

**A STUDY ON CLINICAL PROFILE OF DENGUE IN ADULT PATIENTS IN A
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ABSTRACT

Dengue Fever, known commonly as Break bone fever is the most common Arboviral mosquito borne disease in the world. Dengue has a varied and wide spectrum of clinical presentations, often with unpredictable clinical evolution and outcome. This study is an attempt to derive the clinical profile of Dengue infection from the epidemic and to identify some peculiar features that may help in early recognition and appropriate case management. The present study is an observational study where we studied the clinical profile of 251 serologically proven dengue patients admitted in the Department of Medicine in a tertiary care teaching hospital, for a period of one year. Out of 251 cases, 149 patients belonged to DCF, DHF in 76 patients whereas 26 patients belonged to more severe variety of DSS. Majority of cases occurred in young adult <20 years of age. Distribution of dengue in females was slightly higher. The characteristic feature of dengue like bone pain and retro-orbital pain was present in only 3.20% and 32.70% respectively. Fever was commonest complaint. BP is the most important clinical monitor in a case of dengue for identifying onset of complications like shock. Mortality rates was 0.8%. Management of patients with dengue is mainly supportive, simple, inexpensive and very effective in saving but early and meticulous monitoring are the corner stone for positive outcome.

KEYWORDS: Dengue, DHF, DSS.**INTRODUCTION**

Dengue Fever, known commonly as Break bone fever is the most common Arboviral mosquito borne disease in the world. Many countries especially the countries of the Indian subcontinent have suffered at the hands of this disease. Epidemiology of Dengue Fever in Indian subcontinent is very complex.^[1] It has changed over the last few years with regard to the strains, affected regions and disease severity.

Dengue has a varied and wide spectrum of clinical presentations, often with unpredictable clinical evolution and outcome.^[2] Most of the patients will recover following a self-limiting, less severe clinical course, where as a small proportion of patients with dengue infection, progress to severe disease, characterized by plasma leakage, with or without hemorrhagic manifestations.

Intravenous rehydration of the patient is the treatment of choice. By this simple intervention, case fatality rate is reduced to less than 1% even in severe cases. Clinical profile of dengue fever may vary with each epidemic because of the numerous strains available, varied possibilities of co-infections according to the geography and also due to the vector density of the particular area of

outbreak.^[3]

This study is an attempt to derive the clinical profile of Dengue infection from the current epidemic that stormed Tirunelveli district. An effort is also made to identify some peculiar clinical features that may help us to identify those seemingly simple cases that worsen without any warning signs, so that we may reduce the serious morbidity and mortality associated with this disease. Hence aim of our study is to study the clinical profile of serologically proven dengue fever in Tirunelveli Medical College hospital and to identify some peculiar features that may help in early recognition and appropriate case management which all together helps in bringing out a good clinical outcome.

METHODOLOGY

This study was done in a tertiary care teaching hospital by department of general medicine in collaboration with other departments like Biochemistry, Microbiology, Pathology, Radiology. This was done as a hospital based cross sectional Observational Study for a period of one year. After getting approval from ethics committee 251 cases were included in the study after obtaining informed consent. Patient who has fever with thrombocytopenia with Dengue antigen (NS1) or antibody (IgG or IgM)

positivity and adults with age more than 13 years were included and patients with fever with thrombocytopenia due to other causes were excluded. Complete history, signs, symptoms and laboratory data were recorded as per the Performa. Blood investigations and X -ray chest, USG Abdomen were done. The data was analyzed statistically using standard statistical software, SPSS for windows. Chi Square test used for categorical variables. Significance was considered if the p-value was below 0.05.

RESULTS

The present study is an observational study where we studied the clinical profile of 251 serologically proven dengue patients admitted in the Department of Medicine, in a tertiary care teaching hospital for a period of one year.

The study had revealed much observation that concurred with traditional teaching about dengue, there were other findings that were peculiar to this epidemic. The observations are as follows, Out of 251 cases, 149 patients (59.40%) belonged to DCF, DHF in 76 patients (30.30%), whereas 26 patients (10.40%) belonged to more severe variety of DSS.

