A CLINICAL STUDY OF DENGUE FEVER AT A TERTIARY CARE HOSPITAL

Panchasheelan J. C[1], Shivaraj K. K[2], Chethan B. H[3], Jeetendra Kumar[4], Satyanarayana N[5]

[1]Associate Professor, Department of Medicine, ESI Medical College and PGIMSR, Bangalore.
[2]Senior Resident, Department of Medicine, M. S. Ramaiah Medical College, Bangalore.
[3]Senior Resident, Department of Medicine, ESI Hospital, Kollam.
[4]Dean, Professor, Department of Medicine, ESI Medical College and PGIMSR, Bangalore.
[5]Professor and HOD, Department of Medicine, ESI Medical College and PGIMSR, Bangalore.

ABSTRACT

BACKGROUND
Dengue viral infections are among the most important mosquito-borne diseases of the Indian subcontinent and have become a major global public health concern. Spread of disease has led to increased recognition of atypical manifestations apart from the classical clinical features of dengue infection.

MATERIALS AND METHODS
A cross-sectional prospective study of admitted patients suspected to have dengue infection was conducted during study period from January 2013 to September 2014. They were clinically evaluated and underwent relevant investigations. All patients studied had detailed history including occupation, place of residence, duration and severity of symptoms like fever, myalgia, vomiting and bleeding manifestations. A detailed clinical examination including general and systemic examination was performed. Patients also underwent all the investigations as per the attached proforma. Patients were also analysed for complications, mortality and whether intensive care management was required or not.

RESULTS
Out of 50 patients with suspected dengue fever enrolled in the study, 32 (64%) patients were males and 18 (36%) were females. Dengue fever was more common among migratory workers. Fever was the commonest symptom at presentation (90%). Some of patients had (24%), oliguria and myalgia (70%) at presentation. Majority of the patients were diagnosed using Dengue IgM spot test. More than 90% had thrombocytopenia, 28% renal failure and 32% liver dysfunction; 4% was the mortality. All these patients had severe thrombocytopenia, severe renal failure and ARDS.

CONCLUSION
Among the 50 patients diagnosed with Dengue, fever was the most common presenting symptom. Jaundice, renal failure and liver dysfunction was seen in some of the patients. Most patients were diagnosed using Dengue IgM spot test. Majority recovered once treatment was started with supportive measures. Death was seen in patients who presented late for treatment. This concludes that high index of suspicion in susceptible areas, appropriate investigations, early diagnosis and treatment is essential to prevent complications.

KEYWORDS
Dengue, Jaundice, Renal Failure, Dengue IgM Spot Test, Penicillin.

BACKGROUND
Dengue has worldwide distribution and remains a health problem or potential threat in areas infested with Aedes aegypti mosquito.[1,2] In India the first outbreak of dengue fever was recorded in 1812, virus was isolated in 1945 and many epidemics have been reported since then. The severe fatal forms of disease, i.e. Dengue Haemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS) though common in South East Asia since early 1940's were reported in India for the first time from Calcutta in 1963.[3] Since then epidemics of DSS/DHF have been reported from various states of India.
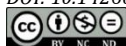
Dengue viruses, single stranded RNA viruses of the family Flaviviridae, are the most common cause of arboviral disease in the world. They are found virtually throughout the tropics and cause an estimated 50 - 100 million illnesses annually including 250,000 – 500,000 cases of dengue haemorrhagic fever, a severe manifestation of dengue and 24,000 deaths.[4-6] More than two-fifths of the world's population (2.5 billion) live in areas potentially at risk for dengue.[7] Because travellers to endemic areas are also at risk, healthcare providers should have an understanding of the spectrum of infection, how to diagnose it and what the appropriate treatment is.

In the WHO Western Pacific region, WHO has confirmed that disease spread into rural areas from where it had not been reported previously. In India, entomological investigation showed a widespread distribution of Aedes aegypti, both in rural and urban areas during an outbreak in Gujarat in 1988 and 1989.

Hence, there is a very important need to study the number of cases and its severity in our local area where

dengue infection is becoming more and more common every year. A reliable, unsophisticated test should be developed for early detection of this disease. As dengue fever in its early stage mimics other tropical infections, both medical professionals and the general public should be educated about the disease and the need to seek early medical intervention.[2] So it is worthwhile to conduct a study on the presenting clinical features and the investigations of dengue fever in this demographic zone, because of the paucity of information regarding the disease in this area. The information so obtained will help in reducing morbidity and mortality due to late presentation in patients presenting in ESI PGIMSR.

