Original Research Article

A study of clinical profile of patients with dengue fever at tertiary care hospital

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Abstract

Introduction: Dengue fever is one of the most common arboviral mediated outbreaks reported with increased prevalence year after year with considerable morbidity and mortality. This study was designed to assess the clinical and biochemical parameters of dengue fever patients.

Materials and methods: Prospective observational study was undertaken among adult patients in a Civil Hospital, Ahmedabad. Fifty patients were studied and analyzed. All patients who were NS1 antigen/ IgM dengue positive were included in the study. Clinical features, hematological and biochemical parameters were noted.

Results: Of the 50 patients studied, majority were males (64%). Fever was the major symptom (100%) followed by headache (96%), myalgia (94%), retro-orbital pain (64%), conjunctival injection (24%), rash (38%), abdominal pain (74%), pleural effusion (30%) and ascites (26%). Significant derangements in platelet (70%), leucocyte counts (78%) and serum transaminases (74%) were noted. Mortality rate was zero.

Conclusion: Fever associated with headache, retro-orbital pain, erythematous morbilliform rash, conjunctival suffusion and itching in palms and soles along with thrombocytopenia, leucopenia, elevated liver transaminases should prompt a clinician on the possibility of dengue infection. Platelet transfusions have little role in management of dengue patients.

Key words

Clinical profile, Dengue fever, Tertiary care.

Introduction

Dengue is the most common arthropod-borne viral (arboviral) illness in humans. Annually, approximately 50-100 million individuals are infected [1]. The incidence has increased many fold in India due to unplanned urbanization and migration of population to urban areas. Although initially reported from urban locales, dengue is now being reported from urban and rural backgrounds alike. Dengue is caused by infection with one of the four serotypes of dengue virus, which is a Flavivirus. Infection with one dengue serotype confers lifelong homotypic immunity to that serotype and a very brief period of partial heterotypic immunity to other serotypes, but a person can eventually be infected by all 4 serotypes [2]. Several serotypes can be in circulation during an epidemic. Dengue is transmitted by mosquitoes of the genus Aedes, principally Aedes aegypti [3]. Initial dengue infection may be asymptomatic (50-90%) [4], may result in a nonspecific febrile illness, or may produce the symptom complex of classic dengue fever (DF). Classic dengue fever is marked by rapid onset of high fever, headache, retro-orbital pain, diffuse body pain (both muscle and bone), weakness, vomiting, sore throat, altered taste sensation, and a centrifugal maculopapular rash, among other manifestations. A small percentage of persons who have previously been infected by one dengue serotype develop bleeding and endothelial leak upon infection with another dengue serotype. This syndrome is termed dengue hemorrhagic fever (DHF). The exact clinical and laboratory profile is crucial for diagnosis as well as successful management of the patients. This study is an attempt to elucidate the clinical and laboratory profile of serologically confirmed cases of dengue fever in our hospital.

Materials and methods

This study was carried out in a Civil Hospital, Ahmedabad from July 2019 to September 2019. All patients above 12 years with confirmed dengue, who were hospitalized with NS1 antigen and/ or IgM d antibody positivity were included in the study. The patients with concomitant malaria, typhoid, leptospirosis etc. were excluded from the study. Detailed history and careful clinical examination was performed on each patient. Laboratory investigations done were hemoglobin, total and differential leucocyte counts, platelet count, hematocrit, liver function tests, blood urea and serum creatinine, chest radiograph and ultrasound scan of abdomen. Blood counts were monitored periodically as and when required.

Results

A total of 50 patients who reported between July to September 2019 were studied and analyzed. Majority of these cases reported to our hospital coinciding with rainy season, showing the breeding of mosquitoes during the said period. Majority of the patients were males (64%). Females formed 36% of the retrospective study. Maximum patients were in 21-40 age group (44%) (**Table - 1**). Fever was universal followed by headache (100%), myalgia (94%), conjunctival injection (24%), morbilliform skin rash (38%), abdominal pain (74%), retro-orbital pain (64%), itching predominantly localized to palmar and plantar aspects of hands and feet (66%). Pleural and ascitic fluid exudation was documented in 30% and 20% of cases, respectively. Hepatomegaly was noted in 88% and splenomegaly in 88% of all cases (**Table - 2**). Platelet count at presentation was less than 50,000/cumm in around 70% of cases, though it kept on falling further during hospitalization/observation. Minimum platelet count noted was 8,000/cumm. Leucopenia was noticed in around 78% of cases. Raised liver serum transaminases were noted in 74% of patients. Raised hematocrit (>45%) was noted in 36% of patients at presentation (**Table - 3**). All the patients were managed with careful monitoring of blood pressure, hematocrit, platelet counts on as and when required basis. Antipyretics (paracetamol) were used along with intravenous fluids (normal saline and ringer lactate) on as required basis. Platelet transfusions

were not used in any of the patients. Total mortality was zero.