Majority of cases 40.20% occurred in young adult <20 years of age. The incidence appeared to reduce with advancing age with least number of cases seen in the age group >60 years of age. DCF (44.30%) and DSS (42.30%) was more common in the younger age group <20 years. DHF (39.50%) was more common in age group of 20- 29 years where as DSS is not observed in patients >60 years in this study.

Table 1: Associations between Dengue type and age.

| Age (Code) | Dengue Clinical Type | | |
|------------|----------------------|--------|--------|
| | DSS | DHF | DCF |
| < 20 yrs | 42.30% | 31.60% | 44.30% |
| 20 - 29 | 26.90% | 39.50% | 26.80% |
| 30 - 39 | 3.80% | 13.20% | 10.70% |
| 40 - 49 | 15.40% | 5.30% | 9.40% |
| 50 - 59 | 11.50% | 6.60% | 7.40% |
| > 60 yrs | - | 3.90% | 1.30% |

In our study distribution of dengue in females was slightly higher 51.40% when compared to males 48.60%. DSS was more common in females 65.40%, when compared to males 34.60% where as DHF in men 53.90% when compared to women 46.10%.

In this study all patients had fever 100%. Followed by headache 61%, Myalgia 54.60%, chills 46.20%.

abdominal pain 43.40%, vomiting 42.20%. The characteristic feature of dengue like bone pain and retro-orbital pain was present in only 3.20% and 32.70% respectively. Atypical clinical feature like seizure was present in 1.20% Even though the bone pain was present in 3.20% it has got statistically significant correlation with Dengue classical fever.

Table 2: Association between Dengue type and Bone Pain.

| Bone Pain | Dengue Type | | | Total |
|-----------------------------|-------------|--------|--------|--------|
| | DSS | DHF | DCF | |
| Yes | 3 | 1 | 4 | 8 |
| | 11.50% | 1.30% | 2.70% | 3.20% |
| No | 23 | 75 | 145 | 243 |
| | 88.50% | 98.70% | 97.30% | 96.80% |
| Total | 26 | 76 | 149 | 251 |
| Chi Square: 6.861; P < 0.05 | | | | |

Most common sign observed in this study was conjunctival congestion 23.90%, followed by Hepatomegaly 12%, Ascites 10%, Rashes 10%, Pleural effusion 9.60%, Puffiness of the face & Splenomegaly 8.40%.

Most common bleeding manifestation encountered was malena 27.50% followed by petechiae 8.40% and gum bleeding in 4.80% less frequent was bleeding manifestation hemoptysis 0.40%. Malena has got statistically significant association with DHF.

Table 3: Associations between Dengue type and Bleeding.

| Melena | Dengue Type | | | Total |
|--------|-------------|--------|--------|--------|
| | DSS | DHF | DCF | |
| Yes | 5 | 28 | 36 | 69 |
| | 19.20% | 36.80% | 24.20% | 27.50% |
| No | 21 | 48 | 113 | 182 |
| | 80.80% | 63.20% | 75.80% | 72.50% |
| Total | 26 | 76 | 149 | 251 |

Chi Square: 5.987; P < 0.05

Blood pressure was normal in 76.50%, even though 21.50% of patient presented with hypotension, DSS had occurred in 10.40%. On CBC, thrombocytopenia was seen in 66.50%, leucopenia in 33.10% hematocrit increased and decreased in 29.10% and 23.10% respectively. Increased hematocrit has got statistical correlation with DSS.

Serum bilirubin was elevated in 10.70%, where as it was normal in 89.30%. In LFT, All the three enzymes ALT, AST and ALP were elevated in 47.10%. SGOT more than SGPT in 36.80%; SGPT more than SGOT; both AST and ALP were almost equally elevated in 5.70%. where as SGOT only in 2.30%. The elevation of liver enzymes has no statistical correlation with any particular type of dengue.

