

# Profile of Dengue Fever in a Tertiary Teaching Hospital

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## Abstract

**Introduction:** Dengue fever is mosquito borne arboviral infection which has emerged as a public health challenge in the past decade in a rapidly urbanising India. This study aims to document the clinical, laboratory and outcome profile in a tertiary teaching hospital in Madurai, South India.

**Aim:** To analyse the clinical profile and outcome of patients with dengue fever admitted at the Medicine wards in Government Rajaji Hospital/Madurai Medical College, Madurai.

**Materials and Methods:** Prospective Observational study conducted during October-November 2012 in Government Rajaji Hospital, Madurai. 280 Patients who were Immunoglobulin M enzyme-linked immunosorbent assay positive for dengue were included in the study. Blood counts, ultrasonogram abdomen and other relevant investigations were done. Patients were treated with fluids, blood products and other necessary measures according to the clinical and laboratory picture.

**Results:** The incidence was higher and the clinical course was more severe in patients of younger age group. 62% of the patients had bleeding manifestations. The mortality rate was 2.5%

**Conclusion:** Sustained and effective vector control measures by the public health authorities, educating the public about vector control and seeking immediate medical attention, and para medical people about the warning signs of the disease may help in curbing the casualties of this potentially dangerous infection.

**Key words:** Dengue, Mortality, Sign and symptoms

## INTRODUCTION

Dengue is the most widely distributed mosquito-borne viral infection of humans, affecting an estimated 100 million people worldwide each year.<sup>1</sup> Dengue is endemic throughout the tropical and subtropical zones between 30° and 40° S.<sup>1</sup> Rapid urbanisation, inadequate supply of piped water, increased movement of human population within and between countries, and further development

and spread of insecticide-resistance in the mosquito vector population, contribute to the increase of dengue transmission in recent years.<sup>2</sup>

The dengue virus (DENV) is a member of the genus Flavivirus in the family Flaviviridae, a single stranded enveloped RNA virus. There are four distinct and closely related serotypes (DENV1, DENV2, DENV3, DENV4).<sup>1</sup> *Aedes aegypti* is the most efficient of the mosquito vectors of dengue.<sup>1</sup> *Aedes albopictus* is a vector in some South east Asian countries.<sup>3</sup> Other *Aedes* mosquitoes capable of transmitting dengue include *Ae. polynesiensis*, *Ae. scutellaris* complex.<sup>1</sup> The mosquito can transmit dengue, either immediately by a change of host when its feeding is interrupted<sup>1</sup> or after an incubation period of 8-10 days, during which time, the virus multiplies in the salivary glands. Once infected, the mosquito host remains infective for life (30-45 days).<sup>1</sup>

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DENV infections can cause a wide clinical spectrum of disease, from a mild febrile illness known as ‘dengue fever’ through to ‘severe dengue’, previously known as dengue haemorrhagic fever (DHF).<sup>1</sup> Dengue begins after an incubation period averaging 4-7 days, - patient experiences sudden onset of fever, frontal headache, retro orbital pain, and back pain along with severe myalgias. Often a transient macular rash appears on the first day, as do adenopathy, palatal vesicles, and scleral injection.<sup>4</sup> The illness may last a week, with additional symptoms and clinical signs usually including anorexia, nausea or vomiting, and marked cutaneous hypersensitivity. Near the time of defervescence on days 3-5, maculopapular rash begins on the trunk and spreads to the extremities and the face.<sup>4</sup> Epistaxis and scattered petechiae are often noted in uncomplicated dengue, and pre-existing gastrointestinal lesions may bleed during the acute illness.<sup>4</sup>

**Aim**

To analyze the clinical profile and outcome of patients with dengue fever admitted at the medicine wards in Government Rajaji Hospital, Madurai.

**MATERIALS AND METHODS**

This was a prospective observational study conducted at Government Rajaji (Medical College) Hospital, Madurai, India. 280 patients with Dengue fever admitted in the General Medicine wards of Government Rajaji Hospital, Madurai were studied. All adult fever patients who were positive for immunoglobulin M (IgM) dengue were included in the study. Haemoglobin, total white cell count, differential white cell count, platelet count, haematocrit were done. IgM dengue was done by enzyme-linked immunosorbent assay method for those who had 4 or more days of fever. Ultrasonogram abdomen and pelvis was done for those who had abdominal pain or melena.

**RESULTS**

The gender distribution was almost equal. 51% were male the rest were female. 200 out of 280 patients were <30 years old (71.4%). Around 50 patients were between 30 and 40 years old. The rest were older than 40 (Figure 1).

