

Original Research Article

Clinical profile of Dengue fever in an urban tertiary care hospital in South India

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ABSTRACT

Background: Dengue is among the most common flavivirus infections in the world. Today dengue ranks as the most important mosquito-borne viral disease in the world. Current estimates report that, at least 112 countries are endemic for Dengue and about 40% of the world populations (2.5-3 billion people) are at risk in tropics and subtropics. Annually 100 million cases of dengue fever and half a million cases of DHF occur worldwide. The clinical features are noted to be different in varying demographics of the world outlining the importance of bringing out data from different parts of the world, so clinicians are better equipped to anticipate the problems associated with clinical dengue.

Methods: The study was conducted over a period of 2 years at a tertiary care hospital in urban Bengaluru, India. A cross-sectional study of a total of 250 patients was done. They were diagnosed to be positive for dengue serology (NS1 or IgM) before including them in the study. Clinical features, haematological, biochemical and radiological parameters were assessed.

Results: Out of 250 patients with dengue fever, the most common symptoms were fever (100%), headache (94.4%) and myalgia (97.2%). Bleeding manifestations were noted in 11.6% of the patients. Bradycardia was noted in 14.8% of the study population. Leukopenia was noted in 36% of the study population. Increased SGOT was seen in 59.6% and increased SGPT in 52.8% of the 250 subjects. The clinical outcome of the 250 patients of dengue fever was classical dengue fever in 86.8%, DHF in 11.6%, DSS in 0.8% and death in 0.8%.

Conclusions: All patients with dengue fever present with fever. Other common features noted were headache, myalgia. Bleeding manifestations are to be looked out for. Rare but important features that a clinician must be vigilant to look for are bradycardia and leucopenia.

Keywords: Dengue fever, DHF, DSS, Fever, Headache

INTRODUCTION

Small bites, big threats.¹ Dengue fever has become one of the most important endemic infectious diseases in India that is responsible for causing a lot of morbidity and in a small percentage of the population even mortality. Even though traction for prevention of dengue fever has gained large momentum in India, the number of cases continue

to rise increasing the economic burden to the country and its human resources.²

Dengue fever is an acute febrile disease characterized by sudden onset of fever for 3 to 5 days, intense headache, myalgia, retro-orbital pain, anorexia, gastrointestinal disturbances and rash.³

Dengue viruses are flavivirus, which include four serotypes DENV 1, DENV 2, DENV 3 and DENV 4. These same viruses are responsible for dengue hemorrhagic fever (DHF). The viruses are transmitted to man by the bite of infective mosquitoes, mainly *Aedes aegypti*. The incubation period is 4-7 days but range from 3 to 14 days.⁴ The disease is now endemic in most tropical countries, subtropical countries. DHF is characterized by increased vascular permeability, hypovolemia and abnormal blood clotting mechanisms.

Today dengue ranks as the most important mosquito-borne viral disease in the world. Current estimates report that, at least 112 countries are endemic for dengue and about 40% of the world populations (2.5-3 billion people) are at risk in tropics and subtropics. Annually 100 million cases of dengue fever and half a million cases of DHF occur worldwide.⁴⁻⁷ Early recognition and prompt initiation of treatment are vital if disease related morbidity and mortality are to be limited.

METHODS

A cross sectional study of 250 subjects was done over a period of 2 years from November 2012 to October 2014 in the department of Medicine at KIMS, Bengaluru, India. Subjects were selected by purposive sampling. Subjects aged 18 years and older with a clinical description of dengue fever and who were diagnosed as dengue NS1 or IgM positive with an initial platelet count of less than 100,000cells/cumm were included in the study. Patients with any other specific coinfections such as malaria, leptospirosis, Enteric fever, scrub typhus were excluded from the study as they are known to produce thrombocytopenia as well.

The data was collected by using a predesigned and a pretested questionnaire which includes the following information like history of symptoms, finding of clinical examination and lab investigation values. The patients were followed up till the end of hospitalization to ascertain the clinical outcome. Informed written consent was taken from all the study subjects. The patients were treated with analgesics, IV fluids and transfusion with blood products as per the WHO protocol.⁸

RESULTS

In the present study, of the total 250 subjects 42.4% were males and 57.6% were females. The most common symptoms in dengue fever patients is fever (100%), headache (94.4%), myalgia (97.2%) followed by pain abdomen (46%), nausea and vomiting (48.8) with arthralgia (23.6). Breathlessness (2.4%), diarrhea (12.8%) and abdominal distention (8.8%) were noted less frequently. Bleeding manifestations were noted in 11.6% of the patients (Table 1). The most common bleeding manifestations noted were petechiae/purpura/ecchymoses (11 patients) followed by epistaxis which was noted in 10 patients (Table 2).

Table 1: Clinical features of 250 subjects with dengue fever.