MATERIALS AND METHODS

This study was descriptive study, data was collected on prospective basis and it was hospital based. Questionnaire was developed based on a review of literature and information was collected accordingly. Fifty patients with confirmed dengue fever admitted to tertiary care hospital during a one year period from January 2013 to September 2014 were selected for this study. Patients with NS1 antigen and IgM dengue antibody-test positive cases were included. These patients presented with dengue clinical features like fever, myalgia, headache, vomiting, abdominal pain or bleeding manifestations. NS1 antigen and IgM dengue antibody tests were done using capture ELISA. These patients were diagnosed and classified as dengue fever, dengue haemorrhagic fever and dengue shock syndrome based on the WHO criteria.[8]

Patients who were included in this study presented with classical features of dengue-like fever with chills, body ache, headache, rash, bleeding manifestations and thrombocytopenia and all those patients had a positive ELISA test. All those patients also tested for malaria and enteric fever and those who found positive for these tests were excluded from the study. Detailed history and clinical examinations of all those patients were done and all those underwent basic investigations like complete blood count, liver function tests, renal function tests, chest x-ray and USG abdomen.

RESULTS

This was a prospective study, conducted on 50 patients in ESIMC and PGIMSR, Bangalore who presented with dengue fever between Jan 2013 - Sept 2014. They were clinically evaluated and underwent relevant investigations. All patients studied had detailed history including occupation, place of residence, duration and severity of symptoms like fever, myalgia, vomiting, breathlessness and bleeding manifestations as shown in Table 1. A detailed clinical examination including general and systemic examination as in Table 2. Patients also underwent all the investigations as per the attached proforma. Patients were also analysed for complications, mortality and whether intensive care management was required or not. There were 32 male and 18 female patients in the study. Mean age of presentation- 45.12 years. Occupation varied but not surprisingly 50% of cases were migrant workers. All the patients had fever and most were associated with thrombocytopenia oliguria and myalgia (50%).

On examination 60% had tachycardia, 50% had muscle tenderness, 20% hepatomegaly, 14% splenomegaly and 20% abdominal tenderness. The most common complications seen were abnormal LFT, thrombocytopenia and renal failure. Number of patients expired 2 (4%); 5 patients presented with hypotension; 16 patients had abnormal LFT and 14 had renal failure; 45 patients had platelet count < 50,000/mm^3 and 12 had total count > 12,000/mm^3. 8 patients had ARDS.

Sex	Males Females	32 (64%) 18 (36%)
Age (Years)	20 - 39 40 - 59 > 60	31 (62%) 9 (18%) 10 (20%)
Occupation	Agriculturists Labourers Housewives Others	12 (48%) 27 (34%) 8 (16%) 3 (6%)
Fever	< 1 Week 1 - 2 Weeks > 2 Weeks	41 (82%) 5 (10%) 4 (8%)
Jaundice		12 (24%)
Oliguria (< 500 mL/day)		14 (28%)
Myalgia		35 (70%)
Dyspnoea		08 (16%)
Pain Abdomen		10 (20%)
Vomiting and Diarrhoea		12 (24%)
Altered Sensorium		05 (10%)

Table 1. Clinical Features

Pallor	06 (12%)
Icterus	12 (24%)
Conjunctival suffusion	16 (32%)
Muscle tenderness	35 (70%)
Tachycardia	25 (50%)
Tachypnoea	08 (16%)
Hypotension	05 (10%)
Hepatomegaly	10 (20%)
Splenomegaly	07 (14%)
Bleeding tendency	08 (16%)
Abdominal tenderness	10 (20%)

Table 2. Findings on Examination

DISCUSSION

Dengue is an important emerging infectious disease mainly found in tropical and sub-tropical regions. The first confirmed case of dengue in India was reported during the 1940s, intermittent reports from Delhi,[9-10] Ludhiana,[11] Mangalore,[12] Vellore[13] and from other states have been published. The identification of dengue is mainly by clinical features, but they can present with other varied manifestation also.[14]

The present study included 50 patients and it was conducted at ESIMC and PGIMSR Bangalore, the study period being Jan 2013 - Sept 2014. This discussion analyses data obtained from the study and compares it to that obtained in previous studies done with similar objectives in mind.