Table - 1: Sex and age characteristics.

Age (years)	Male	Female	Total
12-20	8	5	13
21-40	15	7	22
41-60	7	6	13
>60	2	0	2
Total	32	18	50

Table - 2: Clinical features.

Clinical features	No of Patients
Fever	50
Headache	48
Myalgia	47
Retro-orbital pain	32
Abdominal pain	37
Nausea/Vomiting	47
Diarrhea	23
Conjunctival suffusion	12
Skin Rashes	19
Itching	33
Bradycardia	29
Bleeding	5
Pleural effusion	15
Ascites	13
Breathlessness	0
Seizures	0
Hepatomegaly	44
Splenomegaly	44

Table - 3: Lab parameters.

Parameter	No. of patients
Thrombocytopenia (<50000/cu mm)	35
Leucopenia (< 4000/cu mm)	39
Raised AST, ALT >45 IU/L	37
Raised hematocrit (>45%)	18

Discussion

Increase in the number of dengue cases over the past few years has been attributed to rapid unplanned urbanization with unchecked construction activities and poor sanitation facilities contributing fertile breeding areas for mosquitoes, it is also seen that increase in alertness among medical personnel following the epidemics and availability of diagnostic tools in the hospitals have contributed to the increased detection of cases [5]. Male to female ratio in our study was 1.77: 1. Slightly higher number of males is primarily because of the serving soldiers most of whom tend to stay alone leaving their families at their paternal homes. Fever was the most common presentation (100%), which is in unison with other similar studies from India and South East Asia [6-9]. Headache and myalgia were seen in majority of cases. Retro-orbital pain was noticed in 64% of cases. Conjunctival injection was documented in 24% of all cases and diffuse erythematous skin rash in 38%. Mandal, et al. in a similar study have documented headache in 62.16% and rash in 37.84% of cases [10]. Thrombocytopenia may not be the sole causative factor for development of these rashes as they developed in patients with platelet counts above 50,000/cumm. Dengue virus interacts with host cells, causing release of cytokines and stimulation of immunologic mechanism causing vascular endothelial changes, infiltration of mononuclear cells and perivascular edema [11]. Munde, et al. in their series of patients have shown myalgia in 50% and headache in 25% of all patients [9]. Muniraja, et al. documented conjunctival congestion in 2.6 to 7.3% of cases which is much less than our study patients [12]. Itching was noticed in 66% of our cases, this finding has not been noticed by most other studies except a few, Rachel et al from their study in Kollam, Kerala have documented pruritis in 10.4% of their patients [8]. Bleeding diathesis i s a known feature of dengue fever because of low platelet count and leakage from blood vessels. Bone marrow suppression, Immune-mediated clearance and spontaneous aggregation of platelets to virus infected endothelium may be responsible for such thrombocytopenia. Raised liver transaminases were documented in 74% of cases. In study by Kularatne, et al., 88% patients showed elevated ALT and AST, with 122 of them having a two-fold increase [13]. Mandal, et al. documented elevated transaminases in 83.78% of cases [10].

A study from Brazil by Silva, et al., 17, C1q has found an interacting partner between NS1 protein and liver proteins in the causation of hepatic dysfunction in dengue fever [14]. Pleural effusion documented in 30% on chest radiography and ascites seen in 20% of patients on ultrasound scan of abdomen was marginally higher from other similar studies [15]. Higher mortality rates shown in other studies could be due to reinfection and late presentation to the hospital.

Conclusion

Dengue infection is increasing proportional to increased urbanization and compromised sanitation measures. Fever associated with headache, retro-orbital pain, erythematous morbilliform rash, conjunctival suffusion and itching in palms and soles along with thrombocytopenia, leucopenia, elevated liver transaminases should prompt a clinician on the possibility of dengue infection. Platelet transfusions have little role in management of dengue patients. Early diagnosis, careful monitoring and proper fluid management goes a long way in reducing the mortality due to dengue hemorrhagic fever and shock syndrome.

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