°W 4°S), State of Ceará, causing a large outbreak with a peak of incidence between March and June, 1987 (FP Pinheiro 1989 *Epidem Bull* 10: 1-8).

The Department of Virology, Instituto Oswaldo Cruz/Rio de Janeiro, confirmed the presence of dengue infections in Fortaleza in collaboration with LACEN/CE. Only DEN-1 was present at that time. In 1990-1991 a new epidemic occurred, and from 1986 to 1993 about 54,000 cases were reported, but no cases of dengue hemorrhagic fever (DHF) or dengue shock syndrome (DSS) were reported.

In April 1994, an increase of dengue cases was observed. On 25 May, from classical dengue fever cases, four strains of dengue virus type 2 (DEN-2) were isolated for the first time in Fortaleza by the Department of Virology. Virus isolation was attempted from human acute phase sera by inoculation into cultures of the clone C6/36 *Aedes albopictus* cell line. Virus isolates

were typed by indirect fluorescent antibody test using serotype-specific monoclonal antibodies (DJ Gubler et al. 1984 *Am J Trop Med Hyg* 33: 158-65).

The introduction of DEN-2 caused a large epidemic and by the end of July 28,019 cases had been reported in the state, with 13,788 cases in Fortaleza (Fig.). In this city an incidence of 623 cases/100,000 inhabitants was observed.



Weekly distribution of notified dengue cases in the municipality of Fortaleza, 1994.

During this 1994 epidemic, serious clinical manifestations were reported. By 7 July a total of 120 cases of DHF/DSS had been reported with 30 fatal cases.

A preliminary study confirmed that 21 patients showed signs of increased capillary permeability and so far, five cases have been confirmed by dengue IgM capture test (MAC-ELISA). WHO criteria for DHF/DSS (WHO 1986 *Dengue haemorrhagic fever: diagnostic, treatment and prevention*) were fulfilled in 11 out of 21 patients, considering plasma effusion, thrombocytopenia and hemorrhagic manifestations. The most important hemorrhagic manifestations were petechiae, epistaxis and gums bleedings. The tourniquet test was positive in three out of five patients tested. Pleural effusion was observed in five cases, one of them also presented pericardial effusion. According to the severity of the disease, three cases were classified as grade II, in two patients as grade III, and six as grade IV.

DHF/DSS was confirmed according to WHO criteria in six out of 30 fatal cases. Three of them were submitted to autopsy being confirmed also

by macroscopical examination. One case was associated with cardiogenic shock due to a severe myocarditis. In the remaining patients the following diagnosis were made: septicemia (five cases), pneumonia (two cases), pericarditis, pulmonary embolism, cerebrovascular lesions and endocarditis; each one with one case. The other fatal cases are still under investigation.

DHF/DSS have been observed in patients from 13 years old to 93 years old (mean value 42

years) with a predominance of females 14/21 (66.6%). Most cases reported were from Fortaleza but two of them were from Pacajus county.

In conclusion, dengue virus activity started in Fortaleza in 1986 spreading to the whole State. In the following years classical dengue fever has been reported. In May 1994 a new serotype (DEN-2) was introduced causing a large epidemic with more severe clinical features and fatal cases of DHF/DSS.