e-ISSN: 0975-5160, p-ISSN: 2820-2651

Available online on www.ijtpr.com

International Journal of Toxicological and Pharmacological Research 2023; 13(11); 339-342

Original Research Article

A Hospital Based Observational Study to Evaluate the Laboratory Profile of Dengue Patients

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Received: 12-10-2023 / Revised: 28-10-2023 / Accepted: 27-11-2023
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Conflict of interest: Nil

Abstract

Aim: The aim of the present study was to evaluate the laboratory profile of dengue patients.

Material & Methods: A Prospective, observational study carried out at a Department of General Medicine during the duration of 10 months. Study population was all indoor patients with dengue fever having age group of more than 12 years. 100 patients with dengue fever were selected for study.

Results: In our study out of 100 subjects, 60 were male and 40 were female. The age of the patient in our study group range between 13 to 80 years. Mean age of the study was 45.5 years. Most of the patients diagnosed as a dengue fever presents with fever, body ache, chills, generalized weakness and rarely some patient may present with rash, vomiting, melena, hematuria, itching, photophobia and neck stiffness accompanied by facial flush and other flu like symptoms. The fever usually continues for two days to seven days and can be as high as 41 degrees Celsius. Patients with fever accompanied with tachycardia, some patients also had bradycardia may be due to myocarditis. Few patients in our study were also had blanching, hypotention and neck stiffness. In our study the laboratory findings suggest that the dengue fever patient present with thrombocytopenia most commonly and associated with leukopenia.

Conclusion: Dengue is a mild acute febrile illness; most of the patients do not develop complications and recover completely. Commonly patients present with fever, headache, and myalgia. The laboratory findings suggest that the dengue fever patient present with thrombocytopenia most commonly and associated with leukopenia.

Keywords: Clinical profile, Dengue, Fever, Rash, Severe Dengue, Thrombocytopenia.

Introduction

Dengue is an acute febrile illness which is the most extensively spread mosquito-borne disease, transmitted through the bite of infected mosquitoes of Aedes species. Dengue virus, the causative agent of dengue fever belongs to the Flavivirus genus and has four serotypes (DEN-1, DEN-2, DEN3, and DEN-4. [1] Dengue outbreaks are frequently reported from different parts of India, mainly from urban and semi-urban areas. Dengue is a mosquito-borne viral illness caused by one the four serotypes of dengue virus, belonging to the family flaviviridae. The virus serotypes though genetically closely related yet are antigenically distinct. Subsequent infections by other serotypes increase the risk of developing severe dengue. [2] Dengue infections vary in severity, ranging from influenza-like self-limiting illness to life-threatening dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS) which, if left untreated, are associated with mortality as high as 20%. [3] Symptoms typically start three to fourteen days after contamination. This may include a high fever, headache, nausea, vomiting, muscle and joint pains, and skin rash. The muscle and joint involvement lead to severe pain in the bones, which is why it is called as 'Break bone Fever' 50–82% report with a peculiar cutaneous rash. [4]

Recovery takes under two to seven days Severe dengue (also known as dengue hemorrhagic fever [DHF] or dengue shock syndrome) is characterized by abdominal pain, persistent vomiting, shock, bleeding, thrombocytopenia, and breathing difficulty resulting in decreasing platelet count and blood plasma spillage, or where low blood pressure will occur. [5] Early diagnosis and careful management increase the survival of patients, so

clinical suspicion of dengue is important which depends on the recognition of its signs and symptoms among patients of acute febrile illness. [6] Dengue virus infection exhibit varied clinical presentation, hence, accurate diagnosis is difficult and relies on laboratory confirmation.

A decreased number of white blood cells (leukopenia), accompanied by a decreased number of platelet count (thrombocytopenia) and metabolic acidosis are the initial changes on laboratory examinations. Microbiological laboratory testing confirms the diagnosis of DF. Virus segregation in cell cultures, nucleic acid demonstration by polymerase chain reaction (PCR), and serological detection of viral antigens (such as NS1) or particular antibodies are the preferred microbiological assays. [7] Viral segregation and nucleic acid demonstration provide precise diagnosis, although the high cost limits the availability of these tests.

Hence the aim was to study the laboratory profile of dengue patients.

Material & Methods

A Prospective, observational study carried out at a Department of General Medicine, AIIMS, Patna, Bihar, India during the duration of 10 months. Study population was all indoor patients with dengue fever having age group of more than 12 years. 100 patients with dengue fever were selected for study.