Among the 280 patients 155 persons (55.35%) had features of severe DHF. They had abdominal pain, vomiting, mucosal bleeding and giddiness in varying proportions (Figure 2).

Out of 155 patients who had severe dengue, 55% had abdominal pain, 41% had vomiting, 62% had mucosal bleeding and 36% had giddiness. Among 280 patients 136

persons had pulse pressure of more than 30 mmHg. 51 had pulse pressure of <20 mmHg.

54 patients had a haematocrit of 25-30. 68 patients had 31-35, 80 of them had 36-40, 78 had more than 40 (Figure 3).

Almost half (130) of the study population had a platelet count of <50,000/mm<sup>3</sup>. Around 80% of the 130 patients

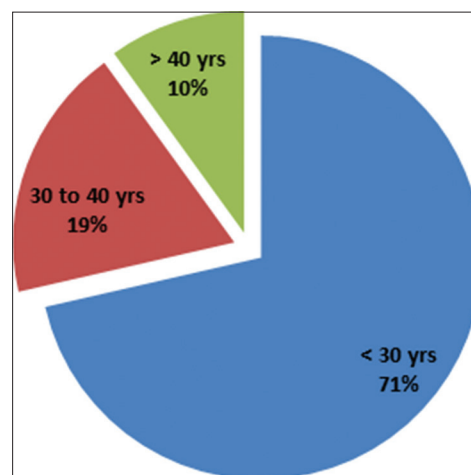


Figure 1: Distribution of age group

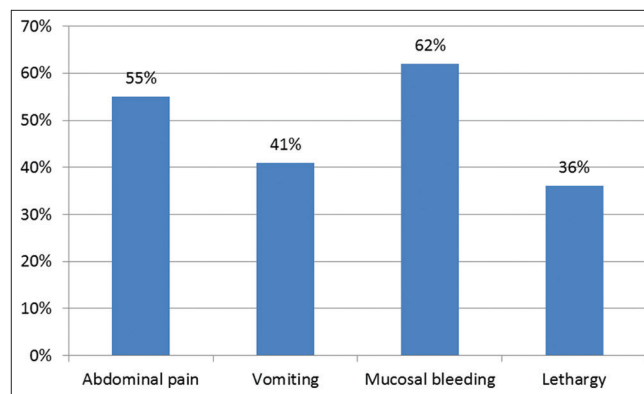


Figure 2: Distribution of warning signs

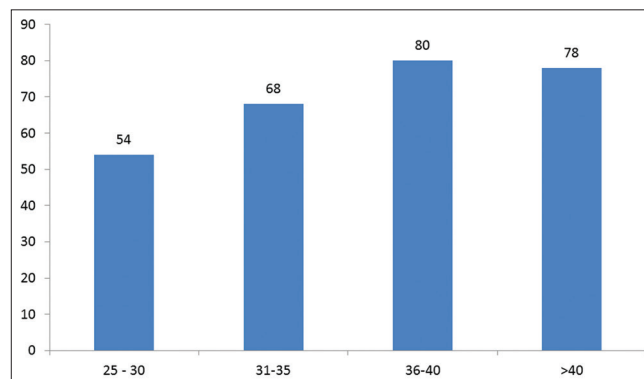


Figure 3: Distribution of hematocrit

had abdominal pain, and 70% of them had hypotension (Figure 4).

Upper gastrointestinal bleeding was the most common bleeding manifestation. Gum bleeding followed next (Figure 5).

Ultrasonography (USG) abdomen findings were as follows - 120 patients had normal USG. Polyserositis was there in 68 persons, ascites in 46, pleural effusion in 26 patients. Gall bladder wall edema was there in 10 patients.

108 patients were treated with fluids alone. 92 patients required blood/blood products transfusion (Figure 6).