Symptoms	Present n (%)	Absent n (%)
Fever	250 (100.0)	0 (0.0)
Headache	236 (94.4)	14 (5.6)
Myalgia	243 (97.2)	7 (2.8)
Retro orbital pain	11 (4.4)	239(95.6)
Arthralgia	59 (23.6)	191 (76.4)
Flushed Appearance	6 (2.4)	244 (97.6)
Rash	8 (3.2)	242 (96.8)
Conjunctival congestion	13 (5.2)	237 (94.8)
Bleeding manifestation	29(11.6)	221 (88.4)
Cough	37 (14.8)	213 (85.2)
Breathlessness	6 (2.4)	244 (97.6)
Pain Abdomen	115 (46.0)	135 (54.0)
Nausea/Vomiting	122 (48.8)	128 (51.2)
Diarrhoea	32 (12.8)	218 (87.2)
Abdominal distension	22 (8.8)	228 (91.2)
Jaundice	2 (0.8)	248 (99.2)

Table 2: Bleeding manifestations sites distribution (n=29).

Bleeding site	Frequency (n=29)	(%)
Epistaxis	10	34.5
Bleeding from gums	1	4.4
Per rectum/Malaena	3	13.0
Per vaginal	3	13.0
Petechiae/purpura/ecchymoses	11	37.9
Haematemesis	1	4.4
Total	29	100.0

Other bleeding manifestations such as bleeding from gums, melaena, per vaginal bleed and haematemesis were noted in a smaller proportion of the subject population. Bradycardia was seen in 14.8% of patients and tachycardia was noted in 12.3% of patients. ECG was normal in 66.5% patients though other changes included bradycardia (14.8%), tachycardia (12.8%), ST changes (0.8%), T wave changes (4.0%) and LVH (0.8%). Leukopenia (that is TLC <4000 cells/cumm) was seen in 36.0% of the patients, leucocytosis (above 11000cells/cumm) was seen in 7.2 percent of the patients. It was noted that the haematocrit was below 40% in 35.2% of subjects, between 40-45% in 30% of subjects and above 45% in 34.8% of subjects. Hepatic enzymes i.e, SGOT was increased in 59.6% and SGPT was increased in 52.8% of the subjects. The mean SGOT was found to be 130.92IU/L with SD of 299.50 and standard error of 18.94. The mean of SGPT was found to be 85.50IU/L with SD of 131.38 and standard error of 8.31. The gross deviation in SD was due to very marked variation in hepatic enzymes levels in the patients with some patients having hepatic enzymes raised to more than 1000.

Chest X-ray was noted to be normal in 79.6% of the subjects in the study. Abnormal findings included pleural effusion, lower lobe consolidation and ARDS noted in 16.4%, 3.2% and 0.8% respectively. On ultrasound examination of the subject's hepatomegaly was the most frequent finding seen in 56.4%. Acalculous cholecystitis was noted in 33.2% of subjects, followed by splenomegaly seen in 21.6%, ascites in 19.2% and pleural effusion in 16% of subjects. Pericholecystic oedema and gall bladder wall thickening was noted in a fewer proportion of the subjects. Evidence of plasma leakage in the form of ascites was seen in 19.2% of subjects, and pleural effusion and ascites was noted in 16% and 0.4% of subjects respectively.

Of the total 250 patients, 217 patients (86.8%) had classical dengue fever, 29 (11.6%) had dengue hemorrhagic fever, 2 (0.8%) had dengue shock syndrome and 2 (0.8%) patients died.

DISCUSSION

The present study included 144 (57.6%) females and 106 (42.4%) males diagnosed with dengue fever. The male to female ratio was 0.73:1. Similar studies done on the clinical profile had a higher ratio of males to females, i.e., in study by Dash PK et al, the male to female ratio was 1.28:1 and by Neerja M et al it was 2:1.^{9,10} However in a study done by Rabbani MU et al, 70.2% were males and 29.8% were females.¹¹

Fever was the presenting complaint in all the studies seen in 100% of all patients in similar studies by Dash PK et al, Neeraja et al, Deshwal R et al and Laul A et al, similar to the finding in my study.⁹⁻¹³ Myalgia was the second most common symptom in my study. It was seen in 97.2% of the subjects. In other studies, done by Deshwal R et al, and Laul A et al, it was 90.67 and 86% respectively whereas it was lower in studies done by Dash PK et al, and Neerja M et al, myalgia being noted in 86% and 74% of the study subjects respectively.^{8,10,12,13} Headache was the third most common symptom in my study, seen in 94.4% of subjects. This was similar to findings noted in other studies where headache was seen in a high proportion of subjects, such as studies by Dash PK et al, and Neerja M et al, showed headache to be present in 86% and 74% of subjects respectively.^{9,10} Other symptoms such as joint pains were noted in 23.6% of subjects in my study. In the study by Dash PK et al, joint pains were seen in 55% of the subjects, whereas in the study by Neerja M et al, joint pains were noted in 15% of the subjects, the finding of which are similar to that seen in my study.^{9,10} Bleeding manifestations were noted in 11.6% of the subjects in my study whereas it was seen only in 7% of the subjects in the study by Neerja M et al, and in 21% of patients in the study by Laul et al.^{9,13} Rashes were noted only in 3.2% of the subjects in my study. This finding was noted in a much higher percentage of subjects in other studies, such as studies by Dash PK et al, Neerja M et al, Deshwal et al, Laul A et al,

rashes were noted in 56%, 41%, 37.86% and 21% of the subjects respectively.^{9,10,12,13} Vomiting and pain abdomen was noted in 46% and 48.8% of the subjects in my study, the incidence of the above symptoms was not mentioned in the other studies.