Inclusion Criteria:

1. Patients of both sexes of age more than 12 years, who were willing for admissions and who were positive for Dengue anti-IgM antibody by ELISA and NS1 (Nonstructural-1) antigen positive

Exclusion Criteria:

1. Patients of less than 12 years of age, tested negative for dengue anti-IgM antibody by ELISA and NS1 antigen

2. Patients who were not willing for admission.

3. Patient with concomitant malaria, typhoid, leptospirosis.

Methodology

Detailed clinical history was taken. A through clinical examination was done. All the patients underwent investigations like Hemoglobin, TLC, Platelet count ,hematocrit, Dengue anti-IgM antibody, Dengue anti- IgG antibody and NS1 Antigen, Liver function test(LFTs), Kidney function test (Sr. Urea), Serum creatinine), USG Abdomen, X-Ray chest P/A View and Tourniquet Test. All patients were treated symptomatically. If needed fresh frozen plasma was given. Data was collected with pre tested questionnaire. Data included demographic characters like age, sex etc.

Statistical Analysis: Data was entered in excel sheet. Data was analysed using SPSS version 22.

Results

Table 1: Gender distribution

Gender	N%
Male	60 (60)
Female	40 (40)
Total	100 (100)
Mean age	45.5 years

In our study out of 100 subjects, 60 were male and 40 were female. The age of the patient in our study group range between 13 to 80 years. Mean age of the study was 45.5 years.

Table 2: Distribution of dengue patients according to symptoms and signs

Symptoms and Signs	N	%
Fever	100	100
Body ache	82	82
Chills	73	73
Headache	62	62
Generalized weakness	33	33
Tachycardia	25	25
Blanching	23	23
Vomiting	12	12
Hypotension	9	9
Abdominal pain	6	6
Itching	5	5
Rash	4	4
Haematuria	2	2
Melena	2	2
Photophobia	2	2
Neck stiffness	1	1

Most of the patients diagnosed as a dengue fever presents with fever, body ache, chills, generalized weakness and rarely some patient may present with rash, vomiting, melena, hematuria, itching, photophobia and neck stiffness accompanied by facial flush and other flu like symptoms. The fever usually continues for two days to seven days and can be as high as 41 degree Celsius. Patients with fever accompanied with tachycardia, some patients also had bradycardia may be due to myocarditis. Few patient in our study was also had blanching, hypotension and neck stiffness.

Table 3: Distribution of dengue patients according to abnormal lab parameters

Abnormal lab	N	%
HB	28	28
TLC	68	68
Platelet	83	83
Hematocrit	69	69
Sr Bilirubin	8	8
Direct Bilirubin	5	5
SGOT	46	46
SGPT	33	33
ALP	30	30
Sr. Creatinine	16	16

In our study the laboratory findings suggest that the dengue fever patient present with thrombocytopenia most commonly and associated with leukopenia.

Discussion

Transmission among human beings occurs by the mosquito Aedes aegypti and chiefly occurs during the rainy season. [8] Dengue virus infection presents with a diverse clinical picture that ranges from asymptomatic illness to DF to the severe illness of dengue hemorrhagic fever/dengue shock syndrome (DHF/DSS). [9] Onset of symptoms is characterized by a biphasic, high-grade fever lasting for 3 days to 1 week. Severe headache (mainly retro-bulbar), lassitude, myalgia and painful joint, metallic taste, appetite loss, diarrhea, vomiting, and stomachache are the other reported manifestations. Dengue is also known as "Breakbone fever" because of the associated myalgia and pain in joints. Of patients with DF, 50–82% report with a peculiar cutaneous rash. [4]

In our study out of 100 subjects, 60 were male and 40 were female. The age of the patient in our study group range between 13 to 80 years. Mean age of the study was 45.5 years. Males were affected more than females, this may due to males are more exposed to mosquitoes in outdoor activity. Similar to our study, male preponderance was found in previous studies conducted by Karolie et al [6], Seema Avasthi et al [10], G Lepakshi et al [11], Malavige et al. [12]

Most of the patients diagnosed as a dengue fever presents with fever, body ache, chills, generalized weakness and rarely some patient may present with rash, vomiting, melena, hematuria, itching, photophobia and neck stiffness accompanied by facial flush and other flu like symptoms. The fever usually continues for two days to seven days and can be as high as 41 degree Celsius. Patients with fever accompanied with tachycardia, some patients also had bradycardia may be due to myocarditis. Few patient in our study was also had blanching, hypotention and neck stiffness. In our study the laboratory findings suggest that the dengue fever patient present with thrombocytopenia most commonly and associated with leukopenia. These findings are comparable to those documented by others, though the frequencies of the symptoms varied slightly. [13-18]

Bone marrow suppression, immune-mediated clearance and spontaneous aggregation of platelets to virus infected endothelium may be responsible for such thrombocytopenia. Similar studies have earlier reported thrombocytopenia in dengue patients, though the incidence varied marginally.

Conclusion

Dengue is a mild acute febrile illness; most of the patients do not develop complications and recover completely. Commonly patients present with fever, headache, and myalgia. The laboratory findings suggest that the dengue fever patient present with thrombocytopenia most commonly and associated with leukopenia.

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