Renal function test was normal in 97.60%, elevated in 2.40% but it has no statistically correlation. ECG was normal in 51.40%. Most frequent ECG sign was sinus Tachycardia 33.40%, where as sinus bradycardia in 11.60%, First degrees AV block in 2.0%, Second degrees AV block 0.80%.

USG Abdomen was normal in 104 patients. GB wall edema was present in 23.90%, Ascites was present in 19.20%, and Pleural effusion was seen in 16.70%, Hepatomegaly 15.50% and Splenomegaly 15.10%. In USG Right side Pleural Effusion was seen in 33.30% whereas bilateral effusion was more common and it was present in 66.70%.

X-ray chest P/A view was normal in 91.60%, here right sided pleural was more common 5.20% when compared with bilateral pleural effusion 2.40%. CT brain was taken for 4 patients presented with encephalopathy. It was normal in 2 patients, 1 patient with Seizure had Intracerebral bleed.

Blood transfusion was not needed for 161 patients. 64 (25.50%) was transfused with whole blood, only platelet in 7 patients, whole blood along with platelet in 6.0%. Whole blood along with platelet and FFP in 1.60%.

In serology NSI antigen was positive in 61.80%, IgM in 44.60%, IgG in 1.60%. Regarding the Outcome, patient's recovery rate achieved was 99.20%. We lost 2 cases (0.80%) among the 251 cases studied. The death has got statistical correlation with DSS.

DISCUSSION

This study describes the clinical profile of serologically proven dengue cases in adults aged more than 13 years admitted in our hospital, a total of 251 cases admitted in one-year period were studied by analyzing the symptoms, signs, hematological and laboratory findings, and outcome.

The findings are discussed in detail with reference to other studies conducted in clinical profile of dengue in various parts of the country. Also, an attempt is made to find out the significance of various parameters, in order to help us diagnose promptly and treat effectively the cases thereby reducing morbidity and mortality. The cases studied were classified according to the WHO Diagnostic criteria for Dengue published in 2009.

Of the total 251 cases studied, 149 cases (59.40%) were diagnosed to have DCF, 76 cases (30.30%) were diagnosed with DHF. More severe form of dengue DSS constituted 26 cases which was 10.4% of the cases studied. This clinical distribution of cases as DCF, DHF and DSS in our study followed similar pattern that was observed in other studies conducted in Uttar Pradesh in 2010 (Ritu Karoli et al).^[3] In these studies, DCF constituted around 70% of cases and DHF and DSS constituted the rest.

Age group of the cases ranged from 13 – 65 years. Majority of cases in this study were young adults belonging to the age group of 20 – 39 years of age. Whereas it was less common among age group > 60 years. Incidence of dengue showed a decreasing trend with increasing age. The study revealed that younger age group was more susceptible to dengue infection in our population. According to WHO^[4], DSS was more prone in children and young adults because the compensatory mechanism for capillary leakage was weak when compared to adults.

In our study 51.40% of the cases were females and males constituted 48.60%. There was no statistical significance for this finding. DSS was more common among females (65.40%) when compared to males (34.60%). Similar observation was made by WHO^[5], this might be due to difference in genetic background and immune response among males and females.

Presenting symptoms were analyzed and categorized into common presentation and atypical presentation. 251 cases

(100%) had fever at the time of presentation which was similar to the studies conducted in Chennai^[6] and North Karnataka.^[7] Headache was the second most common symptom (61.0%) similar to the study from North Karnataka (2013). Retro orbital pain was observed in 32.70% of cases. This was not specific for DCF, DHF or DSS. 54.60% of the cases had moderate to severe myalgia. The incidence of bone pain which is supposed to be characteristic of Dengue, which even gave it the synonym of Break bone fever, was surprisingly low (3.20%) and was more common in DCF and was statistically significant.

