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Original Research Article

Laboratory and clinical profile of dengue: a study from coaching city, Kota, India

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ABSTRACT

Background: Dengue, an endemic disease in most subtropical and tropical regions of the world and it causes severe epidemics in India. Dengue is one of the most common acute viral illness associated with considerable morbidity and mortality. The objective of this study was to study laboratory findings and clinical profile of patients with dengue fever at a tertiary care hospital of coaching city Kota.
Methods: This study was cross sectional study. The patients were examined at one point of time and later they were never followed which is similar to the cross-sectional study design. A total of 100 patients of dengue fever who were NS1 Antigen or IgM dengue positive, admitted to department of medicine of government medical college, Kota included in the study. Through clinical examination and relevant laboratory investigations performed in all patients.
Results: In the present study, there were 74 males and 26 females. The sex ratio was 2.8:1. Maximum number of males (50%) was in the age group of 15-25 Years. Among females the maximum (42.3%) were in the age group of 15-25 years. The most common presenting symptom was fever in all cases followed by headache in 96%. Among bleeding manifestation, Epistaxis, gum bleeding and melena (24%) were the common symptom. 47% patients showed hepatomegaly and 38% showed splenomegaly. 12% patients were anemic and 51% showed leucopenia while 93% showed thrombocytopenia.
Conclusions: Males were commonly affected. Young age group of 15-25 was more commonly affected. Fever and headache were the most common presenting symptom. As dengue causes increased morbidity and mortality and requires prompt diagnosis and treatment for the proper management of these cases, this study helps physicians in early diagnosis of dengue by suspecting the features as of dengue and can prevent morbidity and mortality associated with dengue.

Keywords: Clinical profile, Dengue, Dengue IgM, Fever, Headache

INTRODUCTION

Dengue viruses are mosquito borne Flavi viruses that have infected people for centuries.[1] Dengue fever has emerged as a serious international public health threat with almost half of the world's population at risk for infection. Dengue virus is transmitted by female mosquito mainly of the species Aedes aegypti.[2]

After the incubation period of 4-10 days, an infected mosquito is capable of transmitting the virus for the rest of its life. The infection caused a flu like illness and occasionally develop into a potentially lethal complications of dengue DHF/ DSS.[3]

The global incidence of dengue has grown dramatically in recent years.[2] It is estimated that 2.5 billion people are at risk for dengue infection, of which nearly 100 million

people contract dengue fever annually and over 2,50,000 progress to dengue hemorrhagic fever (DHF) / Dengue Shock Syndrome (DSS).[4]

Usually rainy and humid season favors dengue transmission due to plenty of mosquito breed.[5,6] Maximum patients present with fever and some directly present with bleeding manifestations. For reduction of morbidity and mortality early diagnosis and prompt treatment is essential.[7]

Thus the necessity of this study is to learn the prevalence of dengue infection based on laboratory screening rapid tests for IgM and IgG antibodies and NS1 Antigen, and to study clinical profile in these cases, so that we can suspect early that it is a case of dengue fever.

METHODS

Present study was cross sectional study. The present study was done in the department of medicine, government medical college Kota from September 2019 to November 2019. Patients were explained the nature of the study and after taking consent only they were included in the present study.

Detailed history and careful clinical examination of each patient have been done. History included age and sex, fever, headache, myalgia, arthralgia, retro orbital pain, nausea, vomiting, jaundice, breathlessness, sore throat, bleeding from nose, gum, blood in vomiting, stool, urine and Sputum.

The patients were examined in detail for various clinical signs like pallor, icterus, cyanosis, lymphadenopathy, edema feet, edema face and detailed examination of pharynx, toxic look and presence of rashes over the body. Detailed examination was also done for sign of bleeding manifestations like purpura, petechiae, ecchymoses, low blood pressure i.e. Hypotension, cold and clammy peripherals.

Laboratory investigations done were hemoglobin total and differential leukocyte counts, Platelet counts, hematocrit, LFT, blood urea, serum creatinine, chest radiograph and ultrasound scan of abdomen.

