DENGUE FEVER/DENGUE HAEMORRHAGIC FEVER OUTBREAK IN SHAHJAHANPUR, UTTAR PRADESH, INDIA, 1992

by

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INTRODUCTION

CLASSICAL dengue or "break bone fever" has been known in India for a very long time, though clinically it was first described in 1912. During the period 1956 to 1992, 40 dengue fever/dengue haemorrhagic fever outbreaks were reported from different parts of India. The first outbreak of DF occurred in Vellore, Tamil Nadu, during 1956-60 and the first DHF outbreak in Calcutta during 1963 with 37 per cent of the patients having haemorrhagic manifestations. In these outbreaks, all the four dengue serotypes have been incriminated. The most recent outbreak of DF/DHF occurred in Shahjahanpur city, Uttar Pradesh, during August-September 1992.

INVESTIGATION METHODOLOGY

The investigation was conducted between 22 and 25 September by studying available institutional data of fever cases, visit to randomly-selected mohallas (localities) of the city for making observational study, rapid fever survey, entomological survey, study of environmental factors responsible for *Aedes* mosquito breeding, epidemiological investigation of acute cases of fever, and collection of serum samples and their examination.

## INVESTIGATION FINDINGS AND INFERENCE

Heavy rains had occurred during the first weeks of August and September, with intermittent rains in between. The rain water got accumulated in old unused tyres, domestic/peridomestic discarded tins, bottles, earthen pots etc. and became excellent places for *Aedes* mosquito breeding and led to widespread transmission of dengue fever.

Shahjahanpur city had a population of about 1 981 500. The outbreak started during early August and, till 24 September, had affected practically all the mohallas of the city. A total of 595 cases were admitted in three hospitals of the city during this period, of which eight died among the 224 admitted cases in the district hospital (CFR 3.6 per cent). The number of clinical dengue fever cases who attended OPDs of various hospitals/dispensaries, except district hospital, was 18 688 during the period.

In the beginning of the outbreak, the proportion of cases with haemorrhagic complications was less, but from the second week of September the number of cases with second attacks and the proportion of cases with haemorrhages increased, resulting in an increase in the number of admitted cases.

The epidemic curve, based on the data available from hospitals and dispensaries is given in the Figure.

Dengue curve, Dengue haemorrhagic syndrome
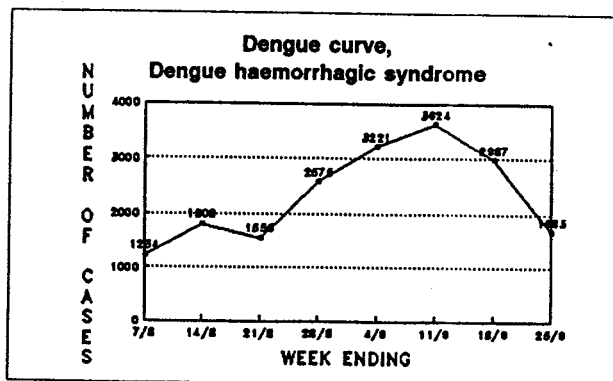
The curve indicates that the peak was during the second week of September. All ages and both sexes were affected in the outbreak, though slightly less in females, who were better covered with clothes. The proportion of deaths was equal in both sexes, but was high in ages 60 years and above. The epidemiological investigation of 53 cases from the community and the district hospital revealed the following symptomatology:

Symptom	Proportion (Percentage)
Fatigue/weakness	100.0
Fever	96.2
Headache/bodyache/muscle pain	75.5
Haemorrhages	54.7
Chills/rigor	47.2
Nausea/vomiting	41.5
Joint pain	39.6

Some additional features observed were gastritis/abdominal pain, drowsiness/confusion and anorexia. Among the haemorrhagic manifestations, haematemesis, epistaxis, petechial haemorrhage, malaena, bleeding gums and haemoptysis were common.

Routine blood examination in a number of cases showed leukopenia, lymphocytosis, thrombocytopenia (count below 100 000) and increased ESR. Lymphocytes up to 60 per cent and platelet count as low as 13 000 were observed.

In all the six mohallas of the city visited, it was found that during the past one month dengue fever had affected almost everybody. In these areas, *Aedes* mosquito breeding sites were detected at a number of places in unused tyres and in discarded containers. Entomological survey showed a house index of 40 per cent and a container index of 62.5 per cent.

A rapid, community-based fever survey with two weeks reference period was carried out in five mohallas of the city covering a population of 1 080 to assess the magnitude of the problem. The attack rate was 80 per cent. It indicated that due to the lack of community-based surveillance, the number of reported cases could be much lower and did not give the real picture about the magnitude.

Out of 25 serum samples tested for the presence of HI antibodies to flaviviruses, 22 were positive with 13 having high antibody titres. None reacted to group A antigen.

Based on epidemiological, clinical and entomological information and laboratory results, it was inferred that the outbreak in Shajahanpur was due to "dengue haemorrhagic syndrome".

RECOMMENDATIONS

Recommendations included strengthening of IEC, community participation, surveillance (epidemiological, entomological) and measures for vector control (source reduction of breeding sites, use of temephos for larval control and adult mosquito control through ultra low volume fogging with 5 per cent malathion).