In spite of major successes against infectious disease in 20th century, new infections have been emerged and old ones re-emerged in recent decades. Dengue appears to be on the increase in Kerala, Tamilnadu and Andamans during last 2 decades, probably due to decreased mosquito control. Since there is a steady increase in cases of dengue to ESIMC and PGIMSR since last 4 - 5 years, the aim of the study is to analyse major clinical presentations and outcome of the cases. A total of 50 cases proved to be dengue by IgM dengue antibody were analysed, admitted between January 2013 and Sept 2014; 76% of the patients were males. Migrant labourers and workers were accounting for 76%. Increased incidence in men could be related to occupational exposure. All the patients had fever, 76% of cases had fever duration less than 1 week. Longest recorded duration of fever in this study was 20 days; this patient had mild renal failure and low platelet count with ARDS. Jaundice was seen in 32% of cases. In a study in U.S.A between 1949 and 1961, 85% of cases had clinical jaundice. In this study 64% of cases had oliguria, all of them had moderate-to-severe renal failure, but total of 41 cases (82%) had renal failure. Of the 14% of cases who presented with oliguric renal failure 2% required dialysis, reflecting oliguric renal failure as bad prognostic sign.

In most of the Western studies, incidence of renal failure was from 80 - 90%. All the patients had normal RFT at the time of discharge. 70% of cases had myalgia at the time of presentation, of which 90% had muscle tenderness. In the Madras study, 82% of patients had myalgia. Most of the Western studies reported myalgia in 40% - 80% of patients. Pain abdomen was present in 20% of cases, but 15% of cases had abdominal tenderness on examination. 24% of cases had diarrhoea and vomiting, 5 patients (10%) presented with altered sensorium out of these patients, 24% had renal failure and liver dysfunction and thrombocytopenia with ARDS. Cecil's textbook of medicine gives an incidence of disturbances of sensorium at 30% in icteric dengue. Conjunctival suffusion was seen in 32% of cases. In the Madras study 58% of cases had conjunctival suffusion, but western studies show highest incidence of conjunctival suffusion ranging from 40% - 100%. Hypotension (SBP < 80 mmHg) was present in 10% of cases at the time of admission. Splenomegaly was seen in 14% of patients and hepatomegaly in 20% of cases. In Western studies incidence of rashes ranges from 7% - 10%. Anaemia defined as < 10 gm% was seen in 10% of cases; this could be due to GI blood loss. One case had a haemoglobin of 7 gm% and was later diagnosed to have iron deficiency anaemia along with dengue. 90% of the cases had platelet count less than 1 lakh, of which 16% had countless than 20,000/cumm. 30% of cases in Madras study had thrombocytopenia (< 50,000/mm^3). Total count ranged from 2,600 to 28,000; but 64% had total count > 12,000/mm^3. All the patients who expired had creatinine > 6 mg%. 2 patients required dialysis and all these patients had oliguric renal failure.

In the study done in India 43 cases of dengue, 79% of cases had renal failure. More than 15% of cases had abnormal LFT. Most of the elevation of AST and ALT was mild-to-moderate ranging from 50 - 200 U/L. Bilirubin more than 2 mg% was seen in 16 cases. Highest recorded value in this study is 12 mg%; 10 patients had abnormal CXR findings, of which 8 patients have bilateral non-homogeneous opacities and all of them had hypoxia. Most of the other studies show small nodular shadows as commonest abnormality in CXR. Most common complication in our study is thrombocytopenia (90%), renal failure (14%), abnormal LFT (16%). 2 patients died in this study with a mortality rate of 4%. Mortality in this study was similar to that described in the literature, which range from 3 to 11%. In study done by M. A. Muthusethupathi et al, mortality was 3%. This may be attributed to the fact that in this study only severe forms of dengue haemorrhagic fever were included. The major manifestations and usual cause of death were severe renal failure (in 100%), ARDS (in 65%). All these patients had total count less than 12,000/mm^3 and platelet count < 50,000/mm^3.

CONCLUSION

Dengue was more common in migrant workers. Fever was the commonest symptom at presentation (100%). Some of patients had jaundice (32%), oliguria (28%) and myalgia (70%) on presentation. More than 90% had thrombocytopenia, 28% had renal failure and 32% had liver dysfunction; 4% was the mortality. All these patients had severe thrombocytopenia, severe renal failure and ARDS.

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