Physical examination in Dengue was done with utmost seriousness so that no critical signs that aid in prompt diagnosis of the disease and its complications was not missed. The signs were analyzed in detail in the present study. Conjunctival congestion due to dilatation of the superficial capillaries was the most common sign (23.90%) noted and was most striking too. Transient erythematous morbiliform rash (Exanthem) was associated in 10% of the cases (25 cases). The spectrum of rash varied from erythematous flush that blanched on pressure to exfoliative dermatitis in 1 case. The rash was associated with itching in 11 cases. Clinically hepatomegaly was present in 30 cases (12%) and splenomegaly in 21 cases (8.40%). No significance was present in statistical analysis and hence these findings could not be specifically attributed to DCF, DHF, and DSS. Free fluid abdomen (ascites) was clinically apparent in 30 cases (10%). Ascites was a part of third space volume loss due to increased capillary leakage more during the later phase of the disease. Ascites was observed in DCF, DHF and DSS. Clinically apparent pleural effusion was present in 24 cases (9.6%). Clinically right sided pleural effusion was detected more frequently followed by bilateral pleural effusion.

A typical dengue facies resulted from facial puffiness especially eye lid edema associated with erythema of the surrounding areas. This kind of facial puffiness was present in 21 cases (8.4%), 16 cases (6.4%) had icterus associated with dark yellow discoloration of urine. However, no features suggestive of obstruction of the biliary tree were noticed like clay colored stool and pruritis. 4 cases of dengue also had developed pneumonia. This pneumonia would have been caused by either a co infection or nosocomial infection. Similar cases were observed in the previous studies and WHO^[4] had opined about the same as above.

One of the atypical presentations of dengue observed in the present study was myocarditis. Young adults (4 cases) were diagnosed to have myocarditis and confirmed with ECHO and treated accordingly. 3 cases recovered and 1 case succumbed after deteriorating to refractory shock.

Analysis of Bleeding Manifestations

Studying the bleeding manifestation among the cases

admitted was undertaken separately. A detailed analysis of various bleeding manifestations is as follows. 69 cases (27.50%) presented with melena. This was the most common bleeding manifestation encountered. DHF and melena were linked statistically significant. 5 (2.0%) of them had hematemesis. Massive episodes were treated with blood and blood product transfusions. 21 cases had petechiae especially over the extremities. Lower limbs were commonly involved than the upper limbs may be due to capillary damage aggravated on standing by gravity. Petechiae were also noted over palate which is an uncommon site for the same. Petechiae were statistically significant in DCF.

Mucosal bleeding were common during this epidemic. 12 cases (4.80%) had gum bleeding and 9 cases (3.60%) had epistaxis. All these cases had spontaneous bleeding and some cases had to be transfused with blood for replacing the lost volume and for prophylaxis against further bleed they were given blood product transfusions. 9 cases of young females admitted with dengue had developed menorrhagia during the menstrual cycles and some of them had required blood transfusion. Apart from these 4 cases (1.60%) had developed hematuria. 1 had hemoptysis.

BP is the most important clinical monitor in a case of dengue for identifying onset of complications like shock. Pulse pressure is more important than BP in identifying early stage shock. Narrowed pulse pressure (< 20 mm of Hg) is the most sensitive sign. In this study hypotension was noted at presentation among 54 cases and the majority was stabilized using IV fluid support. Hypotension was persistent in cases of DSS (26 cases). In our ICU setup we used pulse pressure as the main monitor for identifying and treating patients with DSS.

Thrombocytopenia was the most common abnormality observed. 167 cases (66.50%) had thrombocytopenia ranging from mild to severe thrombocytopenia. Leucopenia was observed in 83 cases (33.10%). Eosinophilia was observed among many cases mostly in patients who had associated dermatological manifestations like rash and itching may be as an effect of some allergic response.

Hematocrit was elevated in 73 cases studied and they had to be treated with IV fluid therapy in addition to oral fluids. Low hematocrit was noticed among 58 cases but was significantly low in cases who presented with significant bleeding. However, a low hematocrit was also noted among the cases without bleeding manifestations. This may be due to the presence of anemia in these patients that might have resulted in low baseline values of hematocrit. Increased hematocrit was noted among 38.50% of cases with DSS and was statistically significant.