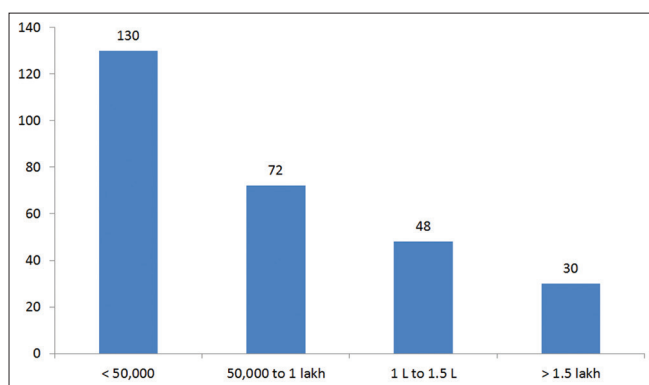


Figure 4: Distribution of platelet count

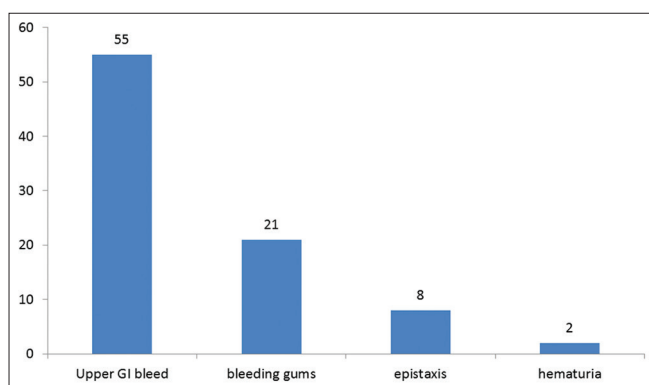


Figure 5: Distribution of bleeding manifestations

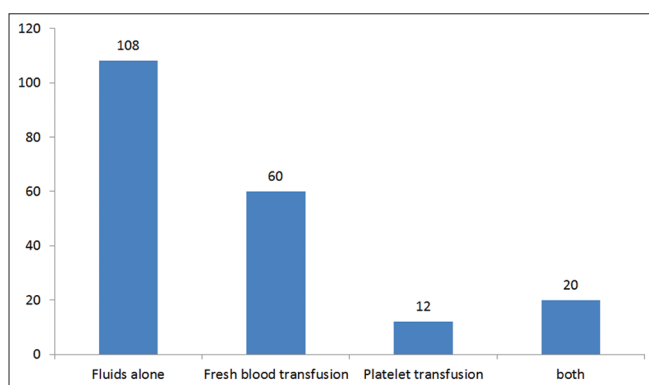


Figure 6: Distribution of treatment modality

### Mortality

Out of 280 patients 7 died (2.5%). 5 of them were younger than 20 years. 2 persons were older than 20 years. 3 had severe dengue with encephalopathy, 2 had acute respiratory distress syndrome (ARDS), 2 patients had shock.

### DISCUSSION

The clinical and demographic profile of dengue, an emerging and serious public health in India is changing in the recent decade. We chose to do this study during the monsoon season (October-December) - there is a conducive environment for the vector to multiply. There seems an increased incidence of cases during this season and it will be prudent to study the profile during this season.

In our study population of 280 IgM dengue positive patients, the majority were younger age group patients. More than 2/3<sup>rd</sup> of them were < 30 years old. This is comparable to the study by Singh *et al.*, where the most exposed age group was 18-35 years.<sup>6</sup> The mean age of the study group was 30 in a study by Veerasekar *et al.*<sup>5</sup>

Almost half of our study population had warning signs - the most common of them was abdominal pain followed by mucosal bleeding. Abdominal pain was the most common warning sign in the studies by Singh *et al.*<sup>6</sup> and Deshwal *et al.*<sup>7</sup>

72% ( $n = 202$ ) of the patients had thrombocytopenia ( $< 1,00,000/mm^3$ ) in our study. 89% of the patients in Singh *et al.*<sup>6</sup> study population and 69% of patients in Deshwal *et al.*<sup>7</sup> study had thrombocytopenia. 79% of patients had thrombocytopenia in Veerasekar *et al.*<sup>5</sup> study.

78 persons had increased haematocrit (more than 40%) in our study (27.8%). 67% and 20.7% had increased haematocrit in Singh *et al.*<sup>6</sup> and Deshwal *et al.*<sup>7</sup> study respectively.

Gastrointestinal bleeding was present in 19% patients in our study. It was meagre in Singh's (3%) study.<sup>6</sup>

As ours was an observational study there was not much deviation in our treatment approach - we followed the standard protocols advised by the Government of India and other expert guidelines with regard to fluid management, blood and blood products transfusion and antibiotics. We found that prophylactic antibiotics and prophylactic transfusion were not necessary. The outcome was poor in patients who sought admission later in the course of illness and in those with atypical manifestations.

The mortality in our study group was 2.5% (7 patients). All of them had severe dengue. Among them 2 patients had encephalopathy and 2 patients had ARDS. The mortality

rate was comparable to Deshwal *et al.* study<sup>7</sup> (mortality rate 0.77%) and Veerasekar *et al.* study (1.3%).<sup>5</sup>

## CONCLUSION

Dengue, a major public health problem worldwide, has emerged as a challenge to health care providers in India. In addition to the increased number of cases in rainy season, the disease is expected to soon attain the status of an endemic one. Sustained and effective vector control measures by the public health authorities, educating the public about vector control and seeking immediate medical attention, and para medical people about the warning signs of the disease may help in curbing the casualties of this potentially dangerous infection.

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