DHF is defined as an acute febrile illness with minor or major bleeding, thrombocytopenia (Platelet count<1,00,000) and evidence by plasma leakage documented by hemoconcentration (hematocrit increased by at least one fifth or decreased by the same amount after intravenous therapy).[8,9] DSS is defined as DHF with signs of circulatory failure, including narrow pulse pressure (20 mm of Hg) Hypotension or frank shock.[8,9]

All the data was recorded and entered in the predesigned, pretested proforma. Various observation in the study were analyzed. Data were expressed as absolute numbers and percentage for all variables.

Inclusion criteria

- All patients above 14 years with confirmed dengue, who were either NS1 Antigen and/or IgM dengue antibody positive were included in the study.

Exclusion criteria

- Patients with concomitant malaria, typhoid, scrub typhus.
- Tests negative for dengue IgM antibody and/ or NS1 antigen.

RESULTS

In the present study there were 74 males and 26 females. The sex ratio was 2.8:1. It was observed that maximum number of males (50%) were in the age group of 15-25 years followed by in the age group of 26-35 years (32.4%) and minimum were in the age group of 65 years and above (1.3%). Among females the maximum (42.3%) were in the age group of 15-25 years (Table 1).

Out of 100 patients, 80 (80%) patients had dengue fever, 17 (17%) patients had dengue hemorrhagic fever and 3 (3%), had dengue shock syndrome (Table 2).

The serological profile shows that 64 (64%) patients were positive for NS1 antigen, 25 (25%) patients were positive for IgM antibody and 11 (11%) patients were positive for both NS1 antigen and IgM antibody (Figure 1).

Table 1: Age and sex distribution of cases.

Age (Years)	Male	%	Female	%	Total	%
15-25	37	50	11	42.3	48	48
26-35	24	32.4	07	26.9	31	31
36-45	08	10.8	04	15.3	12	12
46-55	02	2.7	02	7.6	04	04
56-65	02	2.7	02	7.6	04	04
65 and above	01	1.3	0	0	01	01
Total	74	100	26	100	100	100

Table 2: Age wise distribution and total cases of dengue fever, DHF and DSS.

Age (Years)	Dengue fever	Dengue hemorrhagic fever	Dengue shock syndrome	Total
15-25	39	08	01	48
26-35	26	05	0	31
36-45	11	01	0	12
46-55	02	01	01	04
56-65	02	01	01	04
65 and above	0	01	0	01
Total	80	17	03	100

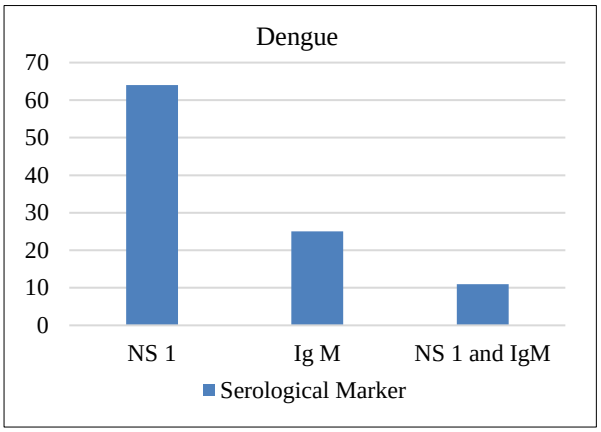

Figure 1: Distribution of number of cases with different serological markers.

Table 3: Distribution of clinical features of dengue cases.