LFT was done in all cases. Normal results were obtained in 137 cases. Elevated bilirubin was noted in 27 cases

(10.70%). Both direct and indirect bilirubin was increased. However clinically manifest jaundice was present in only 16 cases. 87 cases showed enzyme abnormalities. All the three enzymes AST, ALT and ALP were elevated in 41 cases (47.10%). AST was more elevated than ALT in 32 cases and in 5 cases both AST and ALT were elevated in almost same proportion. ALT was elevated more than AST in 7 cases. Isolated elevation on AST was noticed only in 2 cases.

In a study conducted at CMC Vellore^[8], elevation of AST was in 100% cases with LFT abnormality which was similar to our study. This elevation of liver enzymes could be due to direct injury to liver cells by the virus or due to immunological response. Ischemic hepatitis in patients especially in shock could be another possible etiology.

Normal ECG recordings were seen in 169 cases. Sinus tachycardia was seen in 84 cases mostly due to fever itself and many of them in hypotension or shock and tachycardia seemed to resolve with normalization of BP. Sinus bradycardia was observed in 29 cases. First degree AV block was seen in 5 cases and second degree in 2 cases. No case studied had third degree AV block.

USG abdomen was essentially normal in 104 cases (41.40%) of the cases. Gall bladder wall edema was the most common USG finding (60 cases, 23.90% cases). Hepatomegaly and ascites were present in 39 cases and 48 cases respectively. Splenomegaly was observed in 38% cases. Pleural effusion was detected in 42 cases (16.70%).

Chest X-ray PA View was normal in 230 cases. Right sided pleural effusion was detected in 13 cases and bilateral pleural effusion noted in 6 cases. Cardiomegaly was noted only in 1 case. Consolidation was present in 1 case whereas pneumonitis with infiltration was reported in 3 cases. On comparing USG and X-ray in diagnosing pleural effusion, USG proved to be more sensitive than X-ray. Cases with even mild pleural effusion were picked up using USG whereas X-ray revealed normal study. Bilateral pleural effusion was common in USG whereas right sided pleural effusion was commonly reported in X-rays. This may be because even the minimal pleural effusion on the left side was picked up in USG. No patient had isolated left sided pleural effusion. CT brain was performed in patients who had presented with encephalopathy and seizures. CT brain was normal in 2 cases. Intracerebral bleed was noted in 1 case and minimal white matter hypo density was noted in the other case.

Dengue cases were confirmed by serology. NS1 antigen ELISA was the most important test used for diagnosing dengue cases in our hospital. Dengue IgM and IgG were performed in cases according to the availability of test kits. NS1 was found to be positive in 155 cases (61.80%) and IgM positive in 112 cases (44.60%). IgG was

positive only in 4 cases.

Transfusion with blood and blood products were needed in 190 cases. Platelets were not transfused routinely for thrombocytopenia. We used fresh whole blood for cases with uncontrolled bleeding. Platelets were transfused in cases with platelet count < 10000/ml or in cases with uncontrolled bleeding not responding to whole blood.

Regarding the Outcome of dengue epidemic cases admitted in our department, Cure rate achieved was 99.20%. We lost 2 cases among the 251 cases studied. The cause of death was I.C bleed/ encephalopathy/seizures / DSS/ DIC / Refractory shock. The other case succumbed due to massive malena/ encephalopathy/ DSS/ DIC/ refractory shock.

CONCLUSION

In this study the Clinical Profile of serologically proven Dengue fever was studied for one year particularly during the epidemic that stormed Tirunelveli district. With this clinical profile it is easy to recognize and understand the clinical problem. The application of clinical spectrum of WHO classification system is not as very simple and straightforward as it seems because clinical features may overlap among different categories. Although these manifestations are rare, clinicians should always have a high index of suspicion and knowledge of these atypical manifestations, particularly in view of the increasing burden of dengue in recent years. Management of patients with dengue is mainly supportive simple inexpensive and very effective in saving lives, prophylactic FFP and platelets are not necessary for treating DHF, DSS, but early and meticulous monitoring are the corner stone for positive outcome.

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