The present study showed hepatomegaly in 56.4% of the patients. This correlated with findings of hepatomegaly in other studies done by Karoli R et al, and a higher percentage was noted in a study by Aggarwal A et al, at 72%, although the studies done by Singh R et al, Daniel R et al, and Sharma S et al, found only 10%, 12% and 17.6% of subjects to have hepatomegaly respectively.¹⁴⁻¹⁸ The mean SGOT was found to be 130.92 IU/L with SD of 299.50 and Standard error of 18.94. The mean of SGPT was found to be 85.50 IU/L with SD of 131.38 and Standard error of 8.31. Bhalla A et al, noted a mean AST was 287.53 IU/l and mean ALT was 200.23 IU/l.¹⁹ Mandal SK et al, noted a mean AST of 152.8±121.2 and ALT(IU/ml) 111.7±106.8.²⁰

The hematocrit was below 40% in 35.2% of subjects, between 40-45% in 30% of subjects and above 45% in 34.8% of subjects whereas the mean hematocrit was 39.79±3.23% in the study by Rabbani et al.¹¹

Bradycardia was noted in 14.8% of the patients in my study. In a study by Sumana DM et al, Bradycardia was seen in 21.1% of study subjects.^{21,22} These findings are similar to the findings in my study.

In the present study leukopenia (total leucocyte counts less than 4000cells/mm³) was seen in 90 patients i.e., 36% of the study population. In the study by Karoli R et al, and Singh N et al, leukopenia was noted in 86% and 68% of the population respectively. This outcome significantly higher than noted in my study.^{14,16}

Evidence of plasma leakage in the form of ascites was seen in 19.2% of subjects, and pleural effusion and ascites was noted in 16% and 0.4% of subjects respectively. In the study by Daniel R et al, it was 13.2% and 12% respectively.¹⁷

In the present study the clinical outcome of the patients was classical dengue fever in 86.6%, DHF in 11.6%, DSS in 0.8% and death in 0.8% of the patients (Figure 1).

These findings were similar to the study done by Neerja M et al, where classical dengue fever was noted in 85%, DHF in 5%, although no deaths were reported in their study and the incidence of DSS was much higher at 10%.⁹ In the study done by Tewari K et al, classical dengue fever was seen in 85.8%, DSS in 11%, DHF in 3.2%.²³ Mortality was higher in the study done by Tripathi BK et al, at 1.93% and Singh RS et al, at 2.7%. No mortality was reported in the study done by Ratageri VH et al.¹⁶

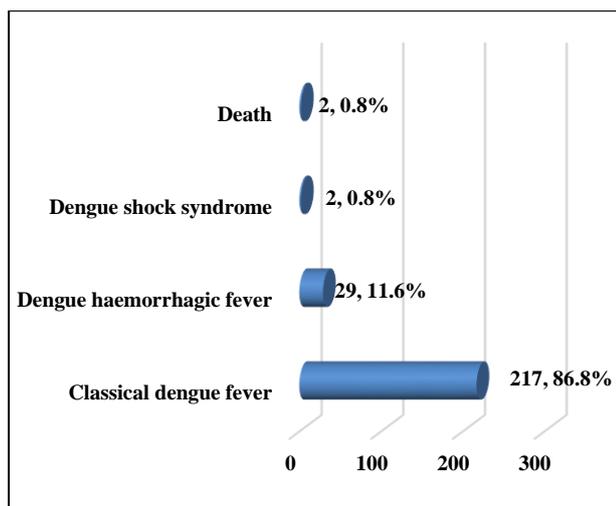


Figure 1: Clinical outcome of all 250 subjects with dengue fever.

In the study done by Pacharoen C et al, in Thailand, the findings do not correlate with the present study. The study showed outcome of classical dengue fever in 22.3%, DHF in 60.4% and DSS in 17.3%.²⁶ No mortality was reported in the study done by Ratageri VH et al.²⁵ This difference in the outcome could be due to geographical factors and because of the difference in the age group of the patients studied.

CONCLUSION

In the present study, the most common symptoms were fever, headache, myalgia followed by pain abdomen, nausea and vomiting with arthralgia. Breathlessness, diarrhea and abdominal distention were noted less frequently. Hence a high index of clinical suspicion of dengue fever is required when the patient presents with the above symptoms.

Bleeding tendencies should be closely watched for. When features of plasma leakage such as pedal oedema, pleural effusion and ascites are present, patient should be closely monitored and immediately managed. Bradycardia were noted in the present epidemic in my study. Bradycardia did not require any specific treatment as it was asymptomatic. Raised liver enzymes are a frequently noted manifestation in the present study and it should be closely watched for.

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