Clinical feature	Number of patients	%
Fever	100	100%
Headache	96	96%
Myalgia	95	95%
Arthralgia	67	67%
Retro orbital pain	14	14%
Nausea and vomiting	56	56%
Abdominal pain	28	28%
Jaundice	15	15%
Dyspnoea	8	8%
Diarrhoea	6	6%
Itching	14	14%
Petechiae	16	16%
Epistaxis	4	4%
Bleeding gums	7	7%
Bleeding vagina	3	3%
Malena	14	14%
Altered Sensorium	2	2%
Hematuria	4	4%
Edema	8	8%
Conjuctival congestion	27	27%
Hepatomegaly	47	47%
Splenomegaly	38	38%

Fever was the most common clinical presentation, present in all the patients. Headache (96%) and myalgia (95%) were the next common clinical presentation. Arthralgia present in 67%, Nausea and vomiting in 56%, retro orbital pain in 14% of cases.

About 14% patients had melena and it was the most common bleeding manifestation, 16% patients had petechiae. Other bleeding signs include Epistaxis (4%), bleeding gums (7%), and vaginal bleeding (7%) (Table 3).

All the patients had thrombocytopenia, but platelet count less than 1,00,000 were reported in 93 (93%) cases. Platelet count deteriorated initially but began to rise in the later course of illness, 51 (51%) patients had leukopenia. 72 (72%) patients had raised hematocrit.

Deranged liver enzymes like SGOT and SGPT were observed in 56% and 60% of patients respectively (Table 4).

Table 4: Laboratory parameters.

Laboratory findings	No. of patients	%
Hb (<10 gm/L)	12	12%
HCT (>40%)	72	72%
TLC (<4000 /mm3)	51	51%
Platelets (<1,00,000)	93	93%
S. Bilirubin (Total >1.5 mg/dl)	8	8%
SGOT (>40 IU/L)	56	56%
SGPT (>40 IU/L)	60	60%
Blood Urea (> 50 g/dl)	7	7%
S. Creatinine (>1.2 mg/dl)	5	5%

Table 5: Hematological observation among the patients.

Hematological observation	Male	Female	Total	%
Anemia	4	8	12	12
Leucopenia	36	15	51	51
Thrombocytopenia	72	71	93	93

In the present study, out of 100 patients 51 showed leukopenia, 12 were anemic and 93 showed thrombocytopenia as shown in (Table 5).

DISCUSSION

In the present study, there were 74 males and 26 females. The sex ratio was 2.8:1. It can be observed that maximum number of males (50%) were in the age group of 15-25 years followed by in the age group of 26-35 years (32.5%) and minimum were in the age group of 65 years and above (1.3%). Among females the maximum (42.3%) were in the age group of 15-25 years. The majority of cases (91%) were in the age group of 15-45 years, which was similar to other studies showing a maximum number of patients occurred in the age group of 15-44 years. [10,11]

Kumar A et al observed DHF in 8.8% cases while Ahmed NH et al observed DHF in 10.3% cases which is lower when compared to our study (17%).[12,13] The most common bleeding manifestation was melena (14%) which was similar to the 2006 outbreak of dengue in North India.[14]

Laul A et al, noted that fever was present in all cases which is similar to present study.[15]

Headache was seen in 87% of the cases which matches the 96% figure of the present study. Body ache was seen in 86% of the cases which is slightly lower to our study (95%). Bleeding manifestation contributed to 21% of the cases which is lower than that we reported (28%) in the present study. Hemoglobin less than 10 gm/L was seen in 12% cases which is more in Tejushree A et al.[16]

Hematocrit was increased in 72% cases while it was increased only in 30% of patients in Mavilla A et al.[17] Leukopenia reported in 51% of the cases in present study while it was 30% in Khan SA et al.[18] Platelet count less than 1,00,000 were reported in 93% cases while Rashmi KS et al, reported in 72.7% of cases.[19]

Elevation of liver enzymes is a common finding in dengue infection and the current study also showed the same.

CONCLUSION

Males were commonly affected. Young age group of 15-25 years was most commonly affected. Fever, headache, myalgia and gastrointestinal symptoms are common presentation. Thrombocytopenia, leukopenia, raised hematocrit, deranged LFT were the common laboratory findings. Combination of clinical picture, hematological parameters and presence of NS-1 Antigen and IgM antibodies could be used as supportive markers for the early diagnosis of dengue, which will go a long way in the proper management of cases.

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