

## BRIEF COMMUNICATION

### A LARGE EPIDEMIC OF DENGUE FEVER WITH DENGUE HEMORRHAGIC CASES IN CEARÁ STATE, BRAZIL, 1994.

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Since 1986 there have been reports of extensive and small outbreaks or sporadic cases of dengue in the Ceará State, Brazil. From 1986 to 1993, only dengue 1 (DEN-1) virus was isolated in Ceará and during this same period at least 53,593 cases (15.9% of all dengue cases notified in Brazil) were reported to the Ministry of Health (Table 1) and no fatalities were notified.

In the 1994 epidemic of dengue fever there were cases of dengue haemorrhagic fever, most of which occurred in Fortaleza (Fig. 1).

The first cases were reported in March and the last ones in August. Preliminary analysis of the temporal distribution of cases suggest the outbreak peak

TABLE 1  
Dengue fever cases notified in Ceará State and Brazil, from 1986-1994\*.

| Year    | Ceará (%)      | Brazil  |
|---------|----------------|---------|
| 1986    | 4,419 (9.3%)   | 47,370  |
| 1987    | 22,513 (25.2%) | 89,394  |
| 1988    | 55 (28.9%)     | 190     |
| 1989    | 4,126 (77.3%)  | 5,334   |
| 1990    | 15,656 (38.5%) | 40,642  |
| 1991    | 6,703 (6.9%)   | 97,209  |
| 1992    | 117 (3.6%)     | 3,215   |
| 1993    | 7 (0.1%)       | 7,086   |
| 1986-93 | 53,593 (15.9%) | 302,440 |
| 1994*   | 27,033 (82%)   | 32,959  |
| Total   | 80,626 (25%)   | 335,399 |

Source: FNS/DEOPE/GTFAD  
\* until 32nd epidemiological week

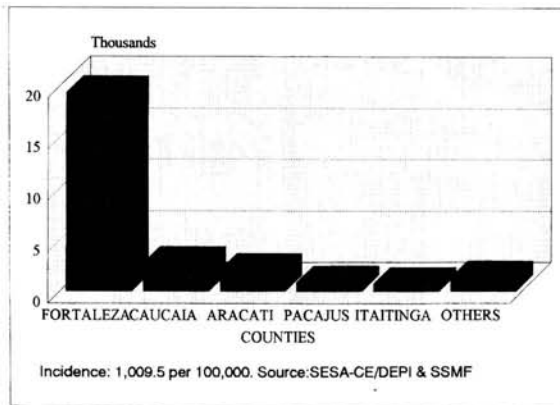


Fig. 1 - Dengue fever in Ceará State, Brazil, 1994

occurred towards the June (Fig. 2). In this period a total of 27,033 cases from several counties were notified to the Department of Epidemiology of Health Secretary of Ceará State-SESA/DEPI. Of these, 19,306 (71.4%) occurred in Fortaleza, which gave an incidence of 1,009.5 cases per 100,000 people (Fig. 1). Of this total, 178 were suspected of dengue haemorrhagic fever (DHF), however, after an exhaustive revision in accordance with WHO<sup>2</sup> and Ministry of Health criteria for DHF, only 26 were confirmed of which 11

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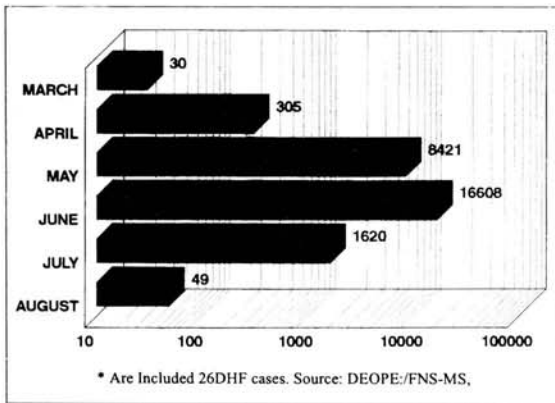


Fig. 2 - Monthly dengue fever cases reported in Ceará state 1994\*.

experienced shock. The age of DHF cases ranged from 13 to 93 years old with mean value of 42 y.o., 11 (42%) male and 15 (58%) female. One hundred thirty-four

were discarded and 18 are still under analysis. Of the confirmed cases, 14 (54%) had fatal outcome, 5 were male and 9 female (Table 2).

The principal disease signs and symptoms observed were typical of classical dengue fever in the majority of cases. Also, several patients had encephalitic syndromes, as have been reported in Asian patients with DHF<sup>1</sup>. In fatal cases, virus or signs of viral encephalitis were not found in the section microscopy done at autopsy. Clinical manifestations reported in DHF patients included bleeding from the upper digestive tract, which was the main cause of death, petechiae and epistaxis (Table 2).

Data collected from autopsied patients showed that the most common macroscopic alterations were gastrointestinal hemorrhages (especially gum bleeding and melena), ascites, bilateral pleural effusion and

**TABLE 2**  
Dengue epidemic in Ceará State, 1994. Dengue haemorrhagic fatal cases confirmed, according of age, sex, clinical, laboratorial and pathological findings.

| Patient | Age | Sex | Clinical features   | Laboratory*  | Pathology  |
|---------|-----|-----|---|--|--|
| MFSC    | 13  | F   | Jaundice, hepatitis, dyspnea, gum bleeding                            | platelets: 205, ht: 50%  | GI bleeding, bilateral pleural effusion                                      |
| MCV     | 56  | M   | Shock   | platelets: 37  | -  |
| FCPC    | 22  | M   | encephalitic signs, dyspnea, ascites, hepatomegaly, jaundice          | -  | GI bleeding, encephalopathy, pulmonary oedema                                |
| JFLV    | 19  | F   | bilateral pleural effusion, shock, hepatomegaly, ascites, hypotension | platelets; 14, WBC: 14,900, ht: 30%                              | Diffuse hemorrhage, <sup>1</sup>   |
| MPN     | 15  | F   | gum bleeding, dyspnea, shock, hypotension                             | platelets: 184, ht: 61%<br>WBC: 9, 100                           | perimyocarditis, cerebral oedema<br>tubular renal necrosis, DIC              |
| MAR     | 27  | F   | hepatosplenomegaly, restlessness, encephalitic signs, gum bleeding    | platelets: 39, ht: 12%, GOT: 710<br>GPT: 1500, WBC: 2,600        | Renal failure, GI bleeding, encephalopathy <sup>2</sup>                      |
| BM      | 64  | M   | restlessness, dyspnea, shock  | platelets: 40, ht: 55%   | GI bleeding,   |
| JGMQ    | 36  | F   | bilateral pleural effusion, shock, skin hemorrhage                    | platelets: 160, ht: 38%, GOT: 350<br>GPT: 400, WBC: 9,300        | GI bleeding, pulmonary failure, massive liver necrosis, ascites <sup>3</sup> |
| MSRN    | 41  | F   | hypotension, shock, gum bleeding                                      | -  | GI bleeding,   |
| AMP     | 93  | M   | jaundice, gum bleeding, shock   | platelets: 70, ht: 22%   | GI bleeding  |
| MWSM    | 69  | F   | gum bleeding, hypotension, shock                                      | platelets: 20, ht: 42%   | GI bleeding  |
| MCCP    | 56  | F   | hypotension, shock, encephalitic signs, bilateral pleural effusion    | platelets: 25, ht: 17%   | Pulmonary failure, pericardic effusion, myocarditis <sup>3</sup>             |
| PBP     | 68  | M   | hematuria, hypotension, shock, anury, hypoglycemia, acidosis          | platelets: 10, ht: 46% urea: 106,<br>creatinin: 5.5, WBC: 13,200 | GI bleeding, septicaemia   |
| MVWS    | 67  | F   | encephalitic signs, hepatomegaly shock                                | platelets: 71, ht: 45%, GOT: 366,<br>GPT: 429 WBC: 2,000,        | Encephalopathy <sup>4</sup>  |

- Notes:
1. GI and genital bleeding, in 9th month of pregnancy.
  2. Also HBsAg positive.
  3. Bilateral pleural effusion.
  4. Diabetes and arterial hypertension.
- \* last results before death; WBC: white blood cells.  
\*\* platelets: x1000, ht: hematocrit.

GOT: glutamic oxaloacetic transaminase; GPT: glutamic pyruvic transaminase.  
- no disposable data; DIC: disseminated intravascular coagulation.

CNS edema. Alterations seen by microscopy included diffuse capillarity and alveolar infiltrate.

Between May-July 1994, 12 dengue virus isolates were obtained at Instituto Evandro Chagas. The predominant virus type was DEN 2 which was isolated from 11/68 (16.2%) acute phase sera. In addition DEN 1 was isolated once from a patient that developed DHF and had a fatal outcome, suggesting that both serotypes were involved. Two (one of each serotype) were isolated from fatal cases. Serotesting (HI and MAC ELISA) with 6 paired samples established dengue infection in 2, from one DEN 2 was also isolated from the acute sample. Examination of 314 sera revealed presumptive dengue infection (MAC ELISA positive and high titers by HI) in 218 (69.4%) patients, among them, 9 DHF cases. The remaining 96 (30.6%) single serum samples were negative. With the exception of a girl, 13 y.o., whose immune response was primary type and from which DEN 1 was also isolated, all DHF patients examined showed secondary type response.

*Aedes aegypti* control measures including ULV application and focal treatment, carried out by National Health Foundation (FNS) in Fortaleza, have broken virus